SEA Part 150 Technical Review Committee

TRC meeting summary

Working Partners: Port of Seattle and ESA
Date: **Tuesday, June 08, 2026**
Location: **Zoom/Virtual**
Subject: Technical Review Committee Meeting #6
Facilitator: Andres Mantilla, Uncommon Bridges

Part 150 Noise Study Technical Review Committee (8:03pm – 8:51pm)

The members of the Part 150 Study Technical Review Committee (TRC) were welcomed by Tom Fagerstrom with the Port of Seattle. He provided a brief update indicating the Noise Exposure Map (NEM) Report was currently in FAA review and would be released soon. Tom also explained that the NEM phase was largely complete and that Phase 2, the Noise Compatibility Program (NCP), is underway and the focus of today's meeting. Roll call was taken by Andres Mantilla.

TRC member	TRC Liaisons
Alaska Airlines – Alethia Miller for Lynae Craig	FAA – Seattle CEO – Sky Laron – absent
Delta Airlines – Kalena Glover – absent	FAA – Seattle ATO – Rodney Lindbeck – absent
Burien – Liz Stead	FAA – Western Service Center ATO – Joe Bert – absent
Des Moines – Jason Woycke	FAA – SEA ATC – Jason Poole – absent
Federal Way – Josh Hoff	FAA – Jennifer Redding – absent
King County – Susan McLain – absent	Port of Seattle – Tom Fagerstrom
Normandy Park – Jeff Watson – absent	Port of Seattle – Ryan McMullan
SeaTac – Zack Shields	Port of Seattle – Paris Edwards
Tukwila – Neil Tabor – absent	Port of Seattle – Tom Hooper

Summary of TRC Meeting 5
Autumn Ward from ESA provided a high-level recap of the fifth TRC meeting. The meeting focused on NEM update status, an overview of the process for review and approval of NCP measures, a review of 2014 Part 150 Study NCP recommendations, a working session to facilitate potential NCP measures, and an update in the project schedule.

Potential Nosie Abatement Measures
Chris Nottoli from ESA discussed the potential noise abatement measures that have been analyzed to date.

Intersection Departures
Chris defined intersection departures as aircraft takeoffs from a taxiway or runway intersection rather than from the runway end. Intersection departures may provide noise benefits for residential land uses in the vicinity of the start-of-takeoff roll near the departure end of the runway. Conversely, intersection departures may also result in noise increases for noise-sensitive land uses off of the opposite end of the runway due to shifting the start-of-takeoff roll down the runway and lowering aircraft altitudes on initial departure.

Sound Exposure Level (SEL) contours were created for intersection departures from Runway 16L/34R, the primary departure runway at SEA, for narrowbody aircraft with takeoff rolls less than 7,500 feet.

Chris explained that for screening purposes the top two departing aircraft from the runway, the Boeing 737-800 and Embraer 175, which represent a majority of the departures from SEA, were included in the analysis.

Chris presented the results of the SEL contours, which indicated using intersection departures did not provide a benefit to noise-sensitive land uses near the beginning of the start-of-takeoff roll and instead resulted in noise being shifted farther along the departure corridor over additional residential areas.

Increase Glideslopes for Arrivals

Chris presented a potential measure that would implement a steeper glideslope and result in aircraft approaching the runway at a higher descent angle. This would have the effect of increasing aircraft altitudes on arrival and lowering noise exposure to areas on the ground. The analysis modeled SEL contours for 3-, 3.25-, and 3.5-degree glideslopes for Runway 16L/34R and Runway 16R/34L for the B737-800. Chris explained that all runways at SEA have a standard 3-degree glideslope, except Runway 34R which has a 2.75-degree glideslope. Chris explained that based on the results of the analysis, this measure shows potential benefit to noise-sensitive land uses with reduced noise exposure under the arrival flight paths to each runway.

Offset Approaches

Chris presented a potential measure that would implement two notional offset approach paths (Offset A and Offset B) for Runways 16R and 16L that could provide potential noise benefits by following less noise-sensitive land uses (e.g., commercial and industrial areas) north of the Airport rather than flying along the runway extended centerlines. Chris explained the Offset A approach follows less sensitive land uses more closely whereas Offset B is more direct (likely preferred), with some increase in flying over residential areas. The analysis showed that offset approaches to Runway 16R provided potential benefits to residential land uses north of the Airport. Conversely, offset approach options to Runway 16L did not appear to provide any benefits and could result in potential increases in noise to residential areas under the notional Offset B arrival path.

Nighttime Arrival Preferential Runway Use

Chris discussed a potential measure to shift nighttime arrival operations from Runway 16R/34L to Runway 16L/34R between 10:00 p.m. and 7:00 a.m. This measure was considered conceptual only and would require input from the TRC regarding the feasibility of how many nighttime arrivals could reasonably be shifted to Runway 16L/34R.

Other Noise Abatement Measures

Chris concluded the presentation on noise abatement measures by describing several additional measures that ESA may evaluate during the NCP phase of this project. Potential measures include:

- Move air traffic over Elliot Bay
- Optimized Profile Descent (OPD) approach procedures
- Encourage and expand preferential runway use, when possible
- Modify Performance Based Navigation (PBN) Standard Terminal Arrival Routes (STAR)

Chris further explained that while each measure explored to date has been evaluated independently, there is potential to combine measures to achieve benefits both within and outside the DNL 65 dB contour. For example, OPD procedures could be analyzed in combination with a potential increased glideslope measure.

Potential Land Use Measures
Scott Tatro from ESA discussed potential land use measures that are being considered for the NCP. These measures include:

- Continue/expand the Sound Insulation Program
- Real Estate Disclosures for residential properties
- Amend building codes
- Noise overlay zone/noise sensitive zoning
- Encourage King County to refine the Assessors Database for airport and other noise nuisance ratings

Potential Program Management Measures
Scott provided an overview of aircraft noise certification to support a potential programmatic measure to encourage fleet optimization among the airlines. Scott also discussed a number of program management measures that may be considered in the NCP, which include:

- Expand Fly Quiet Program
- Continued stakeholder engagement/education/outreach
- Upgrade Noise and Operations Monitoring System (NOMS)
- Real time data dashboard
- Explore opportunities to support noise-related industry research

Questions and Comments
Questions/Answers are identified with Q or A, and comments are identified with C.

Q: Marco Milanese (Port of Seattle) followed up to ask if there were benefits from intersection departures at other airports.
A: Chris (ESA) stated yes, but in the case of SEA, the land uses immediately north and south of the Airport are commercial/industrial and not residential, so shifting the start of departure roll down the runway/to intersections would not have any benefits but, rather, would increase noise due to lower aircraft altitudes on departure.

Q: Tom Fagerstrom (Port of Seattle) inquired what the challenges are for getting higher glideslopes approved.
A: Chris (ESA) noted it would require changes to published procedures to the associated runways and that could cause complications with airspace and sequencing and that the use of high-speed taxiways could be a concern. Autumn (ESA) added that a challenge will be coordinating with FAA, and that it can take a few years for FAA to review the procedures and determine if they are feasible; however, there may be an opportunity to expedite the process with consultants that specialize in airspace procedure implementation.

Q: Mike Brugato asked if the arrival glideslope analysis considers lower power settings on arrival.
A: Adam (ESA) responded that the modeling did include using lower power settings associated with reduced thrust profiles. However, he cautioned that noise profiles may be louder on landing due to the potential need to use increased levels of reverse thrust to slow down.

Q: Marco (Port of Seattle) asked if other airports have been successful at implanting steeper glideslopes as part of P150.
A: Chris (ESA) mentioned Naples Airport was successful in implementing steeper glideslopes as part of their NCP. Autumn also mentioned Fort Lauderdale was successful at raising altitudes, but it wasn't specific to glideslopes.

Q: Tom (Port of Seattle) asked if the offset approaches assumed aircraft would overfly Elliott Bay.
A: Chris (ESA) confirmed that is the case and that there are plans to look at flight procedures over Elliott Bay that could be combined with other measures. He also noted that procedures are notional and would need to be further coordinated with the FAA.

Q: Tom (Port of Seattle) asked if a potential program management measure would be to shape a new Fly Quiet Program to encourage the use of quieter aircraft.
A: Scott (ESA) answered yes, and it could potentially be used to make modifications to the existing SEA Fly Quiet Program or be included as a new program.

Q: Tom (Port of Seattle) asked what active noise control systems are.
A: Autumn (ESA) described that the system currently in testing at Louisville uses speakers and destructive interference to eliminate low frequency noise. Autumn further noted, thus far Louisville has found the system provided vibration and low frequency noise benefits.
C: Chris (ESA) illustrated how the system works and the concept of destructive interference. Autumn added AI is being leveraged to help process the data in real time.
Q: Marco (Port of Seattle) asked where the speakers would be located.
A: Chris explained its target to specific communities given the new nature of the technology but could be expanded to place speakers around an airport.

Schedule Update
Autumn concluded the TRC meeting with the updated Part 150 schedule:

- Noise Exposure Map Phase
    - Summer 2026: Final NEM Report to FAA
- Noise Compatibility Program Phase
    - Spring 2026 – Spring 2027: NCP Analyses
    - Fall 2026: Public Workshop
    - Winter/Spring 2027: Draft NCP documentation
    - Summer 2027 Public Workshop and Hearing
    - Fall 2027: Final NCP Documentation

Autumn explained that an additional public workshop will be held in the fall to solicit feedback from the public on evaluated NCP measures and to provide an opportunity for new potential measures to be considered.

It was noted that the next TRC meeting will likely be in August 2026 to discuss the status of the NCP analyses and provide information about Fall 2026 Workshops. The meeting was closed by thanking attendees for joining and noting that TRC members are welcome to reach out and follow up with any questions or comments for the team at any point.

Part 150 Study Technical Review Committee

Meeting #6 | June 8, 2026

Port of Seattle®

TRC Welcome & Roll Call

TRC Members

- Alaska Airlines – Lynae Craig
- Delta Airlines – Kalena Glover
- King County – Susan McLain
- Burien – Liz Stead
- Des Moines – Jason Woycke
- SeaTac – Zack Shields
- Federal Way – Josh Hoff
- Normandy Park – Jeremy Hammar
- Tukwila – Neil Tabor

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  - SEA ATO – Rodney Lindbeck
- Port of Seattle
  - Tom Fagerstrom
  - Ryan McMullan
  - Paris Edwards
  - Tom Hooper

Agenda

- Welcome & Roll Call
- Summary of TRC Meeting #5
- Potential NCP Measures
  - Noise Abatement
  - Land Use
  - Program Management
- Project Schedule
- Future Meetings
- Questions

Summary of TRC Meeting #5

- Summary of Draft NEM Workshops and Stakeholder Outreach
- NCP Overview
  - Review and approval of NCP measures
  - 2014 Part 150 Study NCP recommendations
- NCP Working Session
  - Brainstorm noise abatement, land use, and program management measures
- Update on Project Schedule

Stakeholder Suggested NCP Measures

Noise Abatement

- Reduce nighttime flights/ noise
- Better disperse arrival and departure noise
- Reduce use of third runway (16R/34L)
- During south flow, increase departure aircraft altitudes before turning
- Move traffic over Eliott Bay
- Noise barriers
- Preferential runway use
- Steeper approach angles
- OPDs
- Incentivize procedure use by quieter aircraft
- Offset approaches
- Airspace study for efficiency/ optimization
- Nighttime Noise Flight Procedures

Land Use/Mitigation

- Expand sound insulation program
- Mitigation outside DNL 65 dB
- Sound insulation repair and replacement
- Amend building codes
- Noise sensitive land use zoning requirements
- Sound insulation for newly exposed to DNL 70dB
- Real estate disclosures
- Acquisition of non-compatible properties and relocation of residents
- Protection from encroachment

Programmatic

- Improve transparency on operations
- Incentives/ Punishment to reduce nighttime operations
- Additional noise monitors
- Additional education/insights into airport operation
- Non acoustical factors (outreach)
- Data sharing/ dashboards
- Real estate community
- Coordination among ATC/ Airlines
- Expand Fly Quiet Program

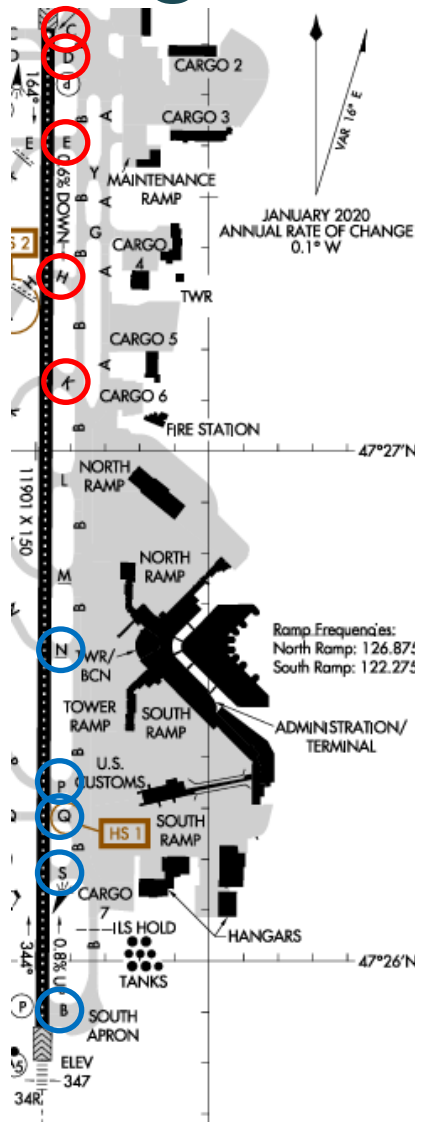
Noise Abatement Measures

Intersection Departures - Definition

- Aircraft occasionally takeoff from a taxiway intersection or runway intersection rather than from the end of the runway
  - Only occurs if the remaining runway length from the intersection meets safety standards
  - Can be requested by the aircraft or used by ATC to help increase airfield capacity by reducing aircraft taxi and/or departure wait times
- May provide noise benefits for noise sensitive land uses in the vicinity of the traditional start-of-takeoff-roll near the departure runway end
- May also result in noise increases for noise sensitive land uses off the opposite end of the runway due to:
  - Shifting the start-of-takeoff-roll down the runway
  - Lowering aircraft altitudes on initial departure

Intersection Departures – SEL Modeling

- Modeled Sound Exposure Level (SEL) contours for intersection departures from Runway 16L/34R
- Narrowbody aircraft with takeoff roll less than ~7,500 feet
- Intersections modeled:
  - 16L: Taxiways C,D,E,H, and K
  - 34R: Taxiways B,S,Q,P, and N
- For screening purposes, assessed changes and acreage for top two departure aircraft
  - 737800 makes up 33% of total fleet and 34% of departures on Runway 16L/34R
  - EMB175 makes up 25% of total fleet and 24% of departures on Runway 16L/34R
- Potentially reduce start-of-takeoff-roll noise and increase airfield capacity

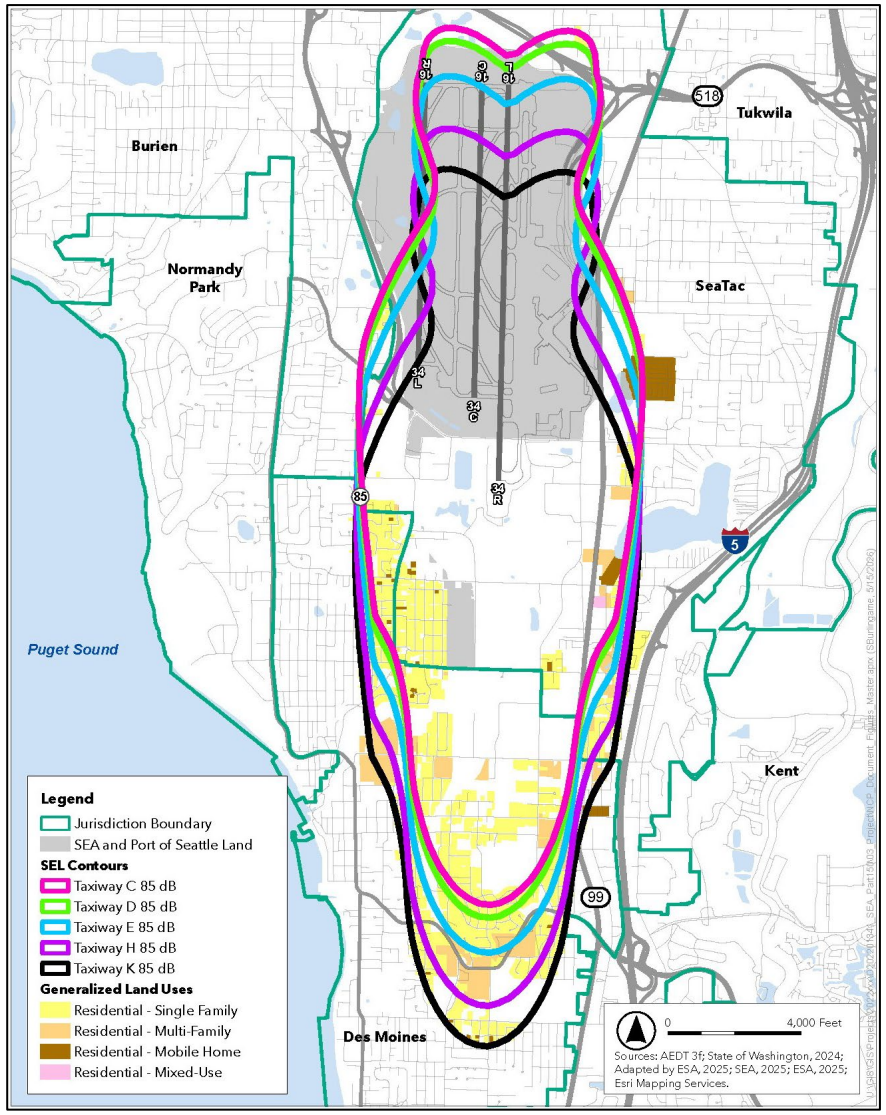


Intersection Departure 16L 737800 SEL Contours

B737-800 // Runway 16L – Housing Units					
Land Use	**Taxiway C**	**Taxiway D**	**Taxiway E**	**Taxiway H**	**Taxiway K**
Residential - Single Family	1,380	1,516	1,841	2,241	2,541
Residential - Multi-Family	1,837	1,927	2,665	3,787	3,976
Residential - Mobile Home	484	483	484	484	91
Residential - Vacant	1	1	1	1	1
Residential - Mixed-Use	1	1	1	1	1
	3,703	**3,928**	**4,992**	**6,514**	**6,610**
Total	**Difference**	**225**	**1,289**	**2,811**	**2,907**

B737-800 // Runway 16L – Population					
Land Use	**Taxiway C**	**Taxiway D**	**Taxiway E**	**Taxiway H**	**Taxiway K**
Residential - Single Family	3,772	4,165	5,102	6,152	6,906
Residential - Multi-Family	4,853	5,088	6,796	9,663	10,178
Residential - Mobile Home	800	798	801	801	275
Residential - Vacant	3	3	3	3	3
Residential - Mixed-Use	2	2	2	2	2
	9,430	**10,056**	**12,704**	**16,620**	**17,363**
Total	**Difference**	**625**	**3,274**	**7,190**	**7,933**

Note: Taxiway C represents full length departure. Difference calculated from Taxiway C.

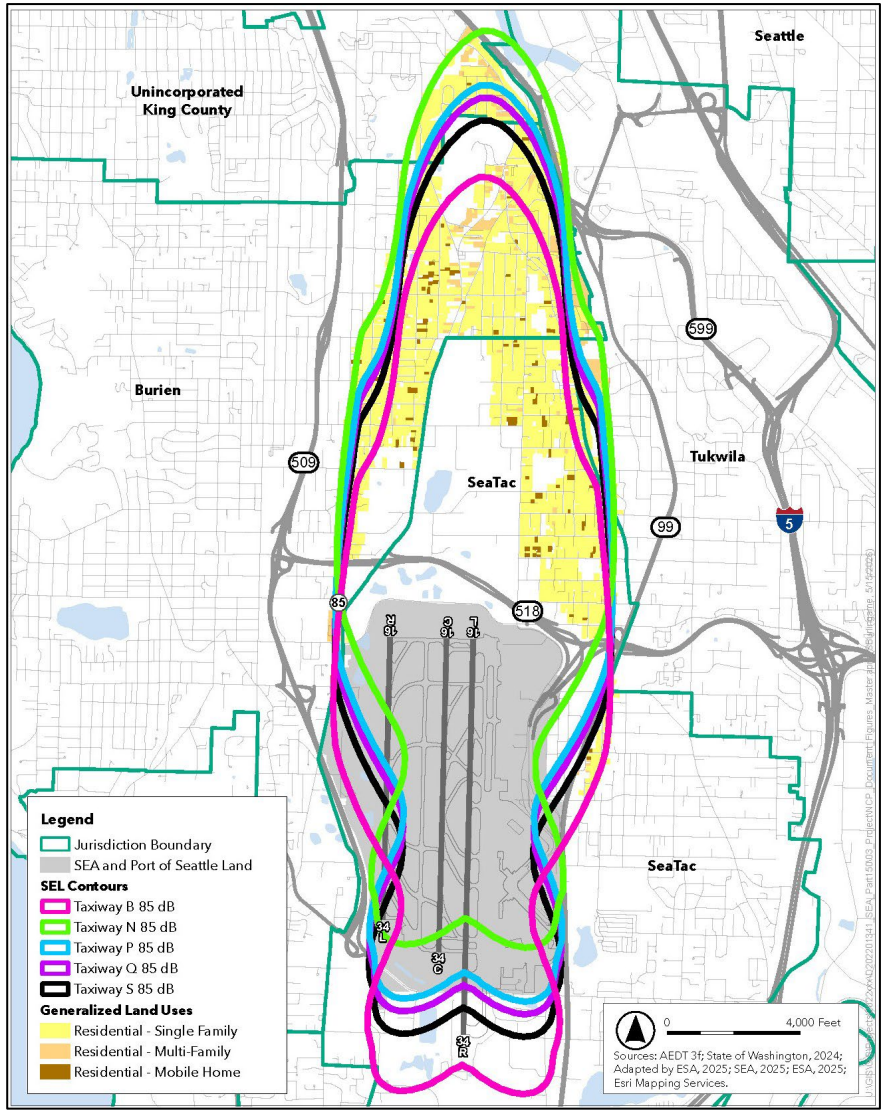


Intersection Departure 34R 737800 SEL Contours

B737-800 // Runway 34R – Housing Units					
Land Use	**Taxiway B**	**Taxiway S**	**Taxiway Q**	**Taxiway P**	**Taxiway N**
Residential - Single Family	2,612	3,083	3,342	3,502	3,851
Residential - Multi-Family	1,016	1,157	1,263	1,263	1,137
Residential - Mobile Home	68	73	81	82	86
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	1	1	1	1	1
	3,697	**4,314**	**4,687**	**4,848**	**5,075**
Total	**Difference**	**617**	**990**	**1,151**	**1,378**

B737-800 // Runway 34R – Population					
Land Use	**Taxiway B**	**Taxiway S**	**Taxiway Q**	**Taxiway P**	**Taxiway N**
Residential - Single Family	7,447	8,823	9,596	10,083	11,120
Residential - Multi-Family	2,334	2,675	2,888	2,888	2,682
Residential - Mobile Home	192	206	230	232	244
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	2	2	2	2	2
	9,975	**11,706**	**12,715**	**13,204**	**14,048**
Total	**Difference**	**1,732**	**2,741**	**3,230**	**4,073**

Note: Taxiway B represents full length departure. Difference calculated from Taxiway B.

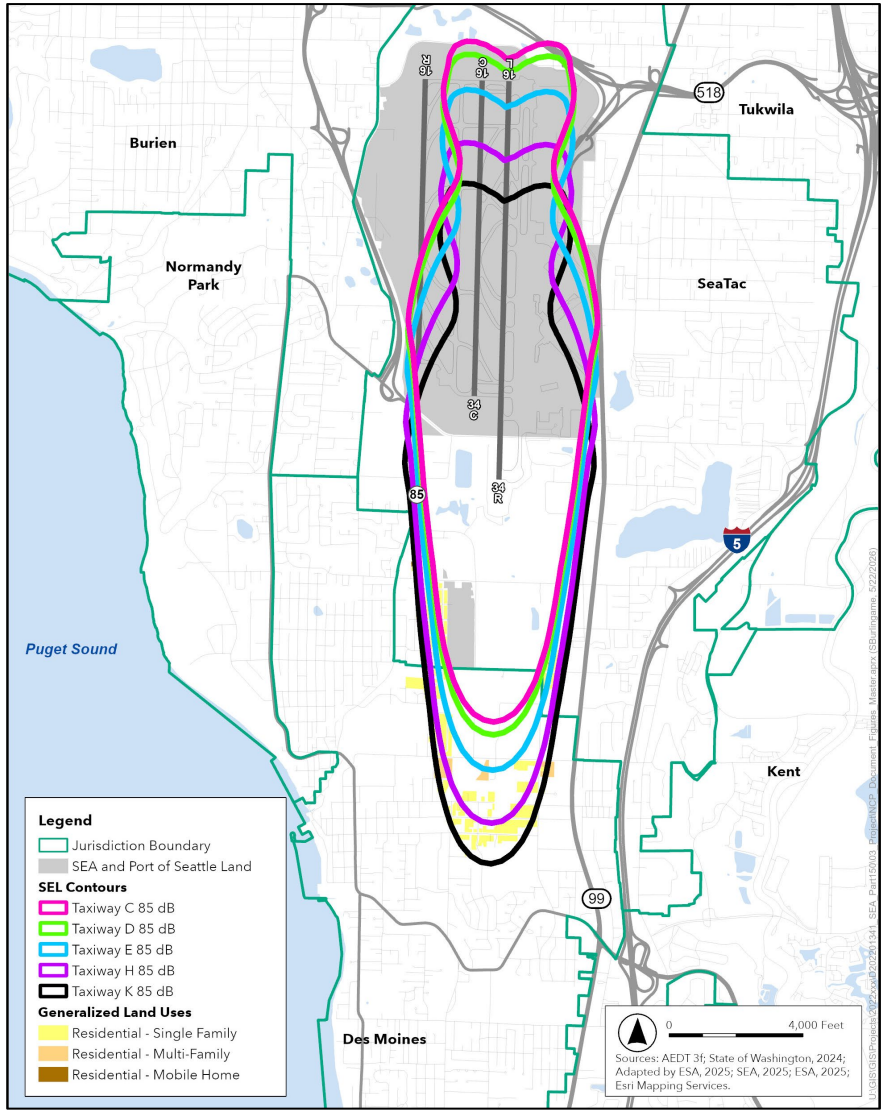


Intersection Departure 16L EMB175 SEL Contours

EMB175 // Runway 16L – Housing Units					
Land Use	**Taxiway C**	**Taxiway D**	**Taxiway E**	**Taxiway H**	**Taxiway K**
Residential - Single Family	52	72	137	283	441
Residential - Multi-Family	-	2	75	198	266
Residential - Mobile Home	1	1	2	2	4
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	-	-	-	-	-
	53	**75**	**214**	**483**	**711**
Total	**Difference**	**22**	**161**	**430**	**658**

EMB175 // Runway 16L – Population					
Land Use	**Taxiway C**	**Taxiway D**	**Taxiway E**	**Taxiway H**	**Taxiway K**
Residential - Single Family	113	157	304	644	1,039
Residential - Multi-Family	-	5	192	508	680
Residential - Mobile Home	2	2	4	4	9
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	-	-	-	-	-
	116	**164**	**500**	**1,157**	**1,728**
Total	**Difference**	**48**	**385**	**1,041**	**1,612**

Note: Taxiway C represents full length departure. Difference calculated from Taxiway C.

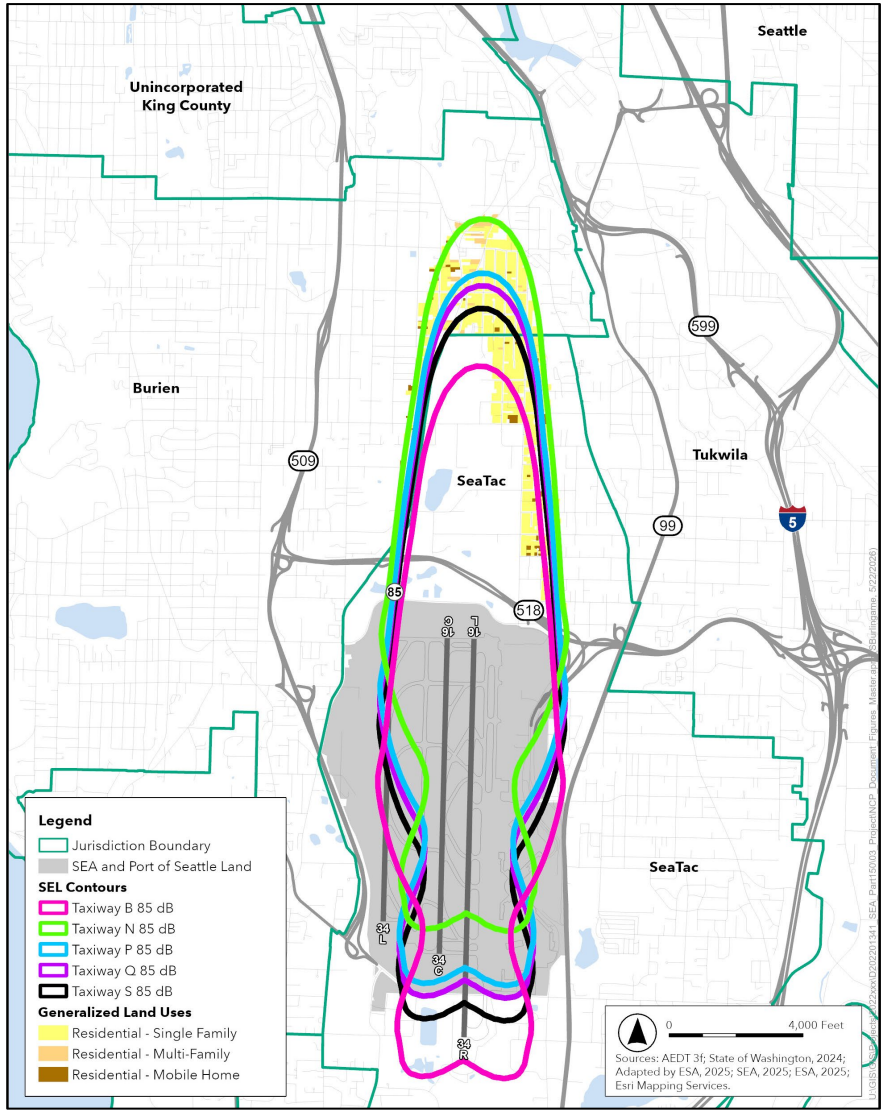


Intersection Departure 34R EMB175 SEL Contours

EMB175 // Runway 34R – Housing Units					
Land Use	**Taxiway B**	**Taxiway S**	**Taxiway Q**	**Taxiway P**	**Taxiway N**
Residential - Single Family	243	559	746	870	1,301
Residential - Multi-Family	8	27	41	50	412
Residential - Mobile Home	16	25	28	32	50
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	-	-	-	-	-
	267	**611**	**815**	**952**	**1,763**
Total	**Difference**	**344**	**548**	**685**	**1,496**

EMB175 // Runway 34R – Population					
Land Use	**Taxiway B**	**Taxiway S**	**Taxiway Q**	**Taxiway P**	**Taxiway N**
Residential - Single Family	709	1,621	2,162	2,521	3,714
Residential - Multi-Family	23	78	119	143	960
Residential - Mobile Home	47	73	81	93	143
Residential - Vacant	-	-	-	-	-
Residential - Mixed-Use	-	-	-	-	-
	778	**1,771**	**2,362**	**2,757**	**4,817**
Total	**Difference**	**993**	**1,584**	**1,979**	**4,039**

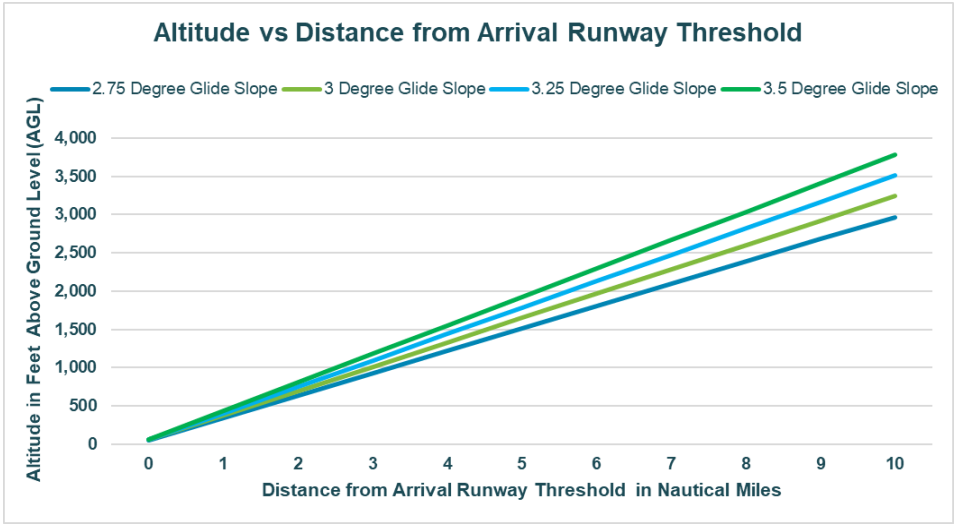
Note: Taxiway B represents full length departure. Difference calculated from Taxiway B.



Increase Glideslopes for Arrivals

- A steeper glide slope results in aircraft approaching at a higher altitude, which lowers noise exposure on the ground
- Generated custom profiles for each glideslope for the 737800
- Modeled SEL contours for 3, 3.25, and 3.5-degree glideslopes for Runway 16R/34L and 16L/34R
  - Runway 34R also includes 2.75-degree published glideslope
    - SAMP NTP Taxiway A/B Extension would include raising glideslope

Glideslope Altitudes				
Distance from Threshold (nm)	2.75-degree (ft AGL)	3.0-degree (ft AGL)	3.25-degree (ft AGL)	3.5-degree (ft AGL)
2	634	692	750	807
4	1,218	1,329	1,440	1,551
6	1,802	1,966	2,130	2,294
8	2,385	2,603	2,820	3,037
10	2,969	3,239	3,510	3,781



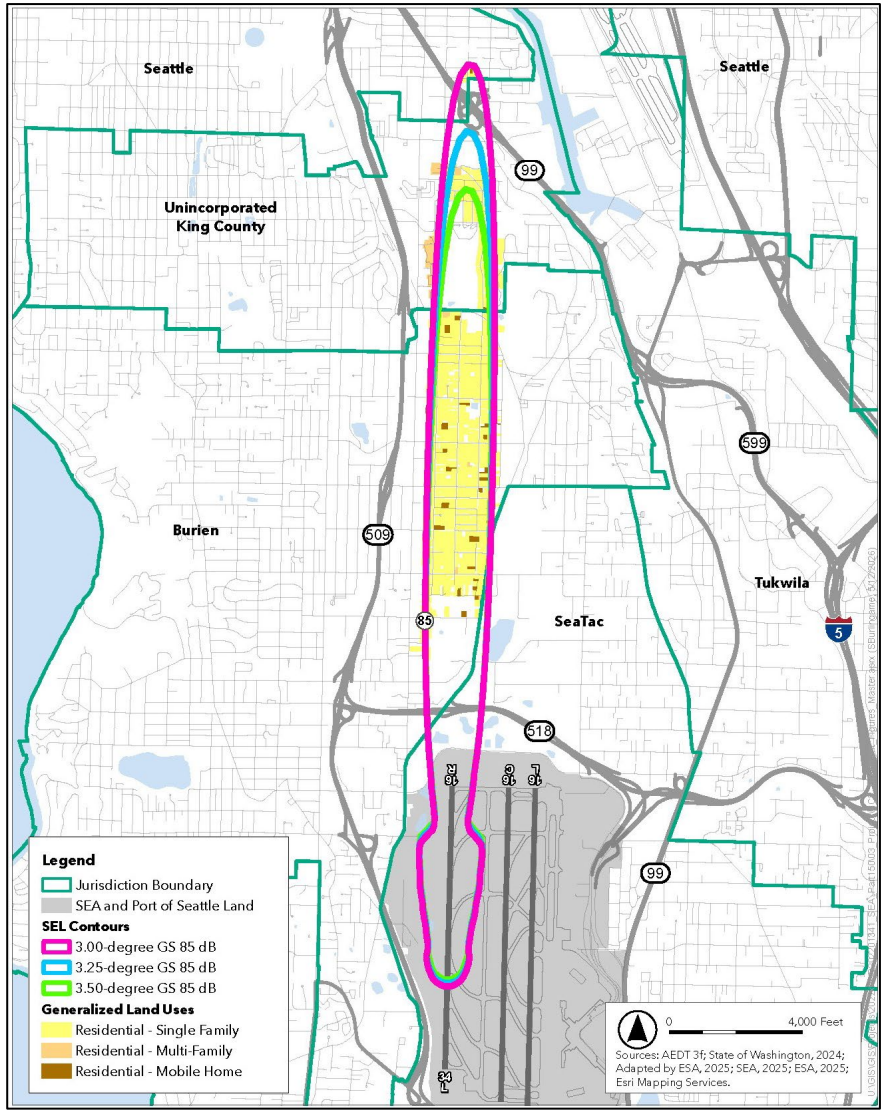
Increased Glideslope 16R 737800 SEL Contours

B737-800 // Runway 16R – Housing Units			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	1,322	1,231	1,114
Residential - Multi-Family	358	230	49
Residential - Mobile Home	43	39	36
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	1,723	**1,500**	**1,199**
Total	**Difference**	**(223)**	**(524)**

Note: Difference calculated from 3.0-degree glideslope.

B737-800 // Runway 16R – Population			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	3,623	3,390	3,047
Residential - Multi-Family	952	611	119
Residential - Mobile Home	120	109	99
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	4,695	**4,110**	**3,266**
Total	**Difference**	**(585)**	**(1,430)**

Note: Difference calculated from 3.0-degree glideslope.



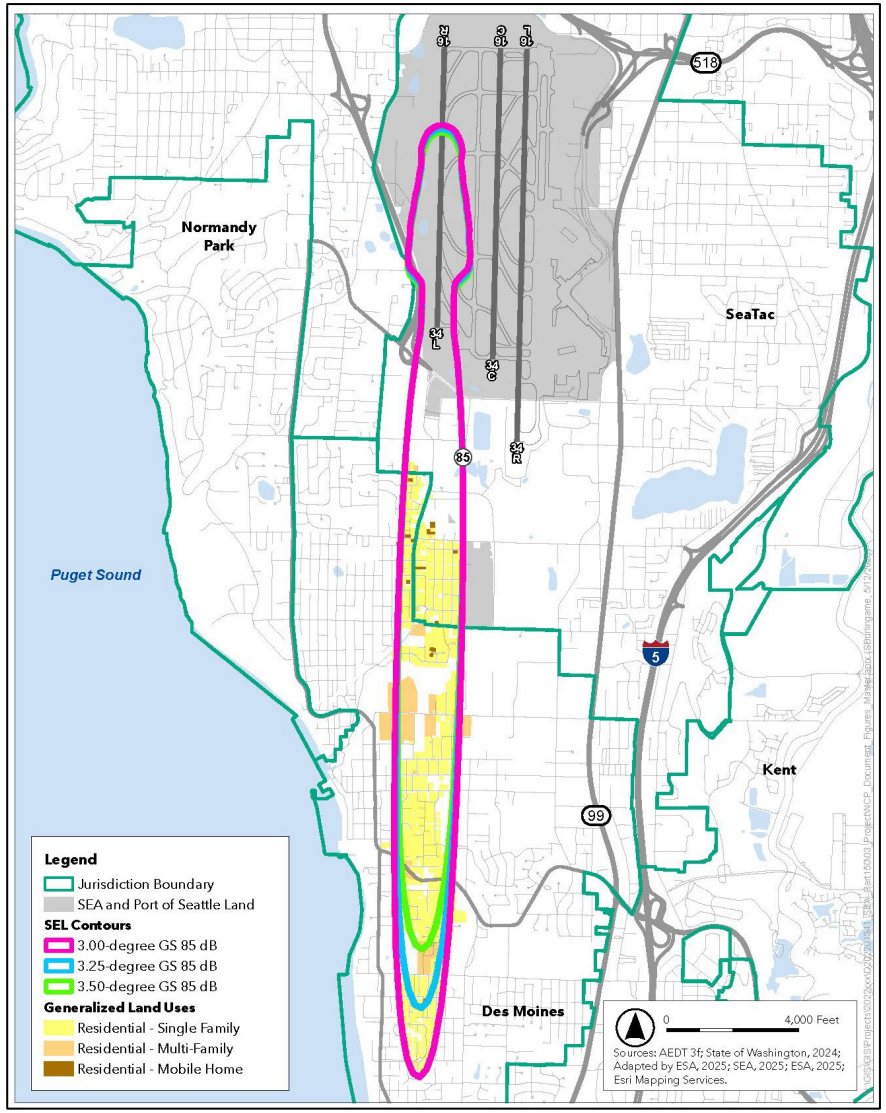
Increased Glideslope 34L 737800 SEL Contours

B737-800 // Runway 34L – Housing Units			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	1,658	1,309	1,143
Residential - Multi-Family	988	984	980
Residential - Mobile Home	17	16	16
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	2,663	**2,309**	**2,139**
Total	**Difference**	**(354)**	**(524)**

Note: Difference calculated from 3.0-degree glideslope.

B737-800 // Runway 34L – Population			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	4,196	3,478	3,102
Residential - Multi-Family	2,461	2,451	2,439
Residential - Mobile Home	45	42	42
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	6,702	**5,971**	**5,583**
Total	**Difference**	**(731)**	**(1,119)**

Note: Difference calculated from 3.0-degree glideslope.



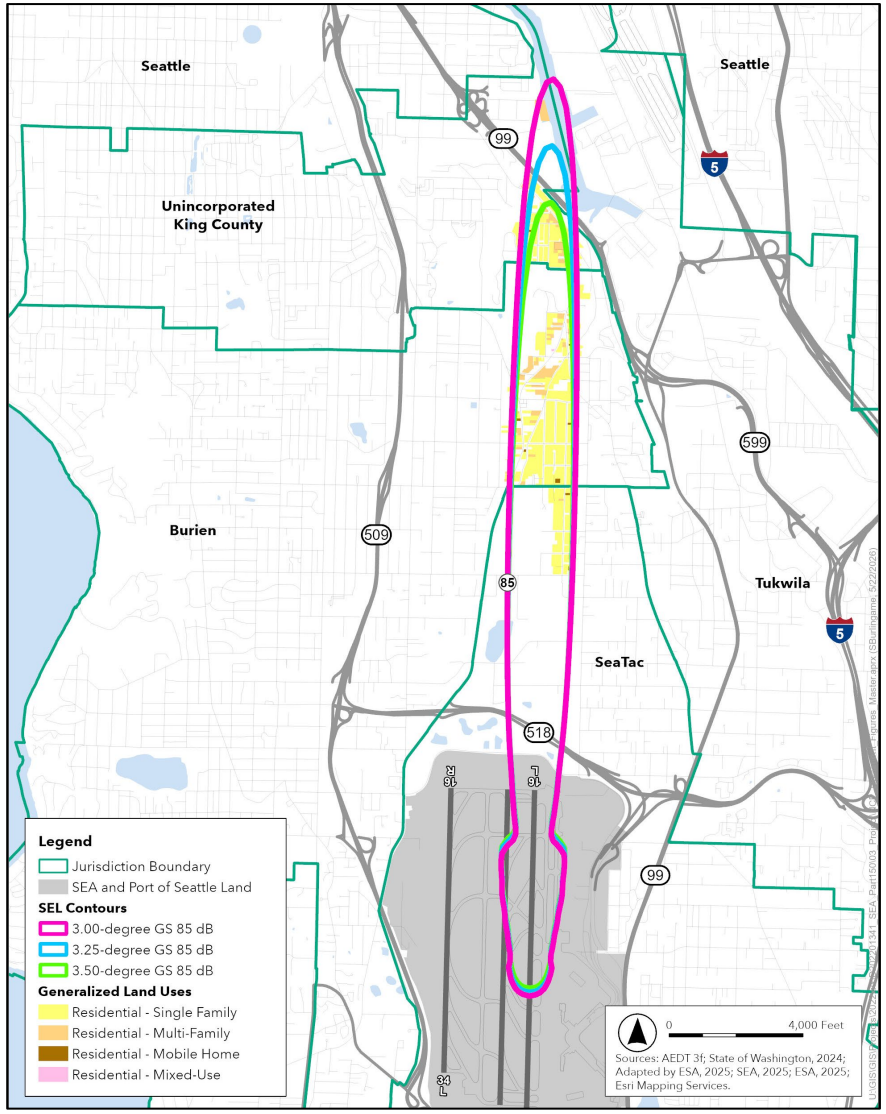
Increased Glideslope 16L 737800 SEL Contours

B737-800 // Runway 16L – Housing Units			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	773	732	659
Residential - Multi-Family	899	893	845
Residential - Mobile Home	8	8	7
Residential - Vacant	-	-	-
Residential - Mixed-Use	1	1	1
	1,681	**1,634**	**1,512**
Total	**Difference**	**(47)**	**(169)**

Note: Difference calculated from 3.0-degree glideslope.

B737-800 // Runway 16L – Population			
Land Use	**3.0-degree**	**3.25-degree**	**3.5-degree**
Residential - Single Family	2,151	2,030	1,808
Residential - Multi-Family	2,056	2,041	1,893
Residential - Mobile Home	23	23	20
Residential - Vacant	-	-	-
Residential - Mixed-Use	2	2	2
	4,232	**4,096**	**3,723**
Total	**Difference**	**(136)**	**(509)**

Note: Difference calculated from 3.0-degree glideslope.



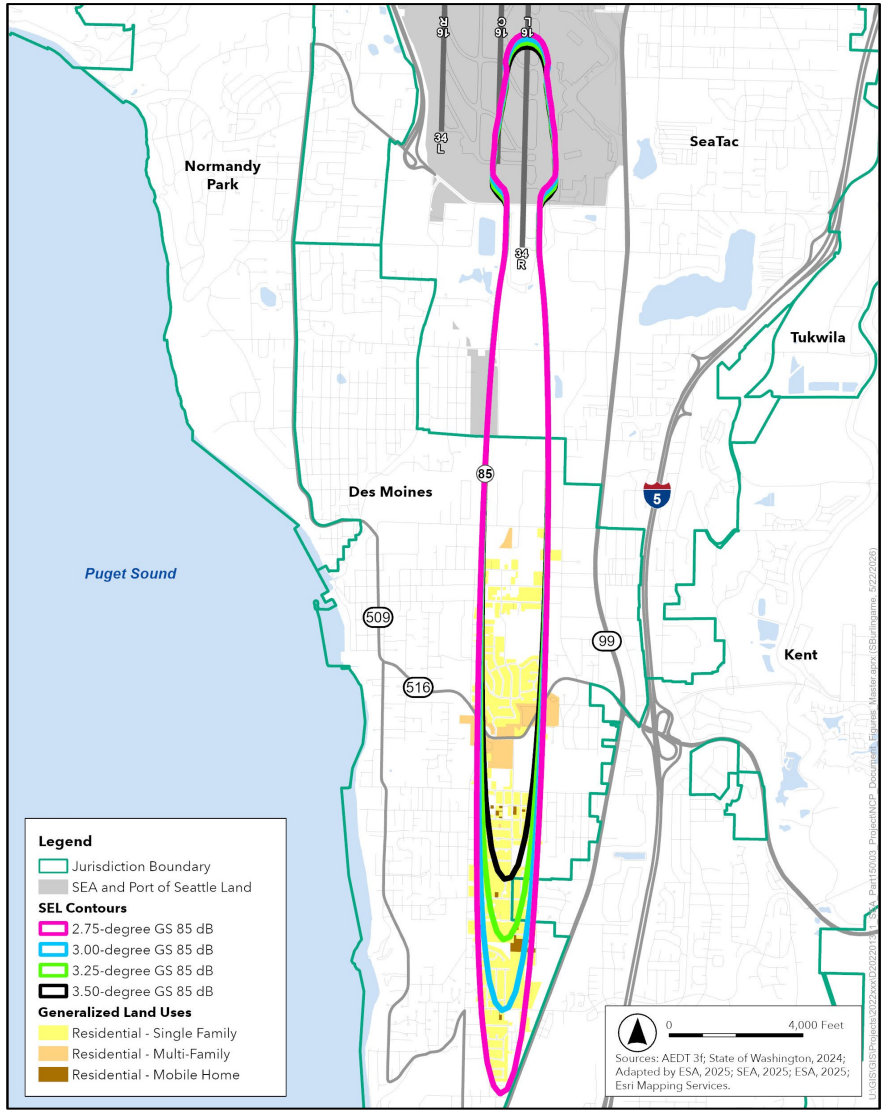
Increased Glideslope 34R 737800 SEL Contours

B737-800 // Runway 34R – Housing Units				
Land Use	2.75-degree	3.0-degree	3.25-degree	3.5-degree
Residential - Single Family	1,260	997	779	576
Residential - Multi-Family	957	913	863	803
Residential - Mobile Home	7	7	7	7
Residential - Vacant	-	-	-	-
Residential - Mixed-Use	-	-	-	-
	2,224	**1,917**	**1,649**	**1,386**
Total	**Difference**	**(307)**	**(575)**	**(838)**

Note: Difference calculated from 3.0-degree glideslope.

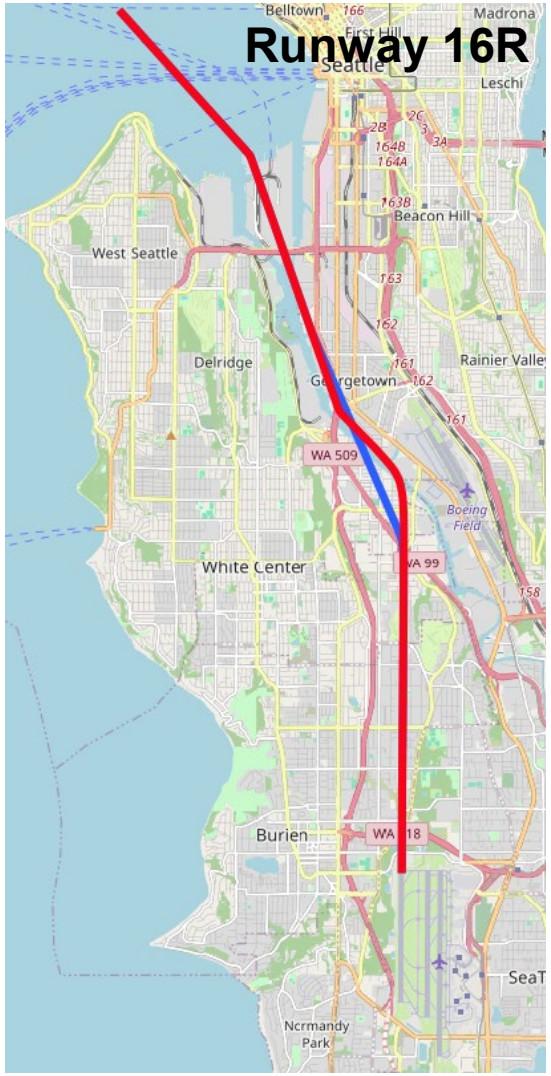
B737-800 // Runway 34R – Population				
Land Use	2.75-degree	3.0-degree	3.25-degree	3.5-degree
Residential - Single Family	3,580	2,771	2,100	1,527
Residential - Multi-Family	2,458	2,351	2,239	2,104
Residential - Mobile Home	19	19	19	19
Residential - Vacant	-	-	-	-
Residential - Mixed-Use	-	-	-	-
	6,057	**5,141**	**4,358**	**3,651**
Total	**Difference**	**(915)**	**(1,699)**	**(2,406)**

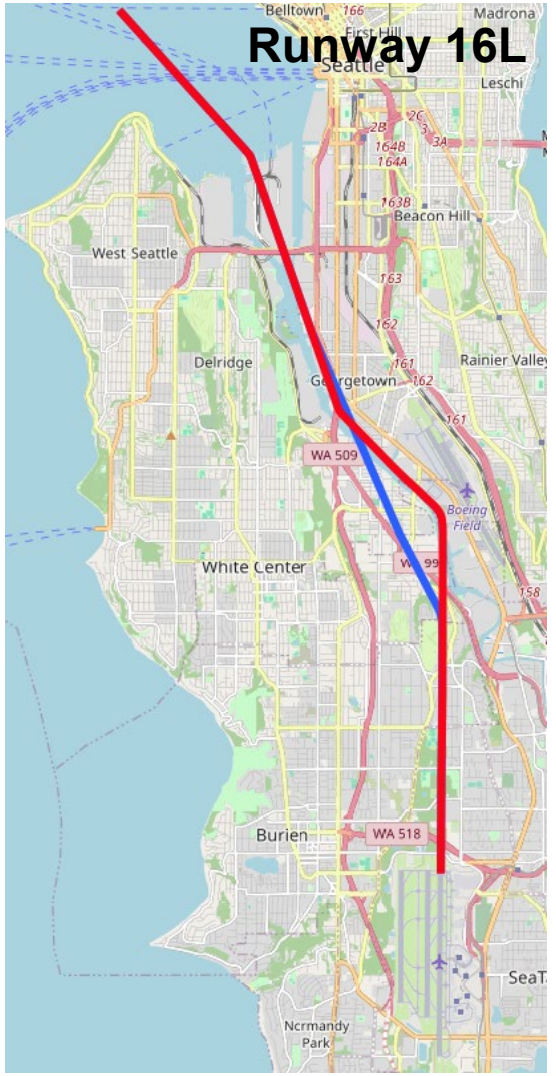
Note: Difference calculated from 3.0-degree glideslope.



Offset Approaches

- Modeled B737-800 SEL contours for two different offset approach options for Runways 16L and 16R
  - **Offset A** follows non-noise sensitive land uses more closely
  - **Offset B** is more direct (likely preferred), with some increase in flying over residential areas
- Offset approaches maximize flying over non-noise sensitive land uses north of the Airport





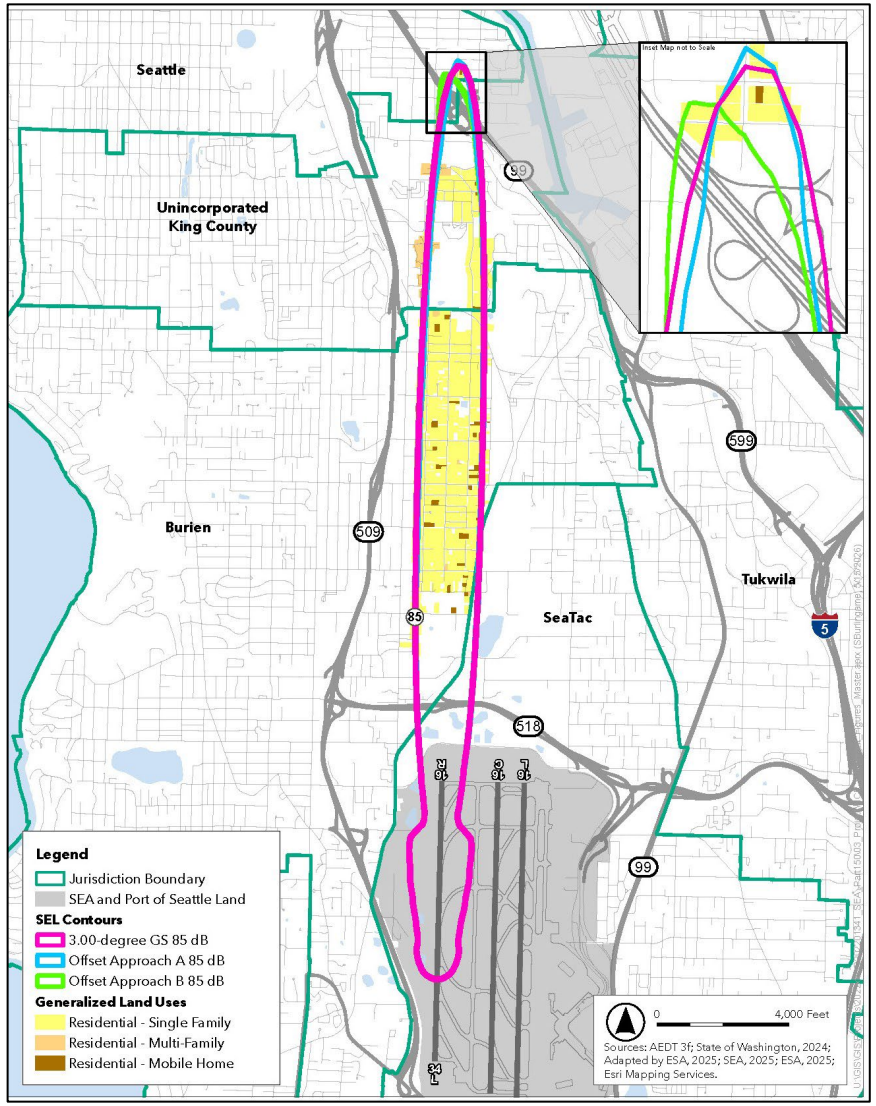
Offset Approach A and B 16R 737800 SEL Contours

B737-800 // Runway 16R – Housing Units			
Land Use	**Standard**	**Offset A**	**Offset B**
Residential - Single Family	1,322	1,291	1,272
Residential - Multi-Family	358	230	230
Residential - Mobile Home	43	41	41
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	1,723	**1,562**	**1,543**
Total	**Difference**	**(161)**	**(180)**

Note: Difference calculated from standard approach.

B737-800 // Runway 16R – Population			
Land Use	**Standard**	**Offset A**	**Offset B**
Residential - Single Family	3,623	3,544	3,496
Residential - Multi-Family	952	611	611
Residential - Mobile Home	120	115	115
Residential - Vacant	-	-	-
Residential - Mixed-Use	-	-	-
	4,695	**4,270**	**4,223**
Total	**Difference**	**(425)**	**(473)**

Note: Difference calculated from standard approach.



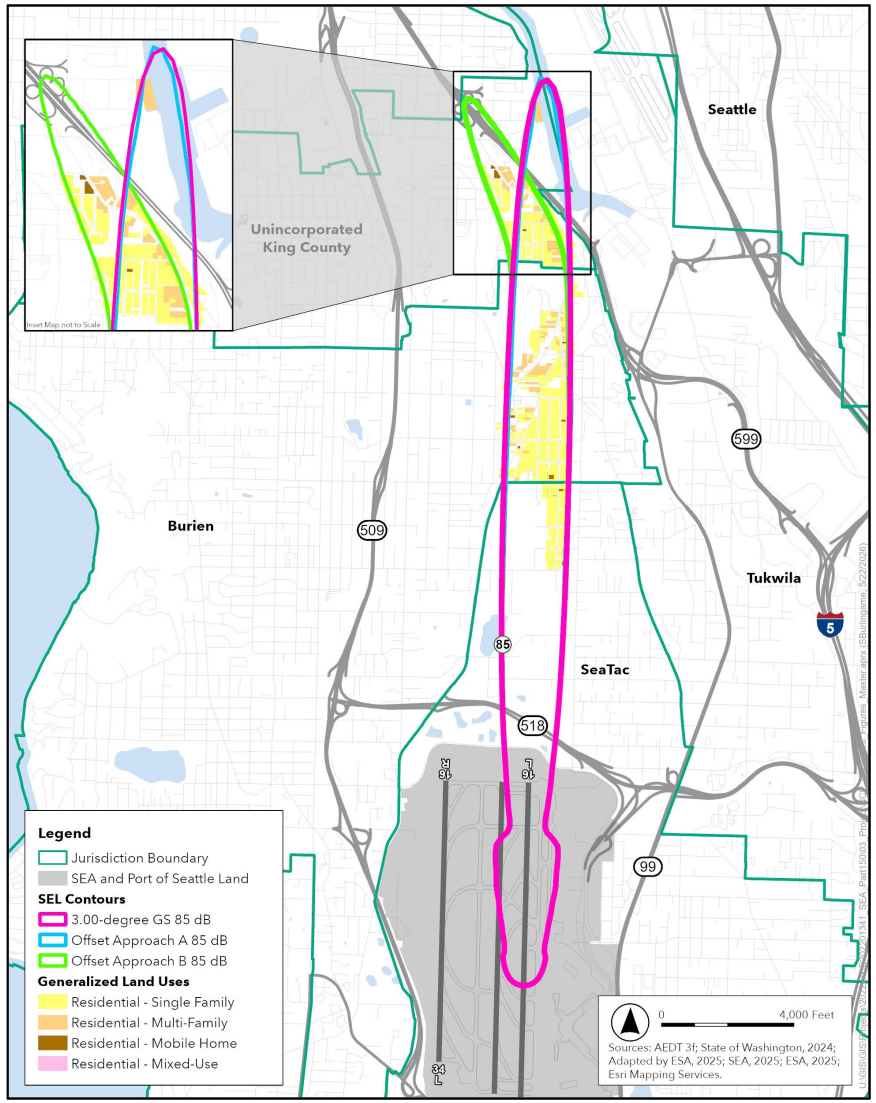
Offset Approach A and B 16L 737800 SEL Contours

B737-800 // Runway 16L – Housing Units			
Land Use	**Standard**	**Offset A**	**Offset B**
Residential - Single Family	773	750	787
Residential - Multi-Family	899	888	993
Residential - Mobile Home	8	8	11
Residential - Vacant	-	-	-
Residential - Mixed-Use	1	1	1
	1,681	**1,647**	**1,792**
Total	**Difference**	**(34)**	**111**

Note: Difference calculated from standard approach.

B737-800 // Runway 16L – Population			
Land Use	**Standard**	**Offset A**	**Offset B**
Residential - Single Family	2,151	2,082	2,230
Residential - Multi-Family	2,056	2,026	2,335
Residential - Mobile Home	23	23	34
Residential - Vacant	-	-	-
Residential - Mixed-Use	2	2	2
	4,232	**4,134**	**4,601**
Total	**Difference**	**(99)**	**369**

Note: Difference calculated from standard approach.



Nighttime Arrival Preferential Runway Use

- Evaluated shifting nighttime arrival operations from Runway 16R/34L to Runway 16L/34R during nighttime hours (10PM to 7AM)
- What would operations look like under different scenarios of shifting different percentages of arrival operations?

September 2024-August 2025 Nighttime Arrivals (10PM - 7 AM)			5% Shift of Nighttime Arrivals from 16R/34L to 16L/34R			10% Shift of Nighttime Arrivals from 16R/34L to 16L/34R		
Arrival Runway	Operations	Percentage	Operations	Change in Operations	Revised Arrival Percentage	Operations	Change in Operations	Revised Arrival Percentage
16L	1,947	6%	2,870	923	9%	3,793	1,846	12%
16R	18,461	60%	17,538	-923	57%	16,615	-1,846	54%
South Flow Total	**21,958**	**66%**	**21,958**	**-**	**66%**	**21,958**	**-**	**66%**
34L	6,987	23%	6,638	-349	22%	6,288	-699	21%
34R	728	2%	1,077	349	4%	1,427	699	5%
North Flow Total	**8,634**	**25%**	**8,634**	**-**	**26%**	**8,634**	**-**	**26%**

Other Noise Abatement Measures

- Move air traffic over Elliott Bay
  - Consider options to reduce the frequency of south-flow arrivals over residential areas north of Seattle
- Optimized Profile Descent Approach Procedure
  - Encourage use of approaches implemented under Greener Skies
- Encourage and expand preferential runway use, when possible
  - Aims to help lower aircraft usage of the third runway
- Modify PBN Standard Terminal Arrival Route (STAR) procedures
  - Aims to reduce noise for residential uses exposed to levels lower than DNL 65 dBA

Land Use Measures

Land Use Measures

- Sound Insulation Program
  - Continue program for eligible structures within the updated Noise Remedy Boundary
  - Expand program to include long-term transient lodging
- Real Estate Disclosures for Properties within DNL 65
  - WA State Law requires disclosure of “material facts or defects” but does not list aircraft noise in the standard disclosure form
  - Location within the NRB could be considered a material fact, but local jurisdictions would need to implement this measure
- Amend Building Codes
  - Airport noise-specific building codes have been adopted by SeaTac and Burien; would be implemented by local jurisdictions
  - Focus on interior noise level reduction and appropriately rated building materials

Land Use Measures, cont.

- Noise Overlay Zone/Noise Sensitive Zoning
  - Could only be recommended by POS and would have to be adopted by local jurisdictions or through interlocal agreements
- Encourage King County to Refine Assessor's Database for Airport and Other Noise Nuisance Rating
  - WA requires property assessments to be uniform at true and fair value. King County applies airport noise nuisance market adjustment factors to certain properties
  - Shows up on the assessor website, but is not well-defined
  - Promote consistent noise-nuisance rating methods across categories (e.g., airports, roadways) to improve clarity and transparency

Program Management Measures

Aircraft Noise Certification Overview

- Noise stage standards set by the International Civil Aviation Organization (ICAO), adapted by FAA
- Noise limits defined by three criteria:
  - Flyover (takeoff)
  - Sideline (lateral)
  - Approach (landing)
- Certification specific to each aircraft type
- Aircraft weight affect noise limits
  - Certification noise limits increase with aircraft weight
    - As a result, heavier aircraft have higher noise levels at each noise stage
    - Lighter aircraft have lower noise levels because of the lower weight

Noise Stage Comparisons

Noise Stage	Enacted	Weight Applicability	Noise Requirement	Notes
2	1977	>75,000 lbs. (later all)	Baseline (loudest)	Phased out by 2000 (>75k lbs.) and 2015 (<75k lbs.)
3	1977/1980s	All transport aircraft	~10 dB quieter than Stage 2	Still widely used
4	2006	All new designs	10 dB quieter than Stage 3	Standard for most modern aircraft
5	2018	All new designs	7 dB quieter than Stage 4	Current certification standard

Encouraging Fleet Optimization

- The existing fleet includes older Stage 3 aircraft and newer Stage 4/5 aircraft
- Stage 5 aircraft make up a smaller portion of the fleet but deliver the greatest noise reduction
- Transitioning to newer aircraft shifts the fleet toward quieter operations

Top Aircraft Noise Stage				
Airframe	Total Ops	Percent of Fleet	Noise Certification Stage	Estimated Equivalent Stage
737800	145,404	33%	3	4
EMB175	108,120	25%	3	4
7378MAX	64,967	15%	4	5
A321-232	32,169	7%	4	4
737700	29,115	7%	3	4
767300	6,800	2%	3	3
A330-343	5,053	1%	5	5
7879	4,531	1%	4	5
A350-941	4,147	1%	5	5
A320-211	4,087	1%	4	4
Total	**404,393**	**93%**	**-**	**-**

Encouraging Fleet Optimization

- Stage 3 aircraft are still widely used among airlines
- Stage 4 equivalent aircraft more prominent in larger commercial carriers
- Stage 5 aircraft are limited in existing fleet
- Regional carriers show limited adoption of Stage 4 or newer aircraft

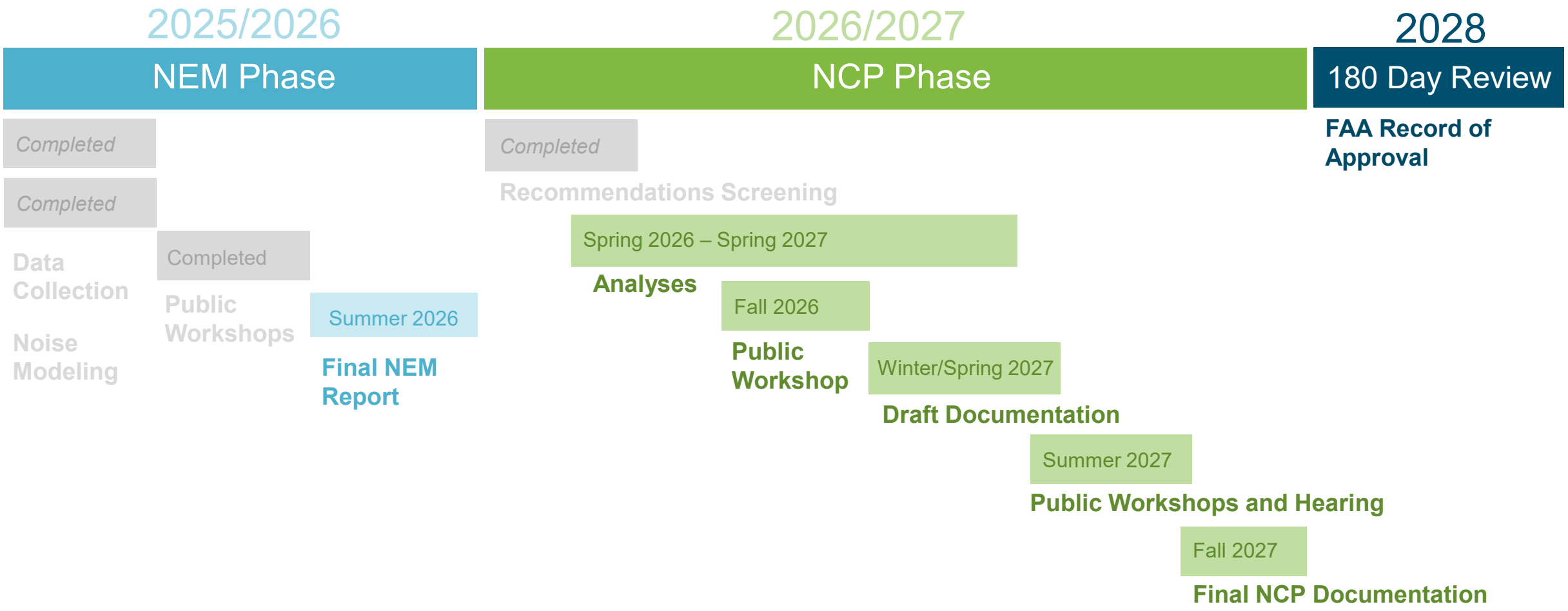
Aircraft Noise Stage By Airline								
Airline	Total Ops	Percent of Total Fleet	Noise Stage Certification			Estimated Equivalent Stage		
			3	4	5	3	4	5
Alaska	159,276	36%	67%	33%	0%	0%	67%	33%
Delta	70,752	16%	67%	25%	7%	0%	92%	7%
SkyWest	64,463	15%	100%	0%	0%	0%	100%	0%
Horizon	45,175	10%	100%	0%	0%	0%	100%	0%
United	18,610	4%	45%	55%	0%	0%	70%	30%

Program Management Measures

- Expand Fly Quiet Program
  - Identify additional incentives, potentially for late night noise operations
- Continued Stakeholder Engagement/Education/Outreach
  - Targeted educational materials/events for different stakeholders (airlines, pilots, real estate associations, etc.)
- Upgrade Noise and Operations Monitoring System (NOMS)
  - Upgrade system software, hardware, and public facing portal
- Real Time Data Dashboard
  - Could integrate with NOMS/Public Vue and add to SEA's noise program website
- Explore Opportunities to Support Research
  - FAA Center of Excellence (ASCENT) and Continuous Lower Energy, Emissions, and Noise (CLEEN)
  - Partner with academic institutions
  - Active noise control systems

Project Schedule

Part 150 Study Schedule



Next TRC Meeting

Technical Review Committee

- TRC Meeting #7 (Tentative)
  - Discuss status of NCP analysis
  - Provide information about Fall 2026 Workshops

August 2026

- Reminder notices will be sent out in advance of each meeting

- Following the meeting, TRC materials will be posted on the Project Website at www.seapart150.com

Questions?