UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

No. 25-7373

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents.

No. 25-7439

CITY OF BURIEN, *et al.*,
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents.

Petitions for Review of an Order by the Federal Aviation Administration

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AMENDED CERTIFIED INDEX TO THE ADMINISTRATIVE RECORD

Of Counsel:

PATRICIA DEEM
Senior Attorney
Office of the Chief Counsel
Federal Aviation Administration

ADAM R.F. GUSTAFSON
Principal Deputy Assistant Attorney General

REBECCA JAFFE
CHRISTOPHER HAIR
Attorneys
Environment and Natural Resources Division
U.S. Department of Justice
Post Office Box 7415

Washington, D.C. 20044
(202) 598-0983
christopher.hair@usdoj.gov

Respondents hereby provide notice to the Court and parties that the amended administrative record for the above-captioned case is available. Attached to this filing are the following documents:

1. A certification from the Federal Aviation Administration that the materials described in the attached list constitute the complete, amended administrative record for these petitions, which challenge the agency's September 24, 2025, Finding of No Significant Impact/Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport.

2. The amended certified index to that record.

The United States has made the documents in the amended administrative record available to the Petitioners via a Box.com link provided to counsel for Petitioners and Intervenors on May 8, 2026.

Respectfully submitted,

ADAM R.F. GUSTAFSON
Principal Deputy Assistant Attorney General

/s/ *Christopher Hair*
REBECCA JAFFE
CHRISTOPHER HAIR
Attorneys
Environment and Natural Resources Division
U.S. Department of Justice
Post Office Box 7415
Washington, D.C. 20044
(202) 598-0983
christopher.hair@usdoj.gov

Of Counsel:

PATRICIA DEEM
Senior Attorney
Office of the Chief Counsel
Federal Aviation Administration

Dated: May 15, 2026

CERTIFICATE OF SERVICE

I hereby certify that on May 15, 2026, I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system. I also used the Appellate Electronic Filing system to serve all registered case participants.

/s/ *Christopher Hair*
CHRISTOPHER HAIR
Counsel for Respondent

IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

VASHON ISLAND FAIR SKIES, a Washington nonprofit corporation Petitioner, v. FEDERAL AVIATION ADMINISTRATION Respondent, ---------- PORT OF SEATTLE Intervenor	Case No. 25-7373
CITY OF BURIEN, Washington municipal corporations: et al. Petitioner, v. FEDERAL AVIATION ADMINISTRATION Respondent, ---------- PORT OF SEATTLE Intervenor	Case No. 25-7439

AMENDED CERTIFIED INDEX OF THE MATERIALS COMPRISING THE ADMINISTRATIVE RECORD FOR THE FEDERAL AVIATION ADMINISTRATION FINDING OF NO SIGNIFICANT IMPACT/RECORD OF DECISION FOR THE SUSTAINABLE MASTER PLAN NEAR-TERM PROJECTS AT THE SEATTLE-TACOMA INTERNATIONAL AIRPORT ISSUED SEPTEMBER 24, 2025

I, Kandice N. Krull, am currently employed as an Environmental Protection Specialist at the Federal Aviation Administration's Denver Airports District Office, a field office within the Office of Airports. In this role, I am responsible for providing oversight and support for certain federal actions taken by the Federal Aviation Administration, including the environmental review and public involvement process for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport, including involvement in the preparation of the associated Environmental Assessment.

I hereby certify to the best of my knowledge that the materials described in the attached categorized list constitute the complete, amended administrative record for the Federal Aviation Administration's September 24, 2025, Finding of No Significant Impact/Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport.

The amended list adds the following materials: Aviation Environmental Design Tool (AEDT) Raw Data and Input Files (AR034315); Total Airspace and Airport Modeler (TAAM) Files (AR034316).

KANDICE N KRULL

Digitally signed by KANDICE N KRULL
Date: 2026.05.13 12:11:05 -06'00'

Kandice N. Krull
Environmental Protection Specialist
Federal Aviation Administration

May 13, 2026

Federal Aviation Administration – Amended Administrative Record for Finding of No Significant Impact/
Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport

Starting Bates #	Ending Bates #	Title/Description
Section 1: Final Environmental Assessment		
SEA SAMP NTP FONSI-ROD		
AR000001	AR000024	Finding of No Significant Impact (FONSI) and Record of Decision (ROD)
SEA SAMP NTP Final EA		
AR000025	AR000048	SEA SAMP NTP Final EA -Table of Contents Errata Acronyms
AR000049	AR000062	SEA SAMP NTP Final EA -Chapter 1 - Purpose and Need
AR000063	AR000076	SEA SAMP NTP Final EA -Chapter 2 - Alternatives
AR000077	AR000172	SEA SAMP NTP Final EA -Chapter 3 - Affected Environment
AR000173	AR000260	SEA SAMP NTP Final EA -Chapter 4 - Environmental Consequences
AR000261	AR000262	SEA SAMP NTP Final EA -Chapter 5 - Cumulative Impacts
AR000263	AR000266	SEA SAMP NTP Final EA -Chapter 6 - List of Preparers
AR000267	AR000270	SEA SAMP NTP Final EA -Chapter 7 - References
AR000271	AR000422	SEA SAMP NTP Final EA-Appendix A-Forecast and Operational Assumptions
AR000423	AR000620	SEA SAMP NTP Final EA-Appendix B-Purpose & Need & Alternatives
AR000621	AR001050	SEA SAMP NTP Final EA-Appendix C-Air Quality/Greenhouse Gas Emissions
AR001051	AR002034	SEA SAMP NTP Final EA-Appendix D-Biological Resources
AR002035	AR002046	SEA SAMP NTP Final EA-Appendix E-Coastal Resources
AR002047	AR002307	SEA SAMP NTP Final EA-Appendix F-Hazardous Materials & Solid Waste
AR002308	AR002453	SEA SAMP NTP Final EA-Appendix G-Historic Resources
AR002454	AR002628	SEA SAMP NTP Final EA-Appendix H-Land Use
AR002629	AR002655	SEA SAMP NTP Final EA-Appendix I-Natural Resources & Energy Supply
AR002656	AR002964	SEA SAMP NTP Final EA-Appendix J-Noise & Noise Compatible Land Use
AR002965	AR003008	SEA SAMP NTP Final EA-Appendix K-Socioeconomics & Children's Health
AR003009	AR003170	SEA SAMP NTP Final EA-Appendix L-Surface Transportation
AR003171	AR004661	SEA SAMP NTP Final EA-Appendix L-Surface Transportation-Information Available by Request
AR004662	AR004981	SEA SAMP NTP Final EA-Appendix M-Water Resources

AR004982	AR005931	SEA SAMP NTP Final EA-Appendix M-Water Resources-Information Available by Request
AR005932	AR008160	SEA SAMP NTP Final EA-Appendix N-Scoping
AR008161	AR009306	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement
AR009307	AR010151	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement-Submitted Studies & Materials
Section 2: Draft Environmental Assessment		
SEA SAMP NTP Draft EA		
AR010152	AR010164	SEA SAMP NTP Draft EA -Table of Contents & Acronyms
AR010165	AR010178	SEA SAMP NTP Draft EA -Chapter 1 - Purpose and Need
AR010179	AR010192	SEA SAMP NTP Draft EA -Chapter 2 - Alternatives
AR010193	AR010304	SEA SAMP NTP Draft EA -Chapter 3 - Affected Environment
AR010305	AR010396	SEA SAMP NTP Draft EA -Chapter 4 - Environmental Consequences
AR010397	AR010414	SEA SAMP NTP Draft EA -Chapter 5 - Cumulative Impacts
AR010415	AR010418	SEA SAMP NTP Draft EA -Chapter 6 - List of Preparers
AR010419	AR010422	SEA SAMP NTP Draft EA -Chapter 7 - References
AR010423	AR010574	SEA SAMP NTP Draft EA-Appendix A-Forecast and Operational Assumptions
AR010575	AR010772	SEA SAMP NTP Draft EA-Appendix B-Purpose & Need & Alternatives
AR010773	AR011214	SEA SAMP NTP Draft EA-Appendix C-Air Quality/Greenhouse Gas Emissions
AR011215	AR011446	SEA SAMP NTP Draft EA-Appendix D-Biological Resources
AR011447	AR011458	SEA SAMP NTP Draft EA-Appendix E-Coastal Resources
AR011459	AR011719	SEA SAMP NTP Draft EA-Appendix F-Hazardous Materials & Solid Waste
AR011720	AR011851	SEA SAMP NTP Draft EA-Appendix G-Historic Resources
AR011852	AR012026	SEA SAMP NTP Draft EA-Appendix H-Land Use
AR012027	AR012053	SEA SAMP NTP Draft EA-Appendix I-Natural Resources & Energy Supply
AR012054	AR012360	SEA SAMP NTP Draft EA-Appendix J-Noise & Noise Compatible Land Use
AR012361	AR012429	SEA SAMP NTP Draft EA-Appendix K-Socioeconomics & Children's Health
AR012430	AR012591	SEA SAMP NTP Draft EA-Appendix L-Surface Transportation

AR012592	AR014082	SEA SAMP NTP Draft EA-Appendix L-Surface Transportation-Information Available by Request
AR014083	AR014260	SEA SAMP NTP Draft EA-Appendix M-Water Resources
AR014261	AR015210	SEA SAMP NTP Draft EA-Appendix M-Water Resources-Information Available by Request
AR015211	AR017439	SEA SAMP NTP Draft EA-Appendix N-Scoping
AR017440	AR017442	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement
SEA SAMP NTP Draft EA Notices and Public Resources		
		Notice of Upcoming Release
AR017443	AR017450	SAMP 30-Day Notice Fact Sheet
AR017451	AR017451	Notification on Port of Seattle Facebook Page on Upcoming Release of Draft EA
AR017452	AR017453	Notification on Port of Seattle LinkedIn Page on Upcoming Release of Draft EA
AR017454	AR017454	Notification on Port of Seattle X Account on Upcoming Release of Draft EA
AR017455	AR017457	Press Release
AR017458	AR017459	Frequently Asked Questions
AR017460	AR017461	Notification of Upcoming Release
AR017462	AR017463	Notification of Upcoming Release - Amharic
AR017464	AR017465	Notification of Upcoming Release - Chinese
AR017466	AR017467	Notification of Upcoming Release - Korean
AR017468	AR017469	Notification of Upcoming Release - Soomaali
AR017470	AR017471	Notification of Upcoming Release - Spanish
AR017472	AR017473	Notification of Upcoming Release - Vietnamese
AR017474	AR017477	Frequently Asked Questions - Amharic
AR017478	AR017481	Frequently Asked Questions - Chinese
AR017482	AR017485	Frequently Asked Questions - Korean
AR017486	AR017489	Frequently Asked Questions - Soomaali
AR017490	AR017493	Frequently Asked Questions - Spanish
AR017494	AR017497	Frequently Asked Questions - Vietnamese
		Notice of Availability

AR017498	AR017499	Postcard Mailer with Translations
AR017500	AR017501	Notice of Availability - Snail Mail Letter
AR017502	AR017502	Draft EA notifications schedule
AR017503	AR017503	Legal Notification - Daily Journal of Commerce
AR017504	AR017505	Legal Notification - Seattle Times
AR017506	AR017506	Notification of Availability of DEA on Port of Seattle Facebook Page
AR017507	AR017507	Notification of Availability of DEA on Port of Seattle LinkedIn Page
AR017508	AR017508	Notification of Availability of DEA on Port of Seattle X Account
AR017509	AR017513	Port of Seattle Connections Email with Notification of Availability of DEA
AR017514	AR017515	Port of Seattle Email Notification of Availability of DEA
AR017516	AR017517	Port of Seattle NEPA Email Notification of Availability of DEA
AR017518	AR017521	Press Release
AR017522	AR017522	Digital AD 1 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017523	AR017523	Digital AD 2 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017524	AR017524	Digital AD 3 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017525	AR017525	Digital AD 4 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017526	AR017526	Digital AD 5 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017527	AR017527	Digital AD 6 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017528	AR017528	Digital AD 7 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017529	AR017529	Digital AD 8 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017530	AR017530	Digital AD 9 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017531	AR017531	El Siete Dias Ad - Spanish Ran Between 10/23/24-11/15/24
AR017532	AR017532	International Examiner Ad Ran Between 10/23/24-11/15/24
AR017533	AR017533	Runtanews.com - English (short) Ran Between 10/23/24-11/15/24
AR017534	AR017534	Runtanews.com - English (long) Ran Between 10/23/24-11/15/24
AR017535	AR017535	Runtanews.com - Soomalli (short) Ran Between 10/23/24-11/15/24
AR017536	AR017536	Runtanews.com - Soomalli (long) Ran Between 10/23/24-11/15/24
AR017537	AR017538	Open House Guide

AR017539	AR017568	Public Meeting Boards
AR017569	AR017570	Email notifying public meeting attendees of flyer with misprint
AR017571	AR017572	Second email notifying public meeting attendees of flyer with misprint
AR017573	AR017575	Notification Materials Requested Added to Website & Locations of Hard Copy
AR017576	AR017576	Notification Web Portal Stopped Accepting Comments Early
AR017577	AR017577	Discussion on what the message should say on public website
AR017578	AR017585	List of All Updates to Project Website
SEA SAMP NTP Draft EA – Comment Period Extension Requests and Notices		
AR017586	AR017587	SEA Request to Extend Comment Period
AR017588	AR017590	FAA Agreement to Extend Comment Period to 45 Days
AR017591	AR017591	Request for Comment Period Extension to 60 Days
AR017592	AR017592	Request for Comment Period Extension by 35 Days
AR017593	AR017594	FAA Response to Port of Seattle Commissioner Request For Extension
AR017595	AR017595	Request for Comment Period Extension by 35 Days
AR017596	AR017597	Updated Master Plan vs EA Handout
AR017598	AR017598	Updated Public Comment Process Handout
AR017599	AR017602	Updated Frequently Asked Questions
AR017603	AR017604	Legal Notification of Comment Period Extension - Daily Journal of Commerce
AR017605	AR017605	Legal Notification of Comment Period Extension - Seattle Times
AR017606	AR017607	FAA Response to Earthjustice's Request for Comment Period Extension
AR017608	AR017609	Notification of Public Comment Extension - Email
AR017610	AR017610	Notification of Public Comment Extension - Facebook
AR017611	AR017611	Notification of Public Comment Extension - LinkedIn
AR017612	AR017612	Notification of Public Comment Extension - EX
AR017613	AR017616	Notification to Submit Extension Requests Directly to the FAA
AR017617	AR017620	Forward of Congressman Smith's Informal Extension Request
SEA SAMP NTP Draft EA - Late Comments		
AR017621	AR017621	Late comment submittal from Melissa Beatty
AR017622	AR017622	Late comment submittal from Tim Gould

AR017623	AR017625	Late comment submittal from Kathy Dooley
AR017626	AR017629	Late comment submittal from Sandra Locklear
AR017630	AR017631	Late comment submittal from Mary Olsen
AR017632	AR017632	Late comment submittal from Hannah Alhajahja
AR017633	AR017634	Late comment submittal from Barbara Petersen
AR017635	AR017636	Late comment submittal from Stephanie Kenick
AR017637	AR017638	Late comment submittal from Joe Vinson
AR017639	AR017640	Late comment submittal from Eileen Lambert
AR017641	AR017646	Late comment submittal from Yoshiko Grace Matsui
AR017647	AR017647	Late comment submittal from Elizabeth Burn
Section 3: Resource Categories – Technical Analyses, Reports, and Agency Coordination		
Air Quality & GHG		
AR017648	AR017648	Submittal of preliminary final AQ and Climate Protocol
AR017649	AR017650	Submittal of FAA comments on AQ and Climate Protocol
AR017651	AR017651	Email Submittal of AQ Protocol to the Pugent Sound Clean Air Agency (PSCAA)
AR017652	AR017653	PSCAA Agreement to Provide Comments by Deadline
AR017654	AR017655	PSCAA Comments on AQ Protocol
AR017656	AR017658	Inclusion of FAA in PSCAA approval of SEAP AQ Protocol
AR017659	AR017660	Landrum & Brown Email to EPA on King County WA Air Quality Status
AR017661	AR017662	Discussion on how projects with no FAA authority impact AQ analysis
AR017663	AR017663	Port Email Preliminary AQ Results to PSCAA
AR017664	AR017665	PSCAA Determination Project will not Cause Exceedance of NAAQS
AR017666	AR017667	Notification that the AQ analysis for vehicle emissions needs to be updated
AR017668	AR017669	FAA concerns with methodology for discussion
AR017670	AR017672	PSCAA Availability for Meeting to Discuss AQ Analysis
AR017673	AR017680	Updated presentation for call with PSCAA
AR017681	AR017701	Submittal of revised air quality protocol
AR017702	AR017704	Discussion on General Conformity and How it Relates to the Project
AR017705	AR017726	Confirmation of receipt of FAA comments on AQ Protocol

AR017727	AR017728	Submittal of revised air quality protocol
AR017729	AR017731	FAA comments on air quality protocol
AR017732	AR017732	Submittal of Updated AQ Protocol to PSCAA for Review
AR017733	AR017734	PSCAA Agreement to Provide Comments by Deadline
AR017735	AR017735	SEA Questions on GHG Guidance for Discussion
AR017736	AR017737	PSCAA Comments on AQ Protocol
AR017738	AR017738	Contradictory guidance on hot to model aircraft GHG emissions
AR017739	AR017741	Explanation of why using taxi times for 2027 and 2032
AR017742	AR017745	Confirmation that they can continue to use TAAM taxi times
AR017746	AR017746	FAA Comments on revised air quality protocol
AR017747	AR017747	Revised AQ protocol in response to PSCAA comments
AR017748	AR017749	Request to Schedule Meeting to Discuss Mixing Height
AR017750	AR017751	Submittal of Updated AQ Protocol to PSCAA for Review
AR017752	AR017753	Acknowledgement of Receipt of Submitted Updated AQ Protocol
AR017754	AR017754	Port Email Submitting Climate Protocol to PSCAA for Review
AR017755	AR017755	PSCAA Agreement to Provide Comments by Deadline
AR017756	AR017756	PSCAA Comments on Climate Protocol
AR017757	AR017758	Acknowledgement of Receipt of PSCAA Comments
AR017759	AR017761	Discussion on update to text in AQ Protocol related to APU
AR017762	AR017783	Submittal of updated climate protocol in response to PSCAA comments
AR017784	AR017786	Submittal of FAA comments to climate protocol changes
AR017787	AR017788	Submittal of updated climate protocol with request for guidance
AR017789	AR017794	Discussion on Emission Increases in Attainment Areas
AR017795	AR017796	FAA responses to request for guidance on climate protocol
AR017797	AR017798	Port Email Submitting Updated Climate Protocol to PSCAA
AR017799	AR017801	PSCAA Comments on Climate Protocol
AR017802	AR017805	SEA acknowledgement did not include FAA comments in submittal to PSCAA
AR017806	AR017809	FAA Responses to PSCAA Comments on Climate Protocol

AR017810	AR017813	Submittal of Preliminary AQ Results
AR017814	AR017816	Thanks for Review and Agreement to Provide Full Results
AR017817	AR017822	Discussion on issues with AEDT 3F and boiler emissions
AR017823	AR017823	Preliminary air quality results using AEDT 3F
AR017824	AR017824	Comparison of AEDT 3E results vs AEDT 3F
Biological		
AR017825	AR017827	Introductions and Discussion on Consultation Process
AR017828	AR017829	Submittal of draft stormwater report (water resources)
AR017830	AR017832	Update on Biological Assessment Development Process
AR017833	AR017834	Submittal of Preliminary BA for NMFS Review
AR017835	AR017836	Acknowledgement of Receipt of Submitted BA
AR017837	AR017838	Email Check-In to Get Updated on Review
AR017839	AR017840	NMFS Initial Comments on Preliminary BA for FAA Consideration
AR017841	AR017842	NMFS Email Requesting Additional Information to Determine Consultation
AR017843	AR017847	Agreement with NMFS that biologist needed to finish report
AR017848	AR017850	NMFS Section Chief joining 4/26/24 call
AR017851	AR017853	Update on Confluence development of BA
AR017854	AR017856	Acknowledgement of submitted comments & update on process
AR017857	AR017857	Update on progress of BA update
AR017858	AR018060	Submittal of updated Final Draft BA
AR018061	AR018062	FAA decision to have BA based on existing science
AR018063	AR018066	Updated information for the Biological Evaluation
AR018067	AR018067	Submittal of working BE for review
AR018068	AR018070	FAA request & SEA submittal of additional studies
AR018071	AR018189	Fall 2017 and Spring 2018 Rainbow Trout In Situ Results
AR018190	AR018343	Fall 2018 and Spring 2019 Rainbow Trout In Situ Results
AR018344	AR018495	Fall 2019 and Spring 2020 Rainbow Trout In Situ Results

AR018496	AR018706	Fall 2020 and Spring 2021 Rainbow Trout In Situ Results
AR018707	AR018745	Fall 2021 and Spring 2022 Rainbow Trout In Situ Results
AR018746	AR018933	Fall 2022 and Spring 2023 Rainbow Trout In Situ Results
AR018934	AR018936	Submittal of 6PPD-Q test results
AR018937	AR018940	Request to Resubmit Informal Consultation Request to Six Different Emails
AR018941	AR018941	Notification of NMFS Priorities and Delay in Review
AR018942	AR018943	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 1
AR018944	AR018946	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 2
AR018947	AR018947	FAA's Resubmittal of Informal Consultation w/ BE to NMFS and USFWS - Part 3
AR018948	AR018948	Resubmittal of Informal Consultation w/ BE to NMFS and USFWS - Part 4
AR018949	AR018949	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 5
AR018950	AR018950	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 6
AR018951	AR018957	Discussion on ways to Submit Rainbow Trout Study too Large for Email
AR018958	AR018963	USFWS Receipt of Submittal and Notification Submittal has Been Logged
AR018964	AR018965	NOAA Receipt of Submittal and Notification Submittal has Been Logged
AR018966	AR018966	NMFS Provided Contact Person for Submittal of Large File
AR018967	AR018967	Realization Issue Already Resolved
AR018968	AR018969	Submittal of Rainbow Trout 2023 Report
AR018970	AR018970	Receipt of Rainbow Trout 2023 Report
AR018971	AR018971	NOAA Non-concurrence Email
AR018972	AR018973	Provided POC to get NOAA Attorney Contact Information
AR018974	AR018974	Provided NOAA Attorney Contact Information
AR018975	AR018976	Confirmation Bonnie Shorin is POC for Project until Position is Filled
AR018977	AR018980	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR018981	AR018981	Acknowledgment Received Invite but Notifying Haven't Reviewed
AR018982	AR018982	Notification of Phased Retirement and New Branch Chief
AR018983	AR018983	Notification of Phased Retirement and New Branch Chief
AR018984	AR018985	Notification Bonnie can Attend for Dayv Lowry

AR018986	AR018986	Summary of call with NOAA and request for additional information
AR018987	AR019051	Provided information requested 3/13/25
AR019052	AR019053	FAA Submittal of Information Requested by NMFS During 3/13/25 Meeting
AR019054	AR019056	Update on Review of Information Submitted 4/10/25
AR019057	AR019061	NOAA Non-concurrence Email
AR019062	AR019067	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR019068	AR019068	Submittal of Presentation & Information Requested from 5/14/25
AR019069	AR019075	Notification Project was Closed Out on NMFS End
AR019076	AR019082	Notification of Need to Resubmit Consultation Request
AR019083	AR019086	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR019087	AR019090	Notification FAA Attorney will be Joining Call
AR019091	AR019092	FAA Email with Agenda for FAA/NMFS Meeting
AR019093	AR019095	Response to NMFS Request for Meeting Attendees
AR019096	AR019096	Request for Information to Support Formal Consultation Requirement
AR019097	AR019098	Submittal of Information Requested on 6/18/25
AR019099	AR019104	Consultation Request Letter as Requested by NOAA
AR019105	AR019109	Notification of Receipt of Submittal
AR019110	AR019111	Notification of Receipt of Consultation Letter
AR019112	AR019118	Notification of Receipt of Submittal and Project Number
AR019119	AR019119	NOAA Biological Opinion Letter and Document
AR019120	AR019120	Notification of USFWS Non-concurrence Email
AR019121	AR01923	FAA Response to Non-concurrence Notification
AR019124	AR019127	Email Chain Between FAA and USFWS Discussing Schedule and Review Time
AR019128	AR019130	Email Chain Between FAA and USFWS Discussing Schedule and Review Time
AR019131	AR019131	Notification that Steve spoke with Logan Kent to get an update
AR019132	AR019133	Clarification that Port funds Logan Kent's position
AR019134	AR019142	USFWS Response to Request for Expedited Review

AR019143	AR019144	Concerns BO Not Compliant with EO 14303
AR019145	AR019149	Concerns BO Not Compliant with EO 14303
AR019150	AR019156	Email Discussion on Status of Project Review
AR019157	AR019159	FAA Preference not to see BO Before Issued
AR019160	AR019160	Reminder for Responses to EFH Conservation Recommendations
AR019161	AR019161	Unofficial Submittal of USFWS BO
AR019162	AR019163	Forward of USFWS status update
AR019164	AR019164	Thanks for effort provided in review
AR019165	AR019166	Submittal of EFH Conservation Recommendations
AR019167	AR019169	Acknowledgement of Receipt of EFH CR
Coastal Zone		
AR019170	AR019173	Submittal of Questions on When Consistency Finding Required
AR019174	AR019181	Email Discussion on when a Consistency Finding is Required
AR019182	AR019182	Forward of WSDE Letter
AR019183	AR019184	Coordination of Calendars to Schedule Meeting
AR019185	AR019186	Email Discussion on when a Consistency Finding is Required
AR019187	AR019189	Submittal of Consistency Determination Template
AR019190	AR019194	Submittal of Information Needed to Determine if Consistency Finding Required
AR019195	AR019200	Update on Coordination with NOAA
AR019201	AR019206	Update on Coordination with NOAA
AR019207	AR019210	Email Clarifying Consistency Finding Only Required for FAA Actions
AR019211	AR019215	Discussion on Wetland Permits and Consistency Determinations
Forecast		
AR019216	AR019219	Questions on FAA's forecast guidance
AR019220	AR019224	Questions on FAA's forecast guidance
AR019225	AR019225	FAA comments and edits to updated forecast email
AR019226	AR019228	Questions on responses to forecast comments
AR019229	AR019232	Response to 8/13/19 questions
AR019233	AR019236	Request for clean copy of forecast to proceed with approval

AR019237	AR019278	Final Aviation Activity Forecast Update report
AR019279	AR019288	Final Constrained Growth Scenario report
AR019289	AR019291	Forecast Approval
AR019292	AR019292	Submittal of modeling assumptions for no action
AR019293	AR019294	Submittal of FAA comments on modeling assumptions
AR019295	AR019298	Request for update on review of updated modeling approach
AR019299	AR019303	Confirmation of FAA concurrence & moving forward with analysis
AR019304	AR019304	Submittal of TAAM taxi times summaries for future NA and PA
AR019305	AR019307	Submittal of runway use tables for TAAM Modeling
AR019308	AR019308	Submittal of updated modeling approach & updated TAAM taxi times
AR019309	AR019309	Submittal of final No Action modeling assumptions for FAA records
AR019310	AR019310	SEA Email on COVID-19 Effects on SEA's operations & Project Status
AR019311	AR019312	Acknowledgement of SEA email on COVID-19
AR019313	AR019313	FAA provided recommended induced demand text to SEA
AR019314	AR019314	SEA's proposed revisions to induced demand text
AR019315	AR019316	Submittal of preliminary updated unconstrained forecast
AR019317	AR019341	Confirmation of receipt of FAA comments on forecast
AR019342	AR019345	Submittal of Proposed Methodology for COGS
AR019346	AR019350	Submittal of supporting documentation for updated COGS
AR019351	AR019352	Submittal of FAA comments on COGS supporting documentation
AR019353	AR019354	FAA conditional approval of COGS - need final report
AR019355	AR019355	Submittal of updated forecast and COGS for approval
AR019356	AR019356	Submittal of FAA comments on updated COGS
AR019357	AR019358	Confirmation no additional comments on updated forecast
AR019359	AR019370	Submittal of updated COGS based on comments
AR019371	AR019371	FAA letter of approval for SEA activity forecast update
AR019372	AR019373	Discussion on why SEA is updating forecast in midst of EA
AR019374	AR019378	Discussion on changes made between 2021 and 2022 forecasts

AR019379	AR019379	Explanation of cargo operations not changing in COGS
AR019380	AR019383	Notification FAA okay with data sources
AR019384	AR019386	Submittal of updated Draft Forecast Memo
AR019387	AR019387	Approval to move forward with preparing future fleet mix tables
AR019388	AR019390	Submittal of FAA comments on updated forecast
AR019391	AR019392	Submittal of FAA comments on fleet mix for air/noise
AR019393	AR019395	Submittal of updated forecast memo based on comments
AR019396	AR019404	Discussion on forecast and scheduling of meeting to discuss further
AR019405	AR019405	Submittal of forecast approval letter
AR019406	AR019406	Submittal of September version of COGS
AR019407	AR019407	Signed updated forecast approval letter
National Historic Preservation Act		
AR019408	AR019409	Scheduling Meeting to Discuss Project
AR019410	AR019410	Provided Graphic of Proposed Project for Meeting
AR019411	AR019412	WISAARD Sign Up
AR019413	AR019413	WISAARD Access Granted
AR019414	AR019414	Email Submittal of Section 106 Initiation Letter
AR019415	AR019416	Email Submittal of Proposed Methodology to DAHP
AR019417	AR019418	Scheduling of Time to Return Phone Call
AR019419	AR019420	Email Submittal of Updated Methodology to DAHP
AR019421	AR019424	Coordination of Calendars to Schedule Meeting
AR019425	AR019428	Email Concurrence with Methodology to FAA
AR019429	AR019429	Email submitting Section 106 finding
AR019430	AR019431	Request for submittal of trinomials and HPI forms in WISAARD
AR019432	AR019433	Trinomials provided and added into the report
AR019434	AR019435	Confirmation of submittal of trinomials and HPI forms in WISAARD
AR019436	AR019437	Notification that consultation letter needs to be updated
AR019438	AR019438	Submittal of DAHP comments on Section 106 finding

AR019439	AR019441	Notification of form release and clarification on SOI qualifications
AR019442	AR019443	Notification of form and property release
AR019444	AR019445	Qualification Issue Discussion
AR019446	AR019447	Submittal of updated Section 106 finding
AR019448	AR019450	Request for update on review & DAHPs response
AR019451	AR019453	DAHP Section 106 Concurrence Letter
AR019454	AR019456	Notification did not find any previous surveys
AR019457	AR019460	Confirmation of no history of consultation for sound insulation projects
AR019461	AR019461	Submittal of updated Visual APE
AR019462	AR019462	Explanation of file types that can be uploaded in WISAARD
AR019463	AR019464	APE Concurrence
AR019465	AR019466	Submittal of updated Section 106 Finding
AR019467	AR019468	Submittal of Appendix E
AR019469	AR019470	DAHP Section 106 Concurrence Letter
AR019471	AR019473	Updated Section 106 Finding Transmittal Email
Noise		
AR019474	AR019547	Submittal of Draft Noise Technical Report
AR019548	AR019549	Submittal of missed approaches memo
AR019550	AR019552	Submittal of FAA comments on missed approaches memo
AR019553	AR019554	Submittal of normalized taxi times for review
AR019555	AR019574	Submittal of missed approaches memo
AR019575	AR019576	Submittal of requested information on missed approach memo
AR019577	AR019577	Submittal of updated missed approach memo
AR019578	AR019584	Notification of preference to submit substitution request separately
AR019585	AR019585	Submittal of future fleet mix tables
AR019586	AR019586	Submittal of substitution request
AR019587	AR019589	Discussion on discrepancy with forecast
AR019590	AR019591	Submittal of updated substitution request

AR019592	AR019592	Submittal of noise protocol
AR019593	AR019594	Notification no more comments on noise protocol and can proceed
AR019595	AR019595	Submittal of draft construction noise protocol
AR019596	AR019597	Submittal of FAA comments on construction noise protocol
AR019598	AR019599	Submittal of updated construction noise protocol
AR019600	AR019601	Submittal of initial construction noise results
AR019602	AR019602	Submittal of requested information with preliminary results
AR019603	AR019604	Submittal of construction schedule for noise analysis
AR019605	AR019605	Where ambient noise levels are located in report
AR019606	AR019606	Submittal of FAA edits to construction noise protocol
AR019607	AR020001	Link to Burbank construction noise analysis
AR020002	AR020002	Request to use TCM 3.2 for construction noise analysis & FAA approval
AR020003	AR020003	Discussion on how overlapping construction schedules were modeled
AR020004	AR020004	Submittal of proposed construction noise language for env. Consequences
AR020005	AR020005	Notification that construction schedule figure missing a project
Section 4f and Section 6f		
AR020006	AR020007	Screenshot of Land and Water Conservation Fund website
AR020008	AR020010	Discussion on Section 4(f) site
Surface Transportation		
AR020011	AR020511	WSDOT submittal of signal timing, count data, & approval to use SR 518 data
		Zip Drive provided with 10/14/19 email
AR020512	AR020513	Request for Tukwila intersection data for analysis
AR020514	AR020519	City of Des Moines submittal of updated inventory and count information
AR020520	AR020522	Surface Transportation Overview Meeting Agenda
AR020523	AR020523	Submittal of Airport Activity Area Map for discussion
AR020524	AR020526	Submittal of SeaTac transportation codes as requested
AR020527	AR020527	Submittal of Burien traffic code as requested
AR020528	AR020529	Notification meeting rescheduled and submittal of materials for review

AR020530	AR020530	Clarification on who from WSDOT should participate in meeting
RA020531	AR020599	Agenda & Presentation for WSDOT meeting
AR020600	AR020600	Confirmation of Port responsibility for review account
AR020601	AR020602	Notification WSDOT has requested more time for their review
AR020603	AR020605	Agreement that WSDOT will be ready for 9/21/21 meeting
AR020606	AR020611	Submittal of follow-up comments
AR020612	AR020613	Request for update on review of technical appendices
AR020614	AR020620	Additional WSDOT questions/comments on analysis & SEA receipt
AR020621	AR020622	Coordination of calendars to schedule meeting
AR0260623	AR020625	WSDOT's response to FAA questions (ICE, WSDOT authority, methodology)
AR020626	AR020626	Submittal of information requested 1/3 emails
AR020627	AR020627	Submittal of information requested 2/3 emails
AR020628	AR020628	Submittal of information requested 3/3 emails
AR020629	AR020629	Submittal of excel spreadsheet requested
AR020630	AR020633	Preliminary responses to WSDOT questions/comments
AR020634	AR020634	Forward of WSDOT's draft comments
AR020635	AR020636	Agenda for WSDOT meeting
AR020637	AR020638	Draft presentation for meeting next day
AR020639	AR020792	Submittal of additional ICEs
AR0207093	AR020800	Forward of WSDOT's comments on meeting notes
AR020801	AR020803	Meeting notes and recap of next steps
AR020804	AR020806	Agenda for the 2-1-25 technical meeting
AR020807	AR020813	Submittal of presentation from 2/1/25 meeting
AR020814	AR020818	Submittal of meeting notes and updated presentation for 2/15/22 meeting
AR020819	AR020819	Meeting notes and recap of next steps
AR020820	AR020823	Submittal of meeting notes & ICE & Segment Methods and Assumptions

AR020824	AR020826	Request for meeting to discuss questions on traffic study
AR020827	AR020827	Meeting notes and recap of next steps
AR020828	AR020832	Submittal of meeting notes and existing conditions Synchro results
AR020833	AR020836	Discussion with FHWA on what is considered a surface transportation impact
AR020837	AR020837	Meeting notes and recap of next steps
AR020838	AR020838	Submittal of SR 516 Interchange Volumes for review
AR020839	AR020839	Meeting notes and recap of next steps
AR020840	AR020840	Submittal of draft volume comparison tables & LOS 2027 summary
AR020841	AR020841	Meeting notes and recap of next steps
AR020842	AR020842	Notification meeting is cancelled
AR020843	AR020844	Meeting notes and recap of next steps
AR020845	AR020846	Submittal of discrepancies between draft reports
AR020847	AR020847	Response to questions on VISSIM
AR020848	AR020849	Meeting notes and recap of next steps
AR020850	AR020854	Forward of email sent to WSDOT
AR020855	AR020856	Meeting notes and recap of next steps
AR020857	AR020869	Submittal of agenda, meeting summary and updated VISSIM methodology
AR020870	AR020876	Agenda, corrected meeting notes and recap of next steps
AR020877	AR020877	Submittal of updated VISSIM methodology
AR020878	AR020878	Notification of canceled meeting & next steps
AR020879	AR020879	Explanation of defining LOS for Intersection #18 for review
AR020880	AR020880	Submittal of Synchro files for future proposed action with mitigation
AR020881	AR020881	Submittal of WSDOT comments on VISSIM methodology
AR020882	AR020883	Meeting notes and recap of next steps
AR020884	AR020887	Submittal of WSDOT comments on mitigation summary
AR020888	AR020889	Meeting notes and recap of next steps
AR020890	AR020899	Submittal of WSDOT comments on VISSIM methodology
AR020900	AR020901	Meeting agenda, notes, and next steps

AR020902	AR020902	Update provided in lieu of meeting
AR020903	AR020917	Submittal of updated methodologies and WSDOT comments
AR020918	AR020919	Meeting notes and recap of next steps
AR020920	AR020921	Meeting notes and recap of next steps
AR020922	AR020922	Updated VISSIM and HCS files (final)
AR020923	AR020923	Notification of delay in review of final documents
AR020924	AR020925	Follow-up after meeting on updating base year in EA
AR020926	AR020926	Meeting notes and recap of next steps
AR020927	AR020927	Source of information on spot checking intersection counts
AR020928	AR020928	Identification of intersections to complete spot checks for review
AR020929	AR020930	Meeting notes and recap of next steps
AR020931	AR020932	Notification of permit required for traffic counts
AR020933	AR020934	Traffic count comparison
AR020935	AR020936	Meeting notes and recap of next steps
AR020937	AR020937	WSDOT meeting summary
AR020938	AR020939	WSDOT meeting agenda and summary
AR020940	AR020940	Traffic count comparison
AR020941	AR020945	Submittal of spreadsheet and request for WSDOT loop sensor data
AR020946	AR020947	WSDOT meeting agenda and summary
AR020948	AR020951	WSDOT meeting agenda & summary and WSDOT submittal of traffic comparison
AR020952	AR020955	WSDOT meeting agenda and summary
AR020956	AR020959	Meeting confirmation and materials for meeting
AR020960	AR020963	Meeting notes and recap of next steps
AR020964	AR020967	Follow-up on request for concurrence on methodology
AR020968	AR020970	Concurrence on proposed methodology
AR020971	AR020972	WSDOT meeting agenda and summary
AR020973	AR020974	WSDOT meeting agenda and summary

AR020975	AR020975	Submittal of freeway data request
AR020976	AR020977	Confirmation 1/6/23 email received and estimated time to respond
AR020978	AR020979	WSDOT meeting agenda and summary
AR020980	AR020983	WSDOT meeting agenda and summary and submittal of mitigation plan
AR020984	AR020985	WSDOT meeting agenda and summary
AR020986	AR020990	Submittal of draft concurrence request and WSDOT comments
AR020991	AR020991	Submittal of existing conditions Synchro results
AR020992	AR020995	FAA agreement with WSDOT comments & SEA agreement for review
AR020996	AR020997	WSDOT meeting agenda and summary
AR020998	AR021004	Submittal Freeway Volumes (2/24/23), WSDOT Comments (3/7/23), & Responses to WSDOT Comments
AR021005	AR021007	WSDOT concurrence with DTA model
AR021008	AR021027	Submittal of VISSIM and HCS methodology & WSDOT Comments
AR021028	AR021035	Notification unable to review 3/8/23 email yet
AR021036	AR021039	Notification of no further comments on DTA model
AR021040	AR021041	WSDOT meeting agenda and summary
AR021042	AR021042	Submittal of email that will be sent to local jurisdictions
AR021043	AR021043	Submittal of surface transportation overview to City of Burien
AR021044	AR021044	Submittal of surface transportation overview to City of Tukwila
AR021045	AR021045	Submittal of surface transportation overview to City of Federal Way
AR021046	AR021046	Submittal of surface transportation overview to Normandy Park
AR021047	AR021048	WSDOT meeting agenda and notes
AR021049	AR021055	City of Des Moines to include an additional intersection in study
AR021056	AR021087	Submittal of VISSIM & HCS methodologies-WSDOT comments on VISSIM-submittal of updated VISSIM methodology
AR021088	AR021089	WSDOT meeting agenda and notes
AR021090	AR021096	City of Kent does not have comments on surface transportation overview
AR021097	AR021097	Submittal of draft calibration results for SR 518 VISSIM

AR021098	AR021098	Received email and agreement to meeting
AR021099	AR021100	Notification of no comments on study area or methodology
AR021101	AR021101	Submittal of HCS calibration
AR021102	AR021102	WSDOT concurrence with VISSIM calibration
AR021103	AR021104	WSDOT meeting agenda and notes
AR021105	AR021113	City of SeaTac's request to add intersections & justification for request
AR021114	AR021114	Update on coordination with City of SeaTac
AR021115	AR021115	WSDOT meeting agenda and notes
AR021116	AR021116	Update on surface transportation analysis and coordination
AR021117	AR021402	Submittal of existing conditions SlimTraffic, Synchro & HCS - WSDOT comments on reports - Submittal of updated reports
AR021403	AR021403	Submittal of draft methodology for future traffic analysis
AR021404	AR021413	WSDOT comments on methodology for future traffic analysis & potential meeting
AR021414	AR021414	Notification regularly scheduled meeting is canceled
AR021415	AR021418	Received comments and request for meeting availability
AR021419	AR021419	Submittal of latest version of DTA model documentation
AR021420	AR021420	Submittal of intersections to Burien to confirm information accurate
AR021421	AR021421	Submittal of intersections to Des Moines to confirm information accurate
AR021422	AR021422	Submittal of intersections to SeaTac to confirm information accurate
AR021423	AR021423	Submittal of intersections to Tukila to confirm information accurate
AR021424	AR021424	Submittal of intersections to WSDOT to confirm information accurate
AR021425	AR021427	Submittal of WSDOT comments on mitigation methodology
AR021428	AR021428	Submittal of updated existing conditions reports
AR021429	AR021437	Submittal of updated future methodology and WSDOT concurrence
AR021438	AR021439	WSDOT meeting agenda and summary
AR021440	AR021477	WSDOT comments on existing traffic analysis report
AR021478	AR021478	Submittal of revised existing traffic analysis report

AR021479	AR021480	WSDOT meeting agenda and summary
AR021481	AR021481	Submittal of draft future no action results for review
AR021482	AR021483	Submittal of Sidra file for future no action
AR021484	AR021484	WSDOT meeting summary
AR021485	AR021485	Submittal of information from meeting for quick review
AR021486	AR021488	Submittal of WSDOT comments and updated No Action deliverables
AR021489	AR021490	WSDOT meeting agenda and notes
AR021491	AR021492	WSDOT meeting agenda and notes
AR021493	AR021495	No further WSDOT comments on future no action
AR021496	AR021496	Submittal of No Action segment and HCS results
AR021497	AR021498	Submittal of simulation summary results provided in meeting
AR021499	AR021500	Received HCS comment & submitted proposed action draft results
AR021501	AR021501	Submittal of summary materials provided during meeting
AR021502	AR021504	WSDOT notification of no comments on future Synchro, VISSIM or Sidra
AR021505	AR021505	Submittal of materials for no action segment and VISSIM analyses
AR021506	AR021507	WSDOT meeting agenda, notes, and submittal of intersection map
AR021508	AR021514	Responses to FAA questions/comments
AR021515	AR021516	WSDOT meeting agenda and summary
AR021517	AR021520	Submittal of latest NA/PA results and WSDOTs mitigation list
AR021521	AR021521	Submittal of updated mitigation methodology
AR021522	AR021522	Final meeting notes
AR021523	AR021531	Submittal of updated ICE methodology - WSDOT Comments - submittal of final ICE and mitigation contingency methodologies
AR021532	AR021534	Submittal of mitigation with clarification looking for fatal flaws & feasibility
AR021535	AR021536	Submittal of notes on volume changes in SR 518 corridor
AR021537	AR021540	WSDOT comments on mitigation summary and initial responses from SEA
AR021541	AR021542	Meeting agenda and notes
AR021543	AR021601	Submittal of preliminary ICE results for review

AR021602	AR021602	Submittal of updated table
AR021603	AR021603	Meeting cancellation and previous meeting notes
AR021604	AR021605	Submittal of updated ICE reports
-	-	Reports linked in 12-22-23 email
AR021606	AR021607	Submittal of additional link and WSDOT request for extension
AR021608	AR021612	Confirmation of meeting date and time with City of Des Moines
AR021613	AR021618	Submittal of SeaTac responses provided during meeting
AR021619	AR021623	Submittal of Des Moines responses provided during meeting
AR021624	AR021625	Submittal of corrected meeting notes & agenda and notes for recent meeting
AR021626	AR021630	Submittal of Tukwila responses provided during meeting
AR021631	AR021634	Submittal of Burien responses provided during meeting
AR021635	AR021635	Des Moines provided clarification on one of their responses
AR021636	AR021636	WSDOT comments on five preliminary ICE reports
AR021637	AR021637	Additional WSDOT comments on ICE reports
AR021638	AR021638	Meeting notes and recap of next steps
AR021639	AR021640	SeaTac confirmed still moving forward with intersection project
AR021641	AR021642	Forward of City of SeaTac project confirmation email
AR021643	AR021643	Meeting notes and recap of next steps
AR021644	AR021644	Coordination of Calendars to Schedule Meeting
AR021645	AR021646	Coordination of Calendars to Schedule Meeting
AR021647	AR021649	Coordination of Calendars to Schedule Meeting
AR021650	AR021650	Meeting notes and recap of next steps
AR021651	AR021670	Proposed mitigation for WSDOT impacted intersections presentation
AR021671	AR021673	Coordination of Calendars to Schedule Meeting
AR021674	AR021677	Coordination of Calendars to Schedule Meeting
AR021678	AR021678	Submittal of draft Burien and Tukwila meeting notes for review
AR021679	AR021679	Notification no comments on meeting notes
AR021680	AR021694	Submittal of meeting notes and Des Moines provided ILA

AR021695	AR021696	Meeting agenda and notes
AR021697	AR021710	Submittal of presentation & meeting notes & Tukwila confirmation no comments
AR021711	AR021731	Submittal of presentation & meeting notes & Burien confirmation no comments
AR021732	AR021738	WSDOT preferences for mitigation and submittal of mitigation spreadsheet
AR021739	AR021782	Submittal of presentation & meeting notes & City of SeaTac comments
AR021783	AR021783	Meeting agenda and notes
AR021784	AR021784	Submittal of notes from meeting with City of SeaTac
AR021785	AR021787	Submittal of future conditions report and attachments
AR021788	AR021854	Submittal of WSDOT comments on future conditions report
AR021855	AR021855	Meeting summary notes
AR021856	AR021856	Submittal of updated future conditions report
AR021857	AR021858	Confirmation of no further comments on future conditions report
AR021859	AR021896	Request for City of SeaTac to confirm no more comments
AR021897	AR021902	Additional request for City of SeaTac to confirm comments addressed
AR021903	AR021906	Submittal of information request by the City of SeaTac
Water Resources		
AR021907	AR02910	Discussion on USACE expectations and permitting role in project
AR021911	AR02911	Notification of new USACE contact
AR021912	AR021913	Request for a meeting while in SEA
AR021914	AR021914	Request for virtual meeting to discuss project
AR021915	AR021915	Another request for virtual meeting to discuss project
AR021916	AR021917	FAA comments on presentation and SEA response
AR021918	AR021918	Submittal of agenda and presentation for meeting
AR021919	AR021920	Thanks for notification unable to attend meeting
AR021921	AR021921	Submittal of Water Resources Mitigation Summary & Permitting
AR021922	AR021922	Request for availability for meeting
AR021923	AR021924	Coordination of calendars to schedule meeting

AR021925	AR021926	FAA comments on mitigation summary report
AR021927	AR021928	Coordination of calendars to schedule meeting
AR021929	AR021929	Submittal of Cooperating Agency Request letter
AR021930	AR021931	Received letter and currently reviewing request
AR021932	AR021933	Agreement to be cooperating agency response
AR021934	AR021935	Notification to ignore sentence in letter that should have been removed
AR021936	AR021936	Meeting invite with mitigation summary memo
AR021937	AR021937	Submittal of USACE alternative analysis framework
AR021938	AR021938	Receipt of Chapters 1 and 2 of DEA
AR021939	AR021940	Inquiry on USACE contact for project
AR021941	AR021942	Granting of request for extension to review DEA chapters
AR021943	AR021944	Forward of USACE email that provides different information on POC
AR021945	AR021945	Forward of USACE comments on draft chapters
AR021946	AR021947	Receipt of comments and FAA contact information
AR021948	AR021997	Submittal of aquatic report & confirmation USACE to remain a cooperating agency
AR021998	AR023040	Submittal of Chapters 3 & 4 & Appendix M of Preliminary Draft EA
AR023041	AR023042	Submittal of Chapter 3 with figures
AR023043	AR023044	Submittal of USACE comments on draft chapters
AR023045	AR023045	Submittal of requested reports
AR023046	AR023046	Submittal of requested report
Section 4: Sustainable Airport Master Plan		
Sustainable Airport Master Plan Technical Memorandums		
AR023047	AR023102	Tech Memo No. 1 - Background, Process, Goals, and Objectives
AR023103	AR023233	Tech Memo No. 2 - Inventory of Existing Conditions
AR023234	AR023268	Tech Memo No. 3 - Air Cargo Market Assessment
AR023269	AR023359	Tech Memo No.4 - Forecasts of Aviation Activity
AR023360	AR023545	Tech Memo No. 5 - Facility Requirements
AR023546	AR023948	Tech Memo No. 6 - Alternatives

AR023949	AR023992	Tech Memo No. 7 - Facilities Implementation and Financial Feasibility
AR023993	AR024028	Tech Memo No. 8 - Environmental Overview
AR024029	AR024477	Tech Memo No. 9 - Sustainability Planning and Management Strategy
AR024478	AR024479	SAMP Public Outreach Summary
Section 5: General Correspondence		
350 Seattle		
AR024480	AR024481	350 Seattle request for an EIS
AR024482	AR024483	Response to 350 Seattle request for an EIS
AR024484	AR024486	Response to 350 Seattle question on EA schedule
Alaska Airlines		
AR024487	AR024488	Concerns with the SAMP as proposed
AR024489	AR024494	Phasing options for SEA SAMP presentation
AR024495	AR024496	Concerns with the SAMP as proposed
AR024497	AR024502	Concerns with the SAMP as proposed & Alaska's suggested alternative
AR024503		Response to 2/4/19 letter from Alaska
AR024504	AR024505	Response to Alaska's suggested alternative
AR024506	AR024510	Legal basis to keep discussing alternatives during NEPA
AR024511	AR024512	Response from meeting with Alaska to discuss SAMP
AR024513	AR024597	Alaska submittal of Enhanced Approach to SEA SAMP Report
AR024598	AR024793	Alaska's response to Port Dec 2019 letter
AR024794	AR024810	Port draft response to FAA re: Alaska
AR024811	AR024827	Port response to FAA re: Alaska
City of Burien		
AR024828	AR024828	Response to request for EIS
AR024829	AR024830	Request for thorough cumulative impact analysis
AR024831	AR024832	Request to pause EA until 250-degree turn resolved
AR024833	AR024833	Request for SEA to ask for extended public comment period
City of SeaTac		
AR024834	AR024839	Confirmation of FAA POC for project

EPA		
AR024840	AR024842	Response to EPA to provide FAA POC and update on project
King County		
AR024843	AR024843	King County request for an EIS
AR024844	AR024844	Response to King County request for EIS
Noemie Maxwell		
AR024845	AR024846	Response to request for information on NEPA process
AR024847	AR024851	Questions on possible forest destruction with proposed NTPs
Section 6: References, Secondary Sources, and Guidance Documents		
AR024852	AR025043	FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions
AR025044	AR025772	FAA Order JO7110.65W
AR025773	AR025904	FAA Order 1050.1F, Environmental Impacts: Policies and Procedures
AR025905	AR026162	FTA Transit Noise & Vibration Impact Assessment Manual
AR026163	AR026205	Sea-Tac International Airport Economic Impacts
AR026206	AR026225	FAA Order JO7110.126A
AR026226	AR026385	Puget Sound Regional Council Vision 2050
AR026386	AR026819	FAA Advisory Circular (AC) 150/5300-13B, Airport Design
AR026820	AR027113	FAA Order 1050.1F, Desk Reference
Air Quality & GHG		
-	-	Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report
AR027114	AR027249	Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution throughout the Contiguous United States
AR027250	AR027255	Federal Register notice of ozone attainment for King County
AR027256	AR027261	Federal Register notice of CO attainment for King County
AR027262	AR027486	Aviation Emissions and Air Quality Handbook, Version 3 Update 1
AR027487	AR027838	International Civil Aviation Organization Annex 14 Aerodromes
AR027839	AR027976	King County Board of Health briefing on airport community health profiles
Biological		

AR027977	AR028024	2021 Washington vascular plant species of conservation concern report
AR028025	AR028032	Guide to Native Milkweeds of Washington
AR028033	AR028033	Summary of King County wildlife habitat conservation areas
Forecast		
AR028034	AR028034	Nonstop destinations served from SEA in 2020
AR028035	AR028094	Airside modeling, approach, key assumptions, & results presentation
AR028095	AR028109	Future activity forecasts and facility requirement calculations for 2027
Hazardous and Solid Waste		
AR028110	AR028130	Informational document about Per- and polyfluoroalkyl substances (PFAS)
AR028131	AR028502	SEA's Construction Safety Manual
AR028503	AR028719	SEA's construction general requirements for tenants within terminal facilities
AR028720	AR029059	SEA's construction general requirements
AR029060	AR029066	EPA interim recommendations to address groundwater PFAS contamination
AR029067	AR029068	Information on hazardous sites from WA Department of Ecology
AR029069	AR029168	National pollutant discharge elimination system & state waste discharge permit
AR029169	AR029282	WA Department of Ecology notification of no further action required
AR029283	AR029698	Cedar Hills Regional Landfill Final Environmental Impact Statement
AR029699	AR029703	Washington State monitoring requirements for PFAS
AR029704	AR029705	WA Department of Ecology toxic cleanup program list of sites
AR029706	AR029707	Requested update on hazardous sites on-airport
AR029708	AR029902	WSDOE's guidance for investigating & remediating PFAS contamination in WA
AR029903	AR029911	USEPA Document regarding a proposed PFAS national drinking water regulation
AR029912	AR029938	Cedar Hills regional landfill 2023 annual report

AR029939	AR029939	Solid waste projections for 2032 and 2037
Natural Resources and Energy Supply		
AR029940	AR029940	Electricity, natural gas, & fuel consumption for years 2010, 2015, 2019, & 2022
AR029941	AR029955	Washington State's energy profile
AR029956	AR029956	Screenshot from the Canadian Gas Association's website about gas facts
AR029957	AR029960	Spreadsheet containing information on SEA fuels, electricity, gas, and water
Socioeconomics		
AR029961	AR029961	Median earnings data from Census 2021 (.csv version)
AR029962	AR029968	Median earnings data from Census 2021 (.xls version)
AR029969	AR029976	Median earnings data from Census 2021 for General Study Area (GSA)
AR029977	AR029977	Median earnings data from Census 2021 metadata
AR029978	AR029984	Median earnings data from Census 2021 to join with a GIS shapefile
AR029985	AR029986	Median earnings data from Census 2021 table notes
AR029987	AR029993	Economic data for Washington State and King County from US Census 2021
AR029994	AR029999	Economic data for Washington State and King County from US Census 2017 - 2021
AR030000	AR030007	Employment numbers from Census 2017 data
AR030008	AR030008	Employment numbers from Census 2017 data metadata
AR030009	AR030010	Employment numbers from Census 2017 table notes
AR030011	AR030018	Employment numbers from Census 2018 data
AR030019	AR030019	Employment numbers from Census 2018 data metadata
AR030020	AR030021	Employment numbers from Census 2018 table notes
AR030022	AR030028	Employment numbers from Census 2019 data
AR030029	AR030029	Employment numbers from Census 2019 data metadata
AR030030	AR030031	Employment numbers from Census 2019 table notes
AR030032	AR030042	Employment numbers from Census 2020 data
AR030043	AR030043	Employment numbers from Census 2020 data metadata
AR030044	AR030045	Employment numbers from Census 2020 table notes
AR030046	AR030055	Median earnings data from Census 2020 for General Study Area (GSA)
AR030056	AR030072	Median household earnings data from Census 2021 data

AR030073	AR030073	Median household earnings from Census 2021 data metadata
AR030074	AR030091	Per capita income data from Census 2021 data
AR030092	AR030092	Per capita income data from Census 2021 metadata
AR030093	AR030094	Per capita income data from Census 2021 table notes
AR030095	AR030109	Per capita income data from Census 2021 data for GIS shapefile
AR030110	AR030117	Employment numbers from Census 2017 data to join with a GIS shapefile
AR030118	AR030126	Employment numbers from Census 2018 data to join with a GIS shapefile
AR030127	AR030135	Employment numbers from Census 2019 data to join with a GIS shapefile
AR030136	AR030144	Employment numbers from Census 2020 data to join with a GIS shapefile
AR030145	AR030154	Unemployment 2017 US Census for General Study Area (GSA)
AR030155	AR030164	Unemployment 2018 US Census for General Study Area (GSA)
AR030165	AR030174	Unemployment 2019 US Census for General Study Area (GSA)
AR030175	AR030184	Unemployment 2020 US Census for General Study Area (GSA)
AR030185	AR030194	Unemployment 2021 US Census for General Study Area (GSA)
AR030195	AR030223	Per capita income 2021 US Census for General Study Area (GSA)
AR030224	AR030227	State and county age data from US Census
AR030228	AR030237	Age data from US Census for General Study Area
AR030238	AR030242	US Census data from 2020
AR030243	AR030243	Metadata for US Census data from 2020
AR030244	AR030265	Median household earnings from Census 2021 data for GIS shapefile (.csv version)
AR030266	AR030289	Median household earnings from Census 2021 data for GIS shapefile (.xls version)
AR030290	AR030312	Median household earnings from Census 2021 for General Study Area (GSA)
AR030313	AR030970	Block data from US Census 2020
AR030971	AR031519	Block data from US Census 2020
AR031520	AR031540	Employment numbers from Census 2022 data
AR031541	AR031558	Employment numbers from Census 2022 data to join with a GIS shapefile
AR031559	AR031560	Table notes for 2022 Employment Census Data
AR031561	AR031561	Employment numbers from Census 2022 data

Surface Transportation		
AR031562	AR032549	SR 509: Corridor Completion/I-5/South Access Road EIS Volume 1
AR032550	AR032665	Transportation Master Plan for the city of SeaTac
AR032666	AR032666	Submittal of Highways of Statewide and Regional Significance
Water Resources		
AR032667	AR032892	Des Moines Creek Basin Plan
AR032893	AR033194	South King County ground water management plan
AR033195	AR033631	Phase 1 groundwater study report
AR033632	AR033691	Groundwater study
AR033692	AR033906	Seattle-Tacoma International Airport stormwater management manual
AR033907	AR033907	State of Washington Department of Ecology receipt of NPDES permit renewal
AR033908	AR034093	Programmatic Construction Stormwater Pollution Plan
AR034094	AR034238	Deep Infiltration Testing for Drainage Basin SDE4
Section 7: Other/Misc		
AR034239	AR034251	Port of Seattle Updates on Cyberattack
Meeting Agenda and Notes		
AR034252	AR034252	Submittal of draft agenda for biweekly call
AR034253	AR034253	Submittal of draft agenda for biweekly call
AR034254	AR034254	Submittal of draft agenda for biweekly call
AR034255	AR034255	Submittal of draft agenda for biweekly call
AR034256	AR034256	Request for meeting to discuss project management
AR034257	AR034257	Submittal of biweekly meeting agenda
AR034258	AR034258	Submittal of biweekly meeting agenda
AR034259	AR034259	Submittal of biweekly meeting agenda
AR034260	AR034260	Submittal of biweekly meeting agenda
AR034261	AR034261	Submittal of biweekly meeting agenda
AR034262	AR034262	Submittal of biweekly meeting agenda
AR034263	AR034263	Submittal of biweekly meeting agenda
AR034264	AR034264	Submittal of agenda for call

AR034265	AR034265	Submittal of biweekly meeting agenda
AR034266	AR034266	Submittal of biweekly meeting agenda
AR034267	AR034267	Submittal of biweekly meeting agenda
AR034268	AR034268	Submittal of biweekly meeting agenda
AR034269	AR034269	Submittal of biweekly meeting agenda
AR034270	AR034270	Items for discussion on next call
AR034271	AR034271	Submittal of biweekly meeting agenda
AR034272	AR034272	Submittal of biweekly meeting agenda
AR034273	AR034274	Request to focus on AQ for next biweekly call
AR034275	AR034275	Submittal of biweekly meeting agenda
AR034276	AR034276	Submittal of biweekly meeting agenda
AR034277	AR034278	Submittal of biweekly meeting agenda
AR034279	AR034279	Discussion on topics for meeting
AR034280	AR034281	Submittal of biweekly meeting agenda
AR034282	AR034282	Project updates and cancellation of biweekly meeting
AR034283	AR034284	Submittal of biweekly meeting agenda
AR034285	AR034285	Submittal of biweekly meeting agenda
AR034286	AR034286	Submittal of biweekly meeting agenda
AR034287	AR034287	Submittal of biweekly meeting agenda
AR034288	AR034288	Submittal of biweekly meeting agenda
AR034289	AR034289	Submittal of biweekly meeting agenda
AR034290	AR034290	Submittal of biweekly meeting agenda
AR034291	AR034291	Submittal of biweekly meeting agenda
AR034292	AR034292	Submittal of biweekly meeting agenda
AR034293	AR034293	Submittal of biweekly meeting agenda
AR034294	AR034294	Submittal of biweekly meeting agenda
AR034295	AR034295	Submittal of in-person workshop agenda
AR034296	AR034296	Submittal of agenda for leadership meeting

AR034297	AR034297	Submittal of biweekly meeting agenda
AR034298	AR034298	Submittal of in-person workshop agenda
AR034299	AR034299	Submittal of meeting notes from in-person workshop
AR034300	AR034300	Submittal of in-person workshop agenda
AR034301	AR034301	Submittal of biweekly meeting agenda
AR034302	AR034303	Submittal of agenda for leadership meeting
AR034304	AR034304	Discussion on what to include for leadership meeting agenda
AR034305	AR034306	Submittal of agenda for leadership meeting
AR034307	AR034307	Submittal of in-person workshop agenda
AR034308	AR034309	Submittal of agenda for leadership meeting
AR034310	AR034311	Discussion on what to include for leadership meeting agenda
AR034312	AR034313	Submittal of in-person workshop agenda
AR034314	AR034314	Submittal of agenda for leadership meeting
AEDT Files		
AR034315	AR034315	AEDT Raw Data and Input Files
AR034316	AR034316	TAAM Files

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

Form 14. Motion for Extension of Time

Instructions for this form: http://www.ca9.uscourts.gov/forms/form14instructions.pdf

9th Cir. Case Number(s) 25-7373, 25-7439

Case Name Vashon Island Fair Skies, Inc. v. FAA; City of Burien v. FAA

Requesting Party Name(s) VashonIsland Fair Skies and City of Burien et al.

I am:
- ○ The party requesting the extension.
- ◉ Counsel for the party or parties requesting the extension.

I request an extension of time to file a:

- ☒ Brief (*you **must** also complete the Declaration on page 3*)
- ☐ Motion to proceed in forma pauperis
- ☐ Motion for a certificate of appealability
- ☐ Response/opposition to a pending motion
- ☐ Reply to a response/opposition to a pending motion
- ☐ Certified Administrative Record
- ☐ Response to court order dated
- ☐ Other *(you **must** describe the document)*

The requested new due date is: August 3, 2026

I request the extension of time because (**cannot be left blank**):
(attach additional pages if necessary)

Unanticipated illnesses affecting counsel and members of the briefing team materially reduced the time available for drafting and review and eliminated the schedule's anticipated margin. Despite diligent efforts, Petitioners require one additional week to complete the Consolidated Opening Brief, verify the record and legal citations, and conduct final review. The requested extension is limited to the time reasonably necessary to ensure that the brief is complete and accurate.

Signature s/Steven M. Taber **Date** July 14, 2026

*(use "*s/[typed name]*" to sign electronically-filed documents)*

Feedback or questions about this form? Email us at forms@ca9.uscourts.gov

Recitals in criminal and immigration cases pursuant to Circuit Rule 27-8
Complete this section for criminal or immigration cases.

Previous requests for extension of time to file the document, including any request for a Streamlined Extension of Time under Circuit Rule 31-2.2(a) (*select one*):

- ○ I have **NOT** filed a previous request to extend time to file the document.
- ◉ I have previously requested an extension of time to file the document.

  This motion is my [Second] request.
  (Examples: first, second)

Bail/detention status (*select one*):

- ○ The defendant is incarcerated. The projected release date is: [ ].
- ○ The petitioner is detained.
- ○ The defendant/petitioner in this criminal/immigration case is at liberty.

Signature [s/Steven M. Taber] **Date** [July 14, 2026]
*(use "*s/[typed name]*" to sign electronically-filed documents)*

Declaration in support of extension to file brief under Circuit Rule 31-2.2(b)
Complete this section if you are requesting an extension of time to file a brief.

1. I request an extension of time to file the Opening brief.
(Examples: opening, answering, reply, first cross-appeal)
2. The brief's current due date is: July 27, 2026
3. The brief's first due date was:
4. A more detailed explanation of why the extension of time to file the brief is necessary: *(Under Circuit Rule 31-2.2(b), a request for extension of time to file a brief must be "supported by a showing of diligence and substantial need" and a conclusory statement as to the press of business does not constitute such a showing. Attach additional pages if necessary.)*

See Attached Page.

5. The position of the other party/parties regarding this request is:

☒ Unopposed.

☐ Opposed by *(name of party/parties opposing this motion):*

☐ Unknown. I am unable to verify the position of the other party/parties because:

6. ☒ The court reporter is not in default with regard to any designated transcripts.

If the court reporter is in default, please explain:

7. ☒ I have exercised diligence and I will file the brief within the time requested.

I declare under penalty of perjury that the foregoing is true and correct.

Signature s/Steven M. Taber **Date** July 14, 2026

*(use "*s/[typed name]*" to sign electronically-filed documents)*

Feedback or questions about this form? Email us at forms@ca9.uscourts.gov

Declaration, Paragraph 4

The briefing schedule was structured to accommodate counsel's previously scheduled vacation leave. Unanticipated illnesses affecting counsel and members of the briefing team, however, materially reduced the time available for drafting and review and eliminated the schedule's anticipated margin. Despite diligent efforts, Petitioners require one additional week to complete the Opening Brief, verify the record and legal citations, and conduct final review. The requested extension is limited to the time reasonably necessary to ensure that the brief is complete and accurate.

No. 25-7373

In the
UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

VASHON ISLAND FAIR SKIES,
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents.

No. 25-7439

CITY OF BURIEN, et al.
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents.

PETITIONERS' UNOPPOSED MOTION FOR A 7-DAY EXTENSION OF TIME FROM AUGUST 3, 2026, TO AUGUST 10, 2026 TO FILE CONSOLIDATED OPENING BRIEF

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com

Attorneys for Petitioners Vashon Island Fair Skies, City of Burien, City of Des Moines, and City of SeaTac

Pursuant to Ninth Circuit Rule 31-2.2(b), Petitioners Vashon Island Fair Skies, the City of Burien, the City of Des Moines, and the City of SeaTac respectfully move for a 7-day extension of time to file their consolidated opening brief, from August 3, 2026, through August 10, 2026. Respondents and Intervenor do not oppose the requested extension.

BACKGROUND AND BASIS FOR RELIEF

1. The consolidated opening brief was first due March 30, 2026, and is currently due August 3, 2026. Petitioners request an extension of 7 days, through August 10, 2026.

2. This week, while drafting the opening brief and locating administrative-record citations for materials Petitioners knew had been submitted, Petitioners discovered a material omission from the certified administrative record.

3. Vashon Island Fair Skies' public comments appear at AR008370-79. Those comments expressly identify an exhibit package through the hyperlink at AR008379, but the exhibit package itself does not appear in the record. Vashon Island Fair Skies also submitted the exhibit package electronically and by sending a Compact Disc.

4. The omitted package is material to issues Petitioners intend to present in their opening brief. Among other materials, it includes the complete FAA Neighborhood Environmental Survey on which Vashon Island Fair Skies relied in addressing FAA's treatment of community noise response, and ADS-B flight-data

materials supporting its request for route-specific validation of the modeled HAWKZ arrival profiles.

5. Petitioners promptly notified counsel for Respondents and Intervenor on July 29, 2026, and requested that FAA complete the record with the exhibit package as it existed when submitted. FAA has since advised Petitioners that it expects to file the amended administrative record by close of business on July 31, 2026.

6. Petitioners therefore request a seven-day extension of the current August 3, 2026, deadline, through August 10, 2026. The extension will provide counsel a limited period to review the newly included, Bates-numbered documents, revise the opening brief and record citations as necessary, and complete final filing review.

7. The parties agree that this record issue is better resolved before briefing.

8. Petitioners have exercised diligence. They have continued drafting the opening brief and discovered the omission while performing the citation and record review necessary to complete it. They raised the issue with opposing counsel as soon as the omission was confirmed and filed this motion promptly. Petitioners will continue working on the brief while the parties address the record and will file within the time requested.

9. Circuit Rule 31-2.2(b) ordinarily requires an extension motion to be filed at least seven days before the brief is due. Petitioners could not meet that period because they confirmed the omission only four days before the August 3 deadline. The timing results from the newly identified record issue, not a lack of diligence.

10. Counsel for the Respondents and Counsel for the Intervenor Port of Seattle were contacted and have indicated that they do not oppose this motion.

11. This petition seeks review of an agency order. No reporter's transcript has been designated, and no court reporter is in default.

CONCLUSION

For these reasons, Petitioners respectfully request that the Court extend the deadline for their consolidated opening brief from August 3, 2026, through August 10, 2026, and adjust the remaining briefing schedule accordingly.

Dated: July 30, 2026

Respectfully submitted,

LEECH TISHMAN NELSON HARDIMAN, INC.

By: Steven M. Taber
Steven M. Taber
1100 Glendon Avenue, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
staber@leechtishman.com

Attorneys for Petitioners Vashon Island Fair Skies, City of Burien, City of Des Moines, and City of SeaTac

DECLARATION OF STEVEN M. TABER

I, Steven M. Taber, declare under penalty of perjury under the laws of the United States of America that the following is true and correct:

1. I am counsel of record for Petitioners. I make this declaration in support of Petitioners' motion for an extension of time.

2. The consolidated opening brief was first due March 30, 2026. It is currently due August 3, 2026. Petitioners request a 7-day extension through August 10, 2026.

3. While drafting the opening brief and searching the administrative record for citations to materials that counsel knew had been submitted, Petitioners confirmed that the exhibit package identified by the hyperlink at AR008379 was not included in the certified administrative record.

4. The omitted package includes the complete FAA Neighborhood Environmental Survey and ADS-B flight-data materials relevant to issues Petitioners intend to present in the opening brief.

5. On July 29, 2026, I asked Respondents and Intervenor to agree that FAA should complete the record with the exhibit package and to state their positions on an extension.

6. Respondent FAA has advised Petitioners that it expects to file the amended administrative record by close of business on July 31, 2026.

7. Petitioners therefore request a seven-day extension of the current August 3, 2026, deadline, through August 10, 2026. The extension will provide

counsel a limited period to review the newly included, Bates-numbered documents, revise the opening brief and record citations as necessary, and complete final filing review.

8. Respondents have advised Petitioners that they will not oppose a seven-day extension of time.

9. Intervenor Port of Seattle has indicated that it will not oppose a seven-day extension.

10. Petitioners have exercised diligence. They have continued drafting the opening brief and discovered the omission while performing the citation and record review necessary to complete it. They raised the issue with opposing counsel as soon as the omission was confirmed and filed this motion promptly. Petitioners will continue working on the brief while the parties address the record and will file within the time requested.

11. No reporter's transcript has been designated in this agency-review proceeding, and no court reporter is in default.

Executed on July 30, 2026, in Los Angeles, California.

Steven M. Taber

CERTIFICATE OF COMPLIANCE

This motion complies with the type-volume limitation of Federal Rule of Appellate Procedure 27(d)(2) because it contains 537 words, excluding the parts exempted by Federal Rule of Appellate Procedure 32(f). This motion complies with the typeface and type-style requirements of Federal Rules of Appellate Procedure 27(d)(1)(E) and 32(a)(5)-(6) because it has been prepared in a proportionally spaced 14-point typeface using Microsoft Word-compatible software and Times New Roman.

Steven M. Taber

CERTIFICATE OF SERVICE

I certify that on July 30, 2026, I electronically filed the foregoing **PETITIONERS' UNOPPOSED MOTION FOR A 7-DAY EXTENSION OF TIME FROM AUGUST 3, 2026, TO AUGUST 10, 2026 TO FILE CONSOLIDATED OPENING BRIEF** with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the appellate electronic filing system. All participants in the case are registered users and will be served electronically.

Steven M. Taber

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

No. 25-7373

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents.

No. 25-7439

CITY OF BURIEN, *et al.*,
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents.

Petitions for Review of an Order by the Federal Aviation Administration

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SECOND AMENDED CERTIFIED INDEX TO THE ADMINISTRATIVE RECORD

Of Counsel:

PATRICIA DEEM
Senior Attorney
Office of the Chief Counsel
Federal Aviation Administration

ADAM R.F. GUSTAFSON
Principal Deputy Assistant Attorney General

REBECCA JAFFE
CHRISTOPHER HAIR
Attorneys
Environment and Natural Resources Division
U.S. Department of Justice

Post Office Box 7415
Washington, D.C. 20044
(202) 598-0983
christopher.hair@usdoj.gov

Respondents hereby provide notice to the Court and parties that the second amended administrative record for the above-captioned case is available. Attached to this filing are the following documents:

1. A certification from the Federal Aviation Administration that the materials described in the attached list constitute the complete, second amended administrative record for these petitions, which challenge the agency's September 24, 2025, Finding of No Significant Impact/Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport.

2. The second amended certified index to that record.

The United States has made the documents in the second amended administrative record available to the Petitioners and Intervenors via a Box.com link provided to their counsel.

Respectfully submitted,

ADAM R.F. GUSTAFSON
Principal Deputy Assistant Attorney General

/s/ *Christopher Hair*
REBECCA JAFFE
CHRISTOPHER HAIR
Attorneys
Environment and Natural Resources Division
U.S. Department of Justice
Post Office Box 7415
Washington, D.C. 20044
(202) 598-0983
christopher.hair@usdoj.gov

Of Counsel:

PATRICIA DEEM
Senior Attorney
Office of the Chief Counsel
Federal Aviation Administration

Dated: July 31, 2026

CERTIFICATE OF SERVICE

I hereby certify that on July 31, 2026, I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system. I also used the Appellate Electronic Filing system to serve all registered case participants.

/s/ *Christopher Hair*
CHRISTOPHER HAIR
Counsel for Respondent

IN THE UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

VASHON ISLAND FAIR SKIES, a Washington nonprofit corporation Petitioner, v. FEDERAL AVIATION ADMINISTRATION Respondent, ---------- PORT OF SEATTLE Intervenor	Case No. 25-7373
CITY OF BURIEN, Washington municipal corporations: et al. Petitioner, v. FEDERAL AVIATION ADMINISTRATION Respondent, ---------- PORT OF SEATTLE Intervenor	Case No. 25-7439

SECOND AMENDED CERTIFIED INDEX OF THE MATERIALS COMPRISING THE ADMINISTRATIVE RECORD FOR THE FEDERAL AVIATION ADMINISTRATION FINDING OF NO SIGNIFICANT IMPACT/RECORD OF DECISION FOR THE SUSTAINABLE MASTER PLAN NEAR-TERM PROJECTS AT THE SEATTLE-TACOMA INTERNATIONAL AIRPORT ISSUED SEPTEMBER 24, 2025

I, Kandice N. Krull, am currently employed as an Environmental Protection Specialist at the Federal Aviation Administration's Denver Airports District Office, a field office within the Office of Airports. In this role, I am responsible for providing oversight and support for certain federal actions taken by the Federal Aviation Administration, including the environmental review and public involvement process for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport, including involvement in the preparation of the associated Environmental Assessment.

I hereby certify to the best of my knowledge that the materials described in the attached categorized list constitute the complete, second amended administrative record for the Federal Aviation Administration's September 24, 2025, Finding of No Significant Impact/Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport.

The second amended list adds various exhibits linked to in public comments submitted by Vashon Island Fair Skies on the Sustainable Airport Master Plan, i.e., AR34317-36301.

_____

Kandice N. Krull
Environmental Protection Specialist
Federal Aviation Administration

July 31, 2026

Federal Aviation Administration – Second Amended Administrative Record for Finding of No Significant Impact/
Record of Decision for the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport

Starting Bates #	Ending Bates #	Title/Description
Section 1: Final Environmental Assessment		
SEA SAMP NTP FONSI-ROD		
AR000001	AR000024	Finding of No Significant Impact (FONSI) and Record of Decision (ROD)
SEA SAMP NTP Final EA		
AR000025	AR000048	SEA SAMP NTP Final EA -Table of Contents Errata Acronyms
AR000049	AR000062	SEA SAMP NTP Final EA -Chapter 1 - Purpose and Need
AR000063	AR000076	SEA SAMP NTP Final EA -Chapter 2 - Alternatives
AR000077	AR000172	SEA SAMP NTP Final EA -Chapter 3 - Affected Environment
AR000173	AR000260	SEA SAMP NTP Final EA -Chapter 4 - Environmental Consequences
AR000261	AR000262	SEA SAMP NTP Final EA -Chapter 5 - Cumulative Impacts
AR000263	AR000266	SEA SAMP NTP Final EA -Chapter 6 - List of Preparers
AR000267	AR000270	SEA SAMP NTP Final EA -Chapter 7 - References
AR000271	AR000422	SEA SAMP NTP Final EA-Appendix A-Forecast and Operational Assumptions
AR000423	AR000620	SEA SAMP NTP Final EA-Appendix B-Purpose & Need & Alternatives
AR000621	AR001050	SEA SAMP NTP Final EA-Appendix C-Air Quality/Greenhouse Gas Emissions
AR001051	AR002034	SEA SAMP NTP Final EA-Appendix D-Biological Resources
AR002035	AR002046	SEA SAMP NTP Final EA-Appendix E-Coastal Resources
AR002047	AR002307	SEA SAMP NTP Final EA-Appendix F-Hazardous Materials & Solid Waste
AR002308	AR002453	SEA SAMP NTP Final EA-Appendix G-Historic Resources
AR002454	AR002628	SEA SAMP NTP Final EA-Appendix H-Land Use
AR002629	AR002655	SEA SAMP NTP Final EA-Appendix I-Natural Resources & Energy Supply
AR002656	AR002964	SEA SAMP NTP Final EA-Appendix J-Noise & Noise Compatible Land Use
AR002965	AR003008	SEA SAMP NTP Final EA-Appendix K-Socioeconomics & Children's Health
AR003009	AR003170	SEA SAMP NTP Final EA-Appendix L-Surface Transportation
AR003171	AR004661	SEA SAMP NTP Final EA-Appendix L-Surface Transportation-Information Available by Request
AR004662	AR004981	SEA SAMP NTP Final EA-Appendix M-Water Resources

AR004982	AR005931	SEA SAMP NTP Final EA-Appendix M-Water Resources-Information Available by Request
AR005932	AR008160	SEA SAMP NTP Final EA-Appendix N-Scoping
AR008161	AR009306	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement
AR009307	AR010151	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement-Submitted Studies & Materials
Section 2: Draft Environmental Assessment		
SEA SAMP NTP Draft EA		
AR010152	AR010164	SEA SAMP NTP Draft EA -Table of Contents & Acronyms
AR010165	AR010178	SEA SAMP NTP Draft EA -Chapter 1 - Purpose and Need
AR010179	AR010192	SEA SAMP NTP Draft EA -Chapter 2 - Alternatives
AR010193	AR010304	SEA SAMP NTP Draft EA -Chapter 3 - Affected Environment
AR010305	AR010396	SEA SAMP NTP Draft EA -Chapter 4 - Environmental Consequences
AR010397	AR010414	SEA SAMP NTP Draft EA -Chapter 5 - Cumulative Impacts
AR010415	AR010418	SEA SAMP NTP Draft EA -Chapter 6 - List of Preparers
AR010419	AR010422	SEA SAMP NTP Draft EA -Chapter 7 - References
AR010423	AR010574	SEA SAMP NTP Draft EA-Appendix A-Forecast and Operational Assumptions
AR010575	AR010772	SEA SAMP NTP Draft EA-Appendix B-Purpose & Need & Alternatives
AR010773	AR011214	SEA SAMP NTP Draft EA-Appendix C-Air Quality/Greenhouse Gas Emissions
AR011215	AR011446	SEA SAMP NTP Draft EA-Appendix D-Biological Resources
AR011447	AR011458	SEA SAMP NTP Draft EA-Appendix E-Coastal Resources
AR011459	AR011719	SEA SAMP NTP Draft EA-Appendix F-Hazardous Materials & Solid Waste
AR011720	AR011851	SEA SAMP NTP Draft EA-Appendix G-Historic Resources
AR011852	AR012026	SEA SAMP NTP Draft EA-Appendix H-Land Use
AR012027	AR012053	SEA SAMP NTP Draft EA-Appendix I-Natural Resources & Energy Supply
AR012054	AR012360	SEA SAMP NTP Draft EA-Appendix J-Noise & Noise Compatible Land Use
AR012361	AR012429	SEA SAMP NTP Draft EA-Appendix K-Socioeconomics & Children's Health
AR012430	AR012591	SEA SAMP NTP Draft EA-Appendix L-Surface Transportation

AR012592	AR014082	SEA SAMP NTP Draft EA-Appendix L-Surface Transportation-Information Available by Request
AR014083	AR014260	SEA SAMP NTP Draft EA-Appendix M-Water Resources
AR014261	AR015210	SEA SAMP NTP Draft EA-Appendix M-Water Resources-Information Available by Request
AR015211	AR017439	SEA SAMP NTP Draft EA-Appendix N-Scoping
AR017440	AR017442	SEA SAMP NTP Final EA-Appendix O-Agency & Public Engagement
SEA SAMP NTP Draft EA Notices and Public Resources		
		Notice of Upcoming Release
AR017443	AR017450	SAMP 30-Day Notice Fact Sheet
AR017451	AR017451	Notification on Port of Seattle Facebook Page on Upcoming Release of Draft EA
AR017452	AR017453	Notification on Port of Seattle LinkedIn Page on Upcoming Release of Draft EA
AR017454	AR017454	Notification on Port of Seattle X Account on Upcoming Release of Draft EA
AR017455	AR017457	Press Release
AR017458	AR017459	Frequently Asked Questions
AR017460	AR017461	Notification of Upcoming Release
AR017462	AR017463	Notification of Upcoming Release - Amharic
AR017464	AR017465	Notification of Upcoming Release - Chinese
AR017466	AR017467	Notification of Upcoming Release - Korean
AR017468	AR017469	Notification of Upcoming Release - Soomaali
AR017470	AR017471	Notification of Upcoming Release - Spanish
AR017472	AR017473	Notification of Upcoming Release - Vietnamese
AR017474	AR017477	Frequently Asked Questions - Amharic
AR017478	AR017481	Frequently Asked Questions - Chinese
AR017482	AR017485	Frequently Asked Questions - Korean
AR017486	AR017489	Frequently Asked Questions - Soomaali
AR017490	AR017493	Frequently Asked Questions - Spanish
AR017494	AR017497	Frequently Asked Questions - Vietnamese
		Notice of Availability

AR017498	AR017499	Postcard Mailer with Translations
AR017500	AR017501	Notice of Availability - Snail Mail Letter
AR017502	AR017502	Draft EA notifications schedule
AR017503	AR017503	Legal Notification - Daily Journal of Commerce
AR017504	AR017505	Legal Notification - Seattle Times
AR017506	AR017506	Notification of Availability of DEA on Port of Seattle Facebook Page
AR017507	AR017507	Notification of Availability of DEA on Port of Seattle LinkedIn Page
AR017508	AR017508	Notification of Availability of DEA on Port of Seattle X Account
AR017509	AR017513	Port of Seattle Connections Email with Notification of Availability of DEA
AR017514	AR017515	Port of Seattle Email Notification of Availability of DEA
AR017516	AR017517	Port of Seattle NEPA Email Notification of Availability of DEA
AR017518	AR017521	Press Release
AR017522	AR017522	Digital AD 1 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017523	AR017523	Digital AD 2 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017524	AR017524	Digital AD 3 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017525	AR017525	Digital AD 4 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017526	AR017526	Digital AD 5 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017527	AR017527	Digital AD 6 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017528	AR017528	Digital AD 7 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017529	AR017529	Digital AD 8 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017530	AR017530	Digital AD 9 Ran Between 10/23/24-11/15/24 in Multiple Publications
AR017531	AR017531	El Siete Dias Ad - Spanish Ran Between 10/23/24-11/15/24
AR017532	AR017532	International Examiner Ad Ran Between 10/23/24-11/15/24
AR017533	AR017533	Runtanews.com - English (short) Ran Between 10/23/24-11/15/24
AR017534	AR017534	Runtanews.com - English (long) Ran Between 10/23/24-11/15/24
AR017535	AR017535	Runtanews.com - Soomalli (short) Ran Between 10/23/24-11/15/24
AR017536	AR017536	Runtanews.com - Soomalli (long) Ran Between 10/23/24-11/15/24
AR017537	AR017538	Open House Guide

AR017539	AR017568	Public Meeting Boards
AR017569	AR017570	Email notifying public meeting attendees of flyer with misprint
AR017571	AR017572	Second email notifying public meeting attendees of flyer with misprint
AR017573	AR017575	Notification Materials Requested Added to Website & Locations of Hard Copy
AR017576	AR017576	Notification Web Portal Stopped Accepting Comments Early
AR017577	AR017577	Discussion on what the message should say on public website
AR017578	AR017585	List of All Updates to Project Website
SEA SAMP NTP Draft EA – Comment Period Extension Requests and Notices		
AR017586	AR017587	SEA Request to Extend Comment Period
AR017588	AR017590	FAA Agreement to Extend Comment Period to 45 Days
AR017591	AR017591	Request for Comment Period Extension to 60 Days
AR017592	AR017592	Request for Comment Period Extension by 35 Days
AR017593	AR017594	FAA Response to Port of Seattle Commissioner Request For Extension
AR017595	AR017595	Request for Comment Period Extension by 35 Days
AR017596	AR017597	Updated Master Plan vs EA Handout
AR017598	AR017598	Updated Public Comment Process Handout
AR017599	AR017602	Updated Frequently Asked Questions
AR017603	AR017604	Legal Notification of Comment Period Extension - Daily Journal of Commerce
AR017605	AR017605	Legal Notification of Comment Period Extension - Seattle Times
AR017606	AR017607	FAA Response to Earthjustice's Request for Comment Period Extension
AR017608	AR017609	Notification of Public Comment Extension - Email
AR017610	AR017610	Notification of Public Comment Extension - Facebook
AR017611	AR017611	Notification of Public Comment Extension - LinkedIn
AR017612	AR017612	Notification of Public Comment Extension - EX
AR017613	AR017616	Notification to Submit Extension Requests Directly to the FAA
AR017617	AR017620	Forward of Congressman Smith's Informal Extension Request
SEA SAMP NTP Draft EA - Late Comments		
AR017621	AR017621	Late comment submittal from Melissa Beatty
AR017622	AR017622	Late comment submittal from Tim Gould

AR017623	AR017625	Late comment submittal from Kathy Dooley
AR017626	AR017629	Late comment submittal from Sandra Locklear
AR017630	AR017631	Late comment submittal from Mary Olsen
AR017632	AR017632	Late comment submittal from Hannah Alhajahja
AR017633	AR017634	Late comment submittal from Barbara Petersen
AR017635	AR017636	Late comment submittal from Stephanie Kenick
AR017637	AR017638	Late comment submittal from Joe Vinson
AR017639	AR017640	Late comment submittal from Eileen Lambert
AR017641	AR017646	Late comment submittal from Yoshiko Grace Matsui
AR017647	AR017647	Late comment submittal from Elizabeth Burn
Section 3: Resource Categories – Technical Analyses, Reports, and Agency Coordination		
Air Quality & GHG		
AR017648	AR017648	Submittal of preliminary final AQ and Climate Protocol
AR017649	AR017650	Submittal of FAA comments on AQ and Climate Protocol
AR017651	AR017651	Email Submittal of AQ Protocol to the Pugent Sound Clean Air Agency (PSCAA)
AR017652	AR017653	PSCAA Agreement to Provide Comments by Deadline
AR017654	AR017655	PSCAA Comments on AQ Protocol
AR017656	AR017658	Inclusion of FAA in PSCAA approval of SEAP AQ Protocol
AR017659	AR017660	Landrum & Brown Email to EPA on King County WA Air Quality Status
AR017661	AR017662	Discussion on how projects with no FAA authority impact AQ analysis
AR017663	AR017663	Port Email Preliminary AQ Results to PSCAA
AR017664	AR017665	PSCAA Determination Project will not Cause Exceedance of NAAQS
AR017666	AR017667	Notification that the AQ analysis for vehicle emissions needs to be updated
AR017668	AR017669	FAA concerns with methodology for discussion
AR017670	AR017672	PSCAA Availability for Meeting to Discuss AQ Analysis
AR017673	AR017680	Updated presentation for call with PSCAA
AR017681	AR017701	Submittal of revised air quality protocol
AR017702	AR017704	Discussion on General Conformity and How it Relates to the Project
AR017705	AR017726	Confirmation of receipt of FAA comments on AQ Protocol

AR017727	AR017728	Submittal of revised air quality protocol
AR017729	AR017731	FAA comments on air quality protocol
AR017732	AR017732	Submittal of Updated AQ Protocol to PSCAA for Review
AR017733	AR017734	PSCAA Agreement to Provide Comments by Deadline
AR017735	AR017735	SEA Questions on GHG Guidance for Discussion
AR017736	AR017737	PSCAA Comments on AQ Protocol
AR017738	AR017738	Contradictory guidance on hot to model aircraft GHG emissions
AR017739	AR017741	Explanation of why using taxi times for 2027 and 2032
AR017742	AR017745	Confirmation that they can continue to use TAAM taxi times
AR017746	AR017746	FAA Comments on revised air quality protocol
AR017747	AR017747	Revised AQ protocol in response to PSCAA comments
AR017748	AR017749	Request to Schedule Meeting to Discuss Mixing Height
AR017750	AR017751	Submittal of Updated AQ Protocol to PSCAA for Review
AR017752	AR017753	Acknowledgement of Receipt of Submitted Updated AQ Protocol
AR017754	AR017754	Port Email Submitting Climate Protocol to PSCAA for Review
AR017755	AR017755	PSCAA Agreement to Provide Comments by Deadline
AR017756	AR017756	PSCAA Comments on Climate Protocol
AR017757	AR017758	Acknowledgement of Receipt of PSCAA Comments
AR017759	AR017761	Discussion on update to text in AQ Protocol related to APU
AR017762	AR017783	Submittal of updated climate protocol in response to PSCAA comments
AR017784	AR017786	Submittal of FAA comments to climate protocol changes
AR017787	AR017788	Submittal of updated climate protocol with request for guidance
AR017789	AR017794	Discussion on Emission Increases in Attainment Areas
AR017795	AR017796	FAA responses to request for guidance on climate protocol
AR017797	AR017798	Port Email Submitting Updated Climate Protocol to PSCAA
AR017799	AR017801	PSCAA Comments on Climate Protocol
AR017802	AR017805	SEA acknowledgement did not include FAA comments in submittal to PSCAA
AR017806	AR017809	FAA Responses to PSCAA Comments on Climate Protocol

AR017810	AR017813	Submittal of Preliminary AQ Results
AR017814	AR017816	Thanks for Review and Agreement to Provide Full Results
AR017817	AR017822	Discussion on issues with AEDT 3F and boiler emissions
AR017823	AR017823	Preliminary air quality results using AEDT 3F
AR017824	AR017824	Comparison of AEDT 3E results vs AEDT 3F
Biological		
AR017825	AR017827	Introductions and Discussion on Consultation Process
AR017828	AR017829	Submittal of draft stormwater report (water resources)
AR017830	AR017832	Update on Biological Assessment Development Process
AR017833	AR017834	Submittal of Preliminary BA for NMFS Review
AR017835	AR017836	Acknowledgement of Receipt of Submitted BA
AR017837	AR017838	Email Check-In to Get Updated on Review
AR017839	AR017840	NMFS Initial Comments on Preliminary BA for FAA Consideration
AR017841	AR017842	NMFS Email Requesting Additional Information to Determine Consultation
AR017843	AR017847	Agreement with NMFS that biologist needed to finish report
AR017848	AR017850	NMFS Section Chief joining 4/26/24 call
AR017851	AR017853	Update on Confluence development of BA
AR017854	AR017856	Acknowledgement of submitted comments & update on process
AR017857	AR017857	Update on progress of BA update
AR017858	AR018060	Submittal of updated Final Draft BA
AR018061	AR018062	FAA decision to have BA based on existing science
AR018063	AR018066	Updated information for the Biological Evaluation
AR018067	AR018067	Submittal of working BE for review
AR018068	AR018070	FAA request & SEA submittal of additional studies
AR018071	AR018189	Fall 2017 and Spring 2018 Rainbow Trout In Situ Results
AR018190	AR018343	Fall 2018 and Spring 2019 Rainbow Trout In Situ Results
AR018344	AR018495	Fall 2019 and Spring 2020 Rainbow Trout In Situ Results

AR018496	AR018706	Fall 2020 and Spring 2021 Rainbow Trout In Situ Results
AR018707	AR018745	Fall 2021 and Spring 2022 Rainbow Trout In Situ Results
AR018746	AR018933	Fall 2022 and Spring 2023 Rainbow Trout In Situ Results
AR018934	AR018936	Submittal of 6PPD-Q test results
AR018937	AR018940	Request to Resubmit Informal Consultation Request to Six Different Emails
AR018941	AR018941	Notification of NMFS Priorities and Delay in Review
AR018942	AR018943	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 1
AR018944	AR018946	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 2
AR018947	AR018947	FAA's Resubmittal of Informal Consultation w/ BE to NMFS and USFWS - Part 3
AR018948	AR018948	Resubmittal of Informal Consultation w/ BE to NMFS and USFWS - Part 4
AR018949	AR018949	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 5
AR018950	AR018950	FAA's Resubmittal of Informal Consultation w/ BE to NMFS & USFWS - Part 6
AR018951	AR018957	Discussion on ways to Submit Rainbow Trout Study too Large for Email
AR018958	AR018963	USFWS Receipt of Submittal and Notification Submittal has Been Logged
AR018964	AR018965	NOAA Receipt of Submittal and Notification Submittal has Been Logged
AR018966	AR018966	NMFS Provided Contact Person for Submittal of Large File
AR018967	AR018967	Realization Issue Already Resolved
AR018968	AR018969	Submittal of Rainbow Trout 2023 Report
AR018970	AR018970	Receipt of Rainbow Trout 2023 Report
AR018971	AR018971	NOAA Non-concurrence Email
AR018972	AR018973	Provided POC to get NOAA Attorney Contact Information
AR018974	AR018974	Provided NOAA Attorney Contact Information
AR018975	AR018976	Confirmation Bonnie Shorin is POC for Project until Position is Filled
AR018977	AR018980	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR018981	AR018981	Acknowledgment Received Invite but Notifying Haven't Reviewed
AR018982	AR018982	Notification of Phased Retirement and New Branch Chief
AR018983	AR018983	Notification of Phased Retirement and New Branch Chief
AR018984	AR018985	Notification Bonnie can Attend for Dayv Lowry

AR018986	AR018986	Summary of call with NOAA and request for additional information
AR018987	AR019051	Provided information requested 3/13/25
AR019052	AR019053	FAA Submittal of Information Requested by NMFS During 3/13/25 Meeting
AR019054	AR019056	Update on Review of Information Submitted 4/10/25
AR019057	AR019061	NOAA Non-concurrence Email
AR019062	AR019067	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR019068	AR019068	Submittal of Presentation & Information Requested from 5/14/25
AR019069	AR019075	Notification Project was Closed Out on NMFS End
AR019076	AR019082	Notification of Need to Resubmit Consultation Request
AR019083	AR019086	Coordination of Calendars to Schedule Meeting Between FAA and NMFS
AR019087	AR019090	Notification FAA Attorney will be Joining Call
AR019091	AR019092	FAA Email with Agenda for FAA/NMFS Meeting
AR019093	AR019095	Response to NMFS Request for Meeting Attendees
AR019096	AR019096	Request for Information to Support Formal Consultation Requirement
AR019097	AR019098	Submittal of Information Requested on 6/18/25
AR019099	AR019104	Consultation Request Letter as Requested by NOAA
AR019105	AR019109	Notification of Receipt of Submittal
AR019110	AR019111	Notification of Receipt of Consultation Letter
AR019112	AR019118	Notification of Receipt of Submittal and Project Number
AR019119	AR019119	NOAA Biological Opinion Letter and Document
AR019120	AR019120	Notification of USFWS Non-concurrence Email
AR019121	AR01923	FAA Response to Non-concurrence Notification
AR019124	AR019127	Email Chain Between FAA and USFWS Discussing Schedule and Review Time
AR019128	AR019130	Email Chain Between FAA and USFWS Discussing Schedule and Review Time
AR019131	AR019131	Notification that Steve spoke with Logan Kent to get an update
AR019132	AR019133	Clarification that Port funds Logan Kent's position
AR019134	AR019142	USFWS Response to Request for Expedited Review

AR019143	AR019144	Concerns BO Not Compliant with EO 14303
AR019145	AR019149	Concerns BO Not Compliant with EO 14303
AR019150	AR019156	Email Discussion on Status of Project Review
AR019157	AR019159	FAA Preference not to see BO Before Issued
AR019160	AR019160	Reminder for Responses to EFH Conservation Recommendations
AR019161	AR019161	Unofficial Submittal of USFWS BO
AR019162	AR019163	Forward of USFWS status update
AR019164	AR019164	Thanks for effort provided in review
AR019165	AR019166	Submittal of EFH Conservation Recommendations
AR019167	AR019169	Acknowledgement of Receipt of EFH CR
Coastal Zone		
AR019170	AR019173	Submittal of Questions on When Consistency Finding Required
AR019174	AR019181	Email Discussion on when a Consistency Finding is Required
AR019182	AR019182	Forward of WSDE Letter
AR019183	AR019184	Coordination of Calendars to Schedule Meeting
AR019185	AR019186	Email Discussion on when a Consistency Finding is Required
AR019187	AR019189	Submittal of Consistency Determination Template
AR019190	AR019194	Submittal of Information Needed to Determine if Consistency Finding Required
AR019195	AR019200	Update on Coordination with NOAA
AR019201	AR019206	Update on Coordination with NOAA
AR019207	AR019210	Email Clarifying Consistency Finding Only Required for FAA Actions
AR019211	AR019215	Discussion on Wetland Permits and Consistency Determinations
Forecast		
AR019216	AR019219	Questions on FAA's forecast guidance
AR019220	AR019224	Questions on FAA's forecast guidance
AR019225	AR019225	FAA comments and edits to updated forecast email
AR019226	AR019228	Questions on responses to forecast comments
AR019229	AR019232	Response to 8/13/19 questions
AR019233	AR019236	Request for clean copy of forecast to proceed with approval

AR019237	AR019278	Final Aviation Activity Forecast Update report
AR019279	AR019288	Final Constrained Growth Scenario report
AR019289	AR019291	Forecast Approval
AR019292	AR019292	Submittal of modeling assumptions for no action
AR019293	AR019294	Submittal of FAA comments on modeling assumptions
AR019295	AR019298	Request for update on review of updated modeling approach
AR019299	AR019303	Confirmation of FAA concurrence & moving forward with analysis
AR019304	AR019304	Submittal of TAAM taxi times summaries for future NA and PA
AR019305	AR019307	Submittal of runway use tables for TAAM Modeling
AR019308	AR019308	Submittal of updated modeling approach & updated TAAM taxi times
AR019309	AR019309	Submittal of final No Action modeling assumptions for FAA records
AR019310	AR019310	SEA Email on COVID-19 Effects on SEA's operations & Project Status
AR019311	AR019312	Acknowledgement of SEA email on COVID-19
AR019313	AR019313	FAA provided recommended induced demand text to SEA
AR019314	AR019314	SEA's proposed revisions to induced demand text
AR019315	AR019316	Submittal of preliminary updated unconstrained forecast
AR019317	AR019341	Confirmation of receipt of FAA comments on forecast
AR019342	AR019345	Submittal of Proposed Methodology for COGS
AR019346	AR019350	Submittal of supporting documentation for updated COGS
AR019351	AR019352	Submittal of FAA comments on COGS supporting documentation
AR019353	AR019354	FAA conditional approval of COGS - need final report
AR019355	AR019355	Submittal of updated forecast and COGS for approval
AR019356	AR019356	Submittal of FAA comments on updated COGS
AR019357	AR019358	Confirmation no additional comments on updated forecast
AR019359	AR019370	Submittal of updated COGS based on comments
AR019371	AR019371	FAA letter of approval for SEA activity forecast update
AR019372	AR019373	Discussion on why SEA is updating forecast in midst of EA
AR019374	AR019378	Discussion on changes made between 2021 and 2022 forecasts

AR019379	AR019379	Explanation of cargo operations not changing in COGS
AR019380	AR019383	Notification FAA okay with data sources
AR019384	AR019386	Submittal of updated Draft Forecast Memo
AR019387	AR019387	Approval to move forward with preparing future fleet mix tables
AR019388	AR019390	Submittal of FAA comments on updated forecast
AR019391	AR019392	Submittal of FAA comments on fleet mix for air/noise
AR019393	AR019395	Submittal of updated forecast memo based on comments
AR019396	AR019404	Discussion on forecast and scheduling of meeting to discuss further
AR019405	AR019405	Submittal of forecast approval letter
AR019406	AR019406	Submittal of September version of COGS
AR019407	AR019407	Signed updated forecast approval letter
National Historic Preservation Act		
AR019408	AR019409	Scheduling Meeting to Discuss Project
AR019410	AR019410	Provided Graphic of Proposed Project for Meeting
AR019411	AR019412	WISAARD Sign Up
AR019413	AR019413	WISAARD Access Granted
AR019414	AR019414	Email Submittal of Section 106 Initiation Letter
AR019415	AR019416	Email Submittal of Proposed Methodology to DAHP
AR019417	AR019418	Scheduling of Time to Return Phone Call
AR019419	AR019420	Email Submittal of Updated Methodology to DAHP
AR019421	AR019424	Coordination of Calendars to Schedule Meeting
AR019425	AR019428	Email Concurrence with Methodology to FAA
AR019429	AR019429	Email submitting Section 106 finding
AR019430	AR019431	Request for submittal of trinomials and HPI forms in WISAARD
AR019432	AR019433	Trinomials provided and added into the report
AR019434	AR019435	Confirmation of submittal of trinomials and HPI forms in WISAARD
AR019436	AR019437	Notification that consultation letter needs to be updated
AR019438	AR019438	Submittal of DAHP comments on Section 106 finding

AR019439	AR019441	Notification of form release and clarification on SOI qualifications
AR019442	AR019443	Notification of form and property release
AR019444	AR019445	Qualification Issue Discussion
AR019446	AR019447	Submittal of updated Section 106 finding
AR019448	AR019450	Request for update on review & DAHPs response
AR019451	AR019453	DAHP Section 106 Concurrence Letter
AR019454	AR019456	Notification did not find any previous surveys
AR019457	AR019460	Confirmation of no history of consultation for sound insulation projects
AR019461	AR019461	Submittal of updated Visual APE
AR019462	AR019462	Explanation of file types that can be uploaded in WISAARD
AR019463	AR019464	APE Concurrence
AR019465	AR019466	Submittal of updated Section 106 Finding
AR019467	AR019468	Submittal of Appendix E
AR019469	AR019470	DAHP Section 106 Concurrence Letter
AR019471	AR019473	Updated Section 106 Finding Transmittal Email
Noise		
AR019474	AR019547	Submittal of Draft Noise Technical Report
AR019548	AR019549	Submittal of missed approaches memo
AR019550	AR019552	Submittal of FAA comments on missed approaches memo
AR019553	AR019554	Submittal of normalized taxi times for review
AR019555	AR019574	Submittal of missed approaches memo
AR019575	AR019576	Submittal of requested information on missed approach memo
AR019577	AR019577	Submittal of updated missed approach memo
AR019578	AR019584	Notification of preference to submit substitution request separately
AR019585	AR019585	Submittal of future fleet mix tables
AR019586	AR019586	Submittal of substitution request
AR019587	AR019589	Discussion on discrepancy with forecast
AR019590	AR019591	Submittal of updated substitution request

AR019592	AR019592	Submittal of noise protocol
AR019593	AR019594	Notification no more comments on noise protocol and can proceed
AR019595	AR019595	Submittal of draft construction noise protocol
AR019596	AR019597	Submittal of FAA comments on construction noise protocol
AR019598	AR019599	Submittal of updated construction noise protocol
AR019600	AR019601	Submittal of initial construction noise results
AR019602	AR019602	Submittal of requested information with preliminary results
AR019603	AR019604	Submittal of construction schedule for noise analysis
AR019605	AR019605	Where ambient noise levels are located in report
AR019606	AR019606	Submittal of FAA edits to construction noise protocol
AR019607	AR020001	Link to Burbank construction noise analysis
AR020002	AR020002	Request to use TCM 3.2 for construction noise analysis & FAA approval
AR020003	AR020003	Discussion on how overlapping construction schedules were modeled
AR020004	AR020004	Submittal of proposed construction noise language for env. Consequences
AR020005	AR020005	Notification that construction schedule figure missing a project
Section 4f and Section 6f		
AR020006	AR020007	Screenshot of Land and Water Conservation Fund website
AR020008	AR020010	Discussion on Section 4(f) site
Surface Transportation		
AR020011	AR020511	WSDOT submittal of signal timing, count data, & approval to use SR 518 data
		Zip Drive provided with 10/14/19 email
AR020512	AR020513	Request for Tukwila intersection data for analysis
AR020514	AR020519	City of Des Moines submittal of updated inventory and count information
AR020520	AR020522	Surface Transportation Overview Meeting Agenda
AR020523	AR020523	Submittal of Airport Activity Area Map for discussion
AR020524	AR020526	Submittal of SeaTac transportation codes as requested
AR020527	AR020527	Submittal of Burien traffic code as requested
AR020528	AR020529	Notification meeting rescheduled and submittal of materials for review

AR020530	AR020530	Clarification on who from WSDOT should participate in meeting
RA020531	AR020599	Agenda & Presentation for WSDOT meeting
AR020600	AR020600	Confirmation of Port responsibility for review account
AR020601	AR020602	Notification WSDOT has requested more time for their review
AR020603	AR020605	Agreement that WSDOT will be ready for 9/21/21 meeting
AR020606	AR020611	Submittal of follow-up comments
AR020612	AR020613	Request for update on review of technical appendices
AR020614	AR020620	Additional WSDOT questions/comments on analysis & SEA receipt
AR020621	AR020622	Coordination of calendars to schedule meeting
AR0260623	AR020625	WSDOT's response to FAA questions (ICE, WSDOT authority, methodology)
AR020626	AR020626	Submittal of information requested 1/3 emails
AR020627	AR020627	Submittal of information requested 2/3 emails
AR020628	AR020628	Submittal of information requested 3/3 emails
AR020629	AR020629	Submittal of excel spreadsheet requested
AR020630	AR020633	Preliminary responses to WSDOT questions/comments
AR020634	AR020634	Forward of WSDOT's draft comments
AR020635	AR020636	Agenda for WSDOT meeting
AR020637	AR020638	Draft presentation for meeting next day
AR020639	AR020792	Submittal of additional ICEs
AR0207093	AR020800	Forward of WSDOT's comments on meeting notes
AR020801	AR020803	Meeting notes and recap of next steps
AR020804	AR020806	Agenda for the 2-1-25 technical meeting
AR020807	AR020813	Submittal of presentation from 2/1/25 meeting
AR020814	AR020818	Submittal of meeting notes and updated presentation for 2/15/22 meeting
AR020819	AR020819	Meeting notes and recap of next steps
AR020820	AR020823	Submittal of meeting notes & ICE & Segment Methods and Assumptions

AR020824	AR020826	Request for meeting to discuss questions on traffic study
AR020827	AR020827	Meeting notes and recap of next steps
AR020828	AR020832	Submittal of meeting notes and existing conditions Synchro results
AR020833	AR020836	Discussion with FHWA on what is considered a surface transportation impact
AR020837	AR020837	Meeting notes and recap of next steps
AR020838	AR020838	Submittal of SR 516 Interchange Volumes for review
AR020839	AR020839	Meeting notes and recap of next steps
AR020840	AR020840	Submittal of draft volume comparison tables & LOS 2027 summary
AR020841	AR020841	Meeting notes and recap of next steps
AR020842	AR020842	Notification meeting is cancelled
AR020843	AR020844	Meeting notes and recap of next steps
AR020845	AR020846	Submittal of discrepancies between draft reports
AR020847	AR020847	Response to questions on VISSIM
AR020848	AR020849	Meeting notes and recap of next steps
AR020850	AR020854	Forward of email sent to WSDOT
AR020855	AR020856	Meeting notes and recap of next steps
AR020857	AR020869	Submittal of agenda, meeting summary and updated VISSIM methodology
AR020870	AR020876	Agenda, corrected meeting notes and recap of next steps
AR020877	AR020877	Submittal of updated VISSIM methodology
AR020878	AR020878	Notification of canceled meeting & next steps
AR020879	AR020879	Explanation of defining LOS for Intersection #18 for review
AR020880	AR020880	Submittal of Synchro files for future proposed action with mitigation
AR020881	AR020881	Submittal of WSDOT comments on VISSIM methodology
AR020882	AR020883	Meeting notes and recap of next steps
AR020884	AR020887	Submittal of WSDOT comments on mitigation summary
AR020888	AR020889	Meeting notes and recap of next steps
AR020890	AR020899	Submittal of WSDOT comments on VISSIM methodology
AR020900	AR020901	Meeting agenda, notes, and next steps

AR020902	AR020902	Update provided in lieu of meeting
AR020903	AR020917	Submittal of updated methodologies and WSDOT comments
AR020918	AR020919	Meeting notes and recap of next steps
AR020920	AR020921	Meeting notes and recap of next steps
AR020922	AR020922	Updated VISSIM and HCS files (final)
AR020923	AR020923	Notification of delay in review of final documents
AR020924	AR020925	Follow-up after meeting on updating base year in EA
AR020926	AR020926	Meeting notes and recap of next steps
AR020927	AR020927	Source of information on spot checking intersection counts
AR020928	AR020928	Identification of intersections to complete spot checks for review
AR020929	AR020930	Meeting notes and recap of next steps
AR020931	AR020932	Notification of permit required for traffic counts
AR020933	AR020934	Traffic count comparison
AR020935	AR020936	Meeting notes and recap of next steps
AR020937	AR020937	WSDOT meeting summary
AR020938	AR020939	WSDOT meeting agenda and summary
AR020940	AR020940	Traffic count comparison
AR020941	AR020945	Submittal of spreadsheet and request for WSDOT loop sensor data
AR020946	AR020947	WSDOT meeting agenda and summary
AR020948	AR020951	WSDOT meeting agenda & summary and WSDOT submittal of traffic comparison
AR020952	AR020955	WSDOT meeting agenda and summary
AR020956	AR020959	Meeting confirmation and materials for meeting
AR020960	AR020963	Meeting notes and recap of next steps
AR020964	AR020967	Follow-up on request for concurrence on methodology
AR020968	AR020970	Concurrence on proposed methodology
AR020971	AR020972	WSDOT meeting agenda and summary
AR020973	AR020974	WSDOT meeting agenda and summary

AR020975	AR020975	Submittal of freeway data request
AR020976	AR020977	Confirmation 1/6/23 email received and estimated time to respond
AR020978	AR020979	WSDOT meeting agenda and summary
AR020980	AR020983	WSDOT meeting agenda and summary and submittal of mitigation plan
AR020984	AR020985	WSDOT meeting agenda and summary
AR020986	AR020990	Submittal of draft concurrence request and WSDOT comments
AR020991	AR020991	Submittal of existing conditions Synchro results
AR020992	AR020995	FAA agreement with WSDOT comments & SEA agreement for review
AR020996	AR020997	WSDOT meeting agenda and summary
AR020998	AR021004	Submittal Freeway Volumes (2/24/23), WSDOT Comments (3/7/23), & Responses to WSDOT Comments
AR021005	AR021007	WSDOT concurrence with DTA model
AR021008	AR021027	Submittal of VISSIM and HCS methodology & WSDOT Comments
AR021028	AR021035	Notification unable to review 3/8/23 email yet
AR021036	AR021039	Notification of no further comments on DTA model
AR021040	AR021041	WSDOT meeting agenda and summary
AR021042	AR021042	Submittal of email that will be sent to local jurisdictions
AR021043	AR021043	Submittal of surface transportation overview to City of Burien
AR021044	AR021044	Submittal of surface transportation overview to City of Tukwila
AR021045	AR021045	Submittal of surface transportation overview to City of Federal Way
AR021046	AR021046	Submittal of surface transportation overview to Normandy Park
AR021047	AR021048	WSDOT meeting agenda and notes
AR021049	AR021055	City of Des Moines to include an additional intersection in study
AR021056	AR021087	Submittal of VISSIM & HCS methodologies-WSDOT comments on VISSIM-submittal of updated VISSIM methodology
AR021088	AR021089	WSDOT meeting agenda and notes
AR021090	AR021096	City of Kent does not have comments on surface transportation overview
AR021097	AR021097	Submittal of draft calibration results for SR 518 VISSIM

AR021098	AR021098	Received email and agreement to meeting
AR021099	AR021100	Notification of no comments on study area or methodology
AR021101	AR021101	Submittal of HCS calibration
AR021102	AR021102	WSDOT concurrence with VISSIM calibration
AR021103	AR021104	WSDOT meeting agenda and notes
AR021105	AR021113	City of SeaTac's request to add intersections & justification for request
AR021114	AR021114	Update on coordination with City of SeaTac
AR021115	AR021115	WSDOT meeting agenda and notes
AR021116	AR021116	Update on surface transportation analysis and coordination
AR021117	AR021402	Submittal of existing conditions SlimTraffic, Synchro & HCS - WSDOT comments on reports - Submittal of updated reports
AR021403	AR021403	Submittal of draft methodology for future traffic analysis
AR021404	AR021413	WSDOT comments on methodology for future traffic analysis & potential meeting
AR021414	AR021414	Notification regularly scheduled meeting is canceled
AR021415	AR021418	Received comments and request for meeting availability
AR021419	AR021419	Submittal of latest version of DTA model documentation
AR021420	AR021420	Submittal of intersections to Burien to confirm information accurate
AR021421	AR021421	Submittal of intersections to Des Moines to confirm information accurate
AR021422	AR021422	Submittal of intersections to SeaTac to confirm information accurate
AR021423	AR021423	Submittal of intersections to Tukila to confirm information accurate
AR021424	AR021424	Submittal of intersections to WSDOT to confirm information accurate
AR021425	AR021427	Submittal of WSDOT comments on mitigation methodology
AR021428	AR021428	Submittal of updated existing conditions reports
AR021429	AR021437	Submittal of updated future methodology and WSDOT concurrence
AR021438	AR021439	WSDOT meeting agenda and summary
AR021440	AR021477	WSDOT comments on existing traffic analysis report
AR021478	AR021478	Submittal of revised existing traffic analysis report

AR021479	AR021480	WSDOT meeting agenda and summary
AR021481	AR021481	Submittal of draft future no action results for review
AR021482	AR021483	Submittal of Sidra file for future no action
AR021484	AR021484	WSDOT meeting summary
AR021485	AR021485	Submittal of information from meeting for quick review
AR021486	AR021488	Submittal of WSDOT comments and updated No Action deliverables
AR021489	AR021490	WSDOT meeting agenda and notes
AR021491	AR021492	WSDOT meeting agenda and notes
AR021493	AR021495	No further WSDOT comments on future no action
AR021496	AR021496	Submittal of No Action segment and HCS results
AR021497	AR021498	Submittal of simulation summary results provided in meeting
AR021499	AR021500	Received HCS comment & submitted proposed action draft results
AR021501	AR021501	Submittal of summary materials provided during meeting
AR021502	AR021504	WSDOT notification of no comments on future Synchro, VISSIM or Sidra
AR021505	AR021505	Submittal of materials for no action segment and VISSIM analyses
AR021506	AR021507	WSDOT meeting agenda, notes, and submittal of intersection map
AR021508	AR021514	Responses to FAA questions/comments
AR021515	AR021516	WSDOT meeting agenda and summary
AR021517	AR021520	Submittal of latest NA/PA results and WSDOTs mitigation list
AR021521	AR021521	Submittal of updated mitigation methodology
AR021522	AR021522	Final meeting notes
AR021523	AR021531	Submittal of updated ICE methodology - WSDOT Comments - submittal of final ICE and mitigation contingency methodologies
AR021532	AR021534	Submittal of mitigation with clarification looking for fatal flaws & feasibility
AR021535	AR021536	Submittal of notes on volume changes in SR 518 corridor
AR021537	AR021540	WSDOT comments on mitigation summary and initial responses from SEA
AR021541	AR021542	Meeting agenda and notes
AR021543	AR021601	Submittal of preliminary ICE results for review

AR021602	AR021602	Submittal of updated table
AR021603	AR021603	Meeting cancellation and previous meeting notes
AR021604	AR021605	Submittal of updated ICE reports
-	-	Reports linked in 12-22-23 email
AR021606	AR021607	Submittal of additional link and WSDOT request for extension
AR021608	AR021612	Confirmation of meeting date and time with City of Des Moines
AR021613	AR021618	Submittal of SeaTac responses provided during meeting
AR021619	AR021623	Submittal of Des Moines responses provided during meeting
AR021624	AR021625	Submittal of corrected meeting notes & agenda and notes for recent meeting
AR021626	AR021630	Submittal of Tukwila responses provided during meeting
AR021631	AR021634	Submittal of Burien responses provided during meeting
AR021635	AR021635	Des Moines provided clarification on one of their responses
AR021636	AR021636	WSDOT comments on five preliminary ICE reports
AR021637	AR021637	Additional WSDOT comments on ICE reports
AR021638	AR021638	Meeting notes and recap of next steps
AR021639	AR021640	SeaTac confirmed still moving forward with intersection project
AR021641	AR021642	Forward of City of SeaTac project confirmation email
AR021643	AR021643	Meeting notes and recap of next steps
AR021644	AR021644	Coordination of Calendars to Schedule Meeting
AR021645	AR021646	Coordination of Calendars to Schedule Meeting
AR021647	AR021649	Coordination of Calendars to Schedule Meeting
AR021650	AR021650	Meeting notes and recap of next steps
AR021651	AR021670	Proposed mitigation for WSDOT impacted intersections presentation
AR021671	AR021673	Coordination of Calendars to Schedule Meeting
AR021674	AR021677	Coordination of Calendars to Schedule Meeting
AR021678	AR021678	Submittal of draft Burien and Tukwila meeting notes for review
AR021679	AR021679	Notification no comments on meeting notes
AR021680	AR021694	Submittal of meeting notes and Des Moines provided ILA

AR021695	AR021696	Meeting agenda and notes
AR021697	AR021710	Submittal of presentation & meeting notes & Tukwila confirmation no comments
AR021711	AR021731	Submittal of presentation & meeting notes & Burien confirmation no comments
AR021732	AR021738	WSDOT preferences for mitigation and submittal of mitigation spreadsheet
AR021739	AR021782	Submittal of presentation & meeting notes & City of SeaTac comments
AR021783	AR021783	Meeting agenda and notes
AR021784	AR021784	Submittal of notes from meeting with City of SeaTac
AR021785	AR021787	Submittal of future conditions report and attachments
AR021788	AR021854	Submittal of WSDOT comments on future conditions report
AR021855	AR021855	Meeting summary notes
AR021856	AR021856	Submittal of updated future conditions report
AR021857	AR021858	Confirmation of no further comments on future conditions report
AR021859	AR021896	Request for City of SeaTac to confirm no more comments
AR021897	AR021902	Additional request for City of SeaTac to confirm comments addressed
AR021903	AR021906	Submittal of information request by the City of SeaTac
Water Resources		
AR021907	AR02910	Discussion on USACE expectations and permitting role in project
AR021911	AR02911	Notification of new USACE contact
AR021912	AR021913	Request for a meeting while in SEA
AR021914	AR021914	Request for virtual meeting to discuss project
AR021915	AR021915	Another request for virtual meeting to discuss project
AR021916	AR021917	FAA comments on presentation and SEA response
AR021918	AR021918	Submittal of agenda and presentation for meeting
AR021919	AR021920	Thanks for notification unable to attend meeting
AR021921	AR021921	Submittal of Water Resources Mitigation Summary & Permitting
AR021922	AR021922	Request for availability for meeting
AR021923	AR021924	Coordination of calendars to schedule meeting

AR021925	AR021926	FAA comments on mitigation summary report
AR021927	AR021928	Coordination of calendars to schedule meeting
AR021929	AR021929	Submittal of Cooperating Agency Request letter
AR021930	AR021931	Received letter and currently reviewing request
AR021932	AR021933	Agreement to be cooperating agency response
AR021934	AR021935	Notification to ignore sentence in letter that should have been removed
AR021936	AR021936	Meeting invite with mitigation summary memo
AR021937	AR021937	Submittal of USACE alternative analysis framework
AR021938	AR021938	Receipt of Chapters 1 and 2 of DEA
AR021939	AR021940	Inquiry on USACE contact for project
AR021941	AR021942	Granting of request for extension to review DEA chapters
AR021943	AR021944	Forward of USACE email that provides different information on POC
AR021945	AR021945	Forward of USACE comments on draft chapters
AR021946	AR021947	Receipt of comments and FAA contact information
AR021948	AR021997	Submittal of aquatic report & confirmation USACE to remain a cooperating agency
AR021998	AR023040	Submittal of Chapters 3 & 4 & Appendix M of Preliminary Draft EA
AR023041	AR023042	Submittal of Chapter 3 with figures
AR023043	AR023044	Submittal of USACE comments on draft chapters
AR023045	AR023045	Submittal of requested reports
AR023046	AR023046	Submittal of requested report
Section 4: Sustainable Airport Master Plan		
Sustainable Airport Master Plan Technical Memorandums		
AR023047	AR023102	Tech Memo No. 1 - Background, Process, Goals, and Objectives
AR023103	AR023233	Tech Memo No. 2 - Inventory of Existing Conditions
AR023234	AR023268	Tech Memo No. 3 - Air Cargo Market Assessment
AR023269	AR023359	Tech Memo No.4 - Forecasts of Aviation Activity
AR023360	AR023545	Tech Memo No. 5 - Facility Requirements
AR023546	AR023948	Tech Memo No. 6 - Alternatives

AR023949	AR023992	Tech Memo No. 7 - Facilities Implementation and Financial Feasibility
AR023993	AR024028	Tech Memo No. 8 - Environmental Overview
AR024029	AR024477	Tech Memo No. 9 - Sustainability Planning and Management Strategy
AR024478	AR024479	SAMP Public Outreach Summary
Section 5: General Correspondence		
350 Seattle		
AR024480	AR024481	350 Seattle request for an EIS
AR024482	AR024483	Response to 350 Seattle request for an EIS
AR024484	AR024486	Response to 350 Seattle question on EA schedule
Alaska Airlines		
AR024487	AR024488	Concerns with the SAMP as proposed
AR024489	AR024494	Phasing options for SEA SAMP presentation
AR024495	AR024496	Concerns with the SAMP as proposed
AR024497	AR024502	Concerns with the SAMP as proposed & Alaska's suggested alternative
AR024503		Response to 2/4/19 letter from Alaska
AR024504	AR024505	Response to Alaska's suggested alternative
AR024506	AR024510	Legal basis to keep discussing alternatives during NEPA
AR024511	AR024512	Response from meeting with Alaska to discuss SAMP
AR024513	AR024597	Alaska submittal of Enhanced Approach to SEA SAMP Report
AR024598	AR024793	Alaska's response to Port Dec 2019 letter
AR024794	AR024810	Port draft response to FAA re: Alaska
AR024811	AR024827	Port response to FAA re: Alaska
City of Burien		
AR024828	AR024828	Response to request for EIS
AR024829	AR024830	Request for thorough cumulative impact analysis
AR024831	AR024832	Request to pause EA until 250-degree turn resolved
AR024833	AR024833	Request for SEA to ask for extended public comment period
City of SeaTac		
AR024834	AR024839	Confirmation of FAA POC for project

EPA		
AR024840	AR024842	Response to EPA to provide FAA POC and update on project
King County		
AR024843	AR024843	King County request for an EIS
AR024844	AR024844	Response to King County request for EIS
Noemie Maxwell		
AR024845	AR024846	Response to request for information on NEPA process
AR024847	AR024851	Questions on possible forest destruction with proposed NTPs
Section 6: References, Secondary Sources, and Guidance Documents		
AR024852	AR025043	FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions
AR025044	AR025772	FAA Order JO7110.65W
AR025773	AR025904	FAA Order 1050.1F, Environmental Impacts: Policies and Procedures
AR025905	AR026162	FTA Transit Noise & Vibration Impact Assessment Manual
AR026163	AR026205	Sea-Tac International Airport Economic Impacts
AR026206	AR026225	FAA Order JO7110.126A
AR026226	AR026385	Puget Sound Regional Council Vision 2050
AR026386	AR026819	FAA Advisory Circular (AC) 150/5300-13B, Airport Design
AR026820	AR027113	FAA Order 1050.1F, Desk Reference
Air Quality & GHG		
-	-	Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report
AR027114	AR027249	Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution throughout the Contiguous United States
AR027250	AR027255	Federal Register notice of ozone attainment for King County
AR027256	AR027261	Federal Register notice of CO attainment for King County
AR027262	AR027486	Aviation Emissions and Air Quality Handbook, Version 3 Update 1
AR027487	AR027838	International Civil Aviation Organization Annex 14 Aerodromes
AR027839	AR027976	King County Board of Health briefing on airport community health profiles
Biological		

AR027977	AR028024	2021 Washington vascular plant species of conservation concern report
AR028025	AR028032	Guide to Native Milkweeds of Washington
AR028033	AR028033	Summary of King County wildlife habitat conservation areas
Forecast		
AR028034	AR028034	Nonstop destinations served from SEA in 2020
AR028035	AR028094	Airside modeling, approach, key assumptions, & results presentation
AR028095	AR028109	Future activity forecasts and facility requirement calculations for 2027
Hazardous and Solid Waste		
AR028110	AR028130	Informational document about Per- and polyfluoroalkyl substances (PFAS)
AR028131	AR028502	SEA's Construction Safety Manual
AR028503	AR028719	SEA's construction general requirements for tenants within terminal facilities
AR028720	AR029059	SEA's construction general requirements
AR029060	AR029066	EPA interim recommendations to address groundwater PFAS contamination
AR029067	AR029068	Information on hazardous sites from WA Department of Ecology
AR029069	AR029168	National pollutant discharge elimination system & state waste discharge permit
AR029169	AR029282	WA Department of Ecology notification of no further action required
AR029283	AR029698	Cedar Hills Regional Landfill Final Environmental Impact Statement
AR029699	AR029703	Washington State monitoring requirements for PFAS
AR029704	AR029705	WA Department of Ecology toxic cleanup program list of sites
AR029706	AR029707	Requested update on hazardous sites on-airport
AR029708	AR029902	WSDOE's guidance for investigating & remediating PFAS contamination in WA
AR029903	AR029911	USEPA Document regarding a proposed PFAS national drinking water regulation
AR029912	AR029938	Cedar Hills regional landfill 2023 annual report

AR029939	AR029939	Solid waste projections for 2032 and 2037
Natural Resources and Energy Supply		
AR029940	AR029940	Electricity, natural gas, & fuel consumption for years 2010, 2015, 2019, & 2022
AR029941	AR029955	Washington State's energy profile
AR029956	AR029956	Screenshot from the Canadian Gas Association's website about gas facts
AR029957	AR029960	Spreadsheet containing information on SEA fuels, electricity, gas, and water
Socioeconomics		
AR029961	AR029961	Median earnings data from Census 2021 (.csv version)
AR029962	AR029968	Median earnings data from Census 2021 (.xls version)
AR029969	AR029976	Median earnings data from Census 2021 for General Study Area (GSA)
AR029977	AR029977	Median earnings data from Census 2021 metadata
AR029978	AR029984	Median earnings data from Census 2021 to join with a GIS shapefile
AR029985	AR029986	Median earnings data from Census 2021 table notes
AR029987	AR029993	Economic data for Washington State and King County from US Census 2021
AR029994	AR029999	Economic data for Washington State and King County from US Census 2017 - 2021
AR030000	AR030007	Employment numbers from Census 2017 data
AR030008	AR030008	Employment numbers from Census 2017 data metadata
AR030009	AR030010	Employment numbers from Census 2017 table notes
AR030011	AR030018	Employment numbers from Census 2018 data
AR030019	AR030019	Employment numbers from Census 2018 data metadata
AR030020	AR030021	Employment numbers from Census 2018 table notes
AR030022	AR030028	Employment numbers from Census 2019 data
AR030029	AR030029	Employment numbers from Census 2019 data metadata
AR030030	AR030031	Employment numbers from Census 2019 table notes
AR030032	AR030042	Employment numbers from Census 2020 data
AR030043	AR030043	Employment numbers from Census 2020 data metadata
AR030044	AR030045	Employment numbers from Census 2020 table notes
AR030046	AR030055	Median earnings data from Census 2020 for General Study Area (GSA)
AR030056	AR030072	Median household earnings data from Census 2021 data

AR030073	AR030073	Median household earnings from Census 2021 data metadata
AR030074	AR030091	Per capita income data from Census 2021 data
AR030092	AR030092	Per capita income data from Census 2021 metadata
AR030093	AR030094	Per capita income data from Census 2021 table notes
AR030095	AR030109	Per capita income data from Census 2021 data for GIS shapefile
AR030110	AR030117	Employment numbers from Census 2017 data to join with a GIS shapefile
AR030118	AR030126	Employment numbers from Census 2018 data to join with a GIS shapefile
AR030127	AR030135	Employment numbers from Census 2019 data to join with a GIS shapefile
AR030136	AR030144	Employment numbers from Census 2020 data to join with a GIS shapefile
AR030145	AR030154	Unemployment 2017 US Census for General Study Area (GSA)
AR030155	AR030164	Unemployment 2018 US Census for General Study Area (GSA)
AR030165	AR030174	Unemployment 2019 US Census for General Study Area (GSA)
AR030175	AR030184	Unemployment 2020 US Census for General Study Area (GSA)
AR030185	AR030194	Unemployment 2021 US Census for General Study Area (GSA)
AR030195	AR030223	Per capita income 2021 US Census for General Study Area (GSA)
AR030224	AR030227	State and county age data from US Census
AR030228	AR030237	Age data from US Census for General Study Area
AR030238	AR030242	US Census data from 2020
AR030243	AR030243	Metadata for US Census data from 2020
AR030244	AR030265	Median household earnings from Census 2021 data for GIS shapefile (.csv version)
AR030266	AR030289	Median household earnings from Census 2021 data for GIS shapefile (.xls version)
AR030290	AR030312	Median household earnings from Census 2021 for General Study Area (GSA)
AR030313	AR030970	Block data from US Census 2020
AR030971	AR031519	Block data from US Census 2020
AR031520	AR031540	Employment numbers from Census 2022 data
AR031541	AR031558	Employment numbers from Census 2022 data to join with a GIS shapefile
AR031559	AR031560	Table notes for 2022 Employment Census Data
AR031561	AR031561	Employment numbers from Census 2022 data

Surface Transportation		
AR031562	AR032549	SR 509: Corridor Completion/I-5/South Access Road EIS Volume 1
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UNITED STATES COURT OF APPEALS

FOR THE NINTH CIRCUIT

FILED

JUL 31 2026

MOLLY C. DWYER, CLERK
U.S. COURT OF APPEALS

VASHON ISLAND FAIR SKIES, a Washington nonprofit corporation,

Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION,

Respondent,

PORT OF SEATTLE,

Intervenor.

No. 25-7373

Agency No. Federal Aviation Administration

ORDER

CITY OF BURIEN, Washington municipal corporations; et al.,

Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION; et al.,

Respondents,

PORT OF SEATTLE,

Intervenor.

No. 25-7439

Agency No. Federal Aviation Administration

The unopposed motion (Docket Entry No. 41) for a 7-day extension of time to file the consolidated opening brief is granted.

The consolidated opening brief is due August 10, 2026. The consolidated answering brief is due September 9, 2026. Intervenor's consolidated brief is due September 23, 2026. The optional consolidated reply brief is due 21 days after intervenor's brief is served.

FOR THE COURT:

MOLLY C. DWYER
CLERK OF COURT

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

Form 34. Disclosure Statement under FRAP 26.1 and Circuit Rule 26.1-1

Instructions for this form: http://www.ca9.uscourts.gov/forms/form34instructions.pdf

9th Cir. Case Number(s) 25-7373

Name(s) of party/parties, prospective intervenor(s), or amicus/amici filing this form:

Vashon Island Fair Skies

Under FRAP 26.1 and Circuit Rule 26.1-1, I make the following disclosures:

1. I disclose the following information required by FRAP 26.1(a) and/or Circuit Rule 26.1-1(b) for any nongovernmental corporation, association, joint venture, partnership, limited liability company, or similar entity[1] which is a party, prospective intervenor, or amicus curiae in any proceeding, or which the government identifies as an organizational victim below in section 2 of this form,[2] or which is a debtor as disclosed below in section 3 of this form.

   a. Does the party, prospective intervenor, amicus, victim, or debtor have any parent companies? Parent companies include all companies that control the entity directly or indirectly through intermediaries.
   ○ Yes ◉ No

   If yes, identify all parent corporations of each entity, including all generations of parent corporations *(attach additional pages as necessary)*:

   b. Is 10% or more of the stock of the party, prospective intervenor, amicus, victim, or debtor owned by a publicly held corporation or other publicly held entity?
   ○ Yes ◉ No

[1] A corporate entity must be identified by its full corporate name as registered with a secretary of state's office and, if its stock is publicly listed, its stock symbol or "ticker."

[2] To the extent it can be obtained through due diligence.

If yes, identify all such owners for each entity *(attach additional pages as necessary)*:

2. In a criminal case, absent good cause shown, the government must identify here any organizational victim of the alleged criminal activity:

N/A

3. In a bankruptcy case, the debtor, the trustee, or, if neither is a party, the appellant must identify here each debtor not named in the court of appeals caption:

N/A

4. Are you aware of any judge serving on this Court who participated at any stage of the case, either in district court, administrative proceedings, or in related state court proceedings?

○ Yes ◉ No

If yes, list the name of the judge and the case name, case number, and name of court of the related proceedings:

I certify that *(select only one)*:

○ this is the first disclosure statement filed in the above-referenced case by the above-identified party/parties, prospective intervenor(s), or amicus/amici, and this disclosure statement complies with FRAP 26.1 and Circuit Rule 26.1-1.

○ the party/parties, prospective intervenor(s), or amicus/amici submitting this supplemental disclosure statement has previously filed a compliant disclosure statement in this case, and this updated disclosure statement discloses changed or additional information.

◉ I have reviewed this form, FRAP 26.1, and Circuit Rule 26.1-1 and, to the best of my knowledge, have no information to disclose at this time.

Signature s/ Steven M. Taber **Date** 8/5/26

*(use "*s/[typed name]*" to sign electronically-filed documents)*

Nos. 25-7373 & 25-7439
(Consolidated)

In the
UNITED STATES COURT OF APPEALS
for the Ninth Circuit

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

Consolidated with No. 25-7439
CITY OF BURIEN, et al.
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

CONSOLIDATED OPENING BRIEF OF VASHON ISLAND FAIR SKIES, INC., CITY OF BURIEN, CITY OF DES MOINES, AND CITY OF SEATAC

On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com

Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

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GLOSSARY OF TECHNICAL TERMS AND ACRONYMS

The following definitions are drawn from governing authorities and the FAA's Administrative Record and are provided solely as reader aids. Where the record uses rather than formally defines a term, the table identifies that usage.

Term	Definition	Source / Record Location
AEDT	Aviation Environmental Design Tool. FAA's computer model for simulating aircraft activity and evaluating environmental effects, including aircraft noise. FAA's materials explain that AEDT noise results depend on factors including the number and type of aircraft operations, time of day, runway use, how aircraft are flown, and routes of flight.	2-ER-73; *see also* 2-ER-69-70
Arrival profile	Term used in the Noise Technical Report for modeled aircraft arrivals. The Report states that relocation of the Runway 34R glideslope was expected to produce a "slightly higher" arrival profile that AEDT did not specifically model.	2-ER-75 n.13; 2-ER-76 n.14
DNL	Day-Night Average Sound Level. A cumulative sound level representing sound energy over a 24-hour period, with a 10-decibel weighting applied to nighttime noise events between 10:00 p.m. and 7:00 a.m.	14 C.F.R. § 150.7; 2-ER-72
65-DNL/1.5-DNL significance screen	The aircraft-noise significance criterion applied in the Final EA: a project causes a significant noise impact when it produces an increase of 1.5 DNL or more in a noise-sensitive area exposed to 65 DNL or more.	FAA Order 1050.1F, Exh. 4-1; 2-ER-45; 2-ER-51-56

Term	Definition	Source / Record Location
FICON	Federal Interagency Committee on Noise. The earlier federal interagency noise work referenced in FAA's aircraft-noise materials and compared with the later Neighborhood Environmental Survey.	3-ER-327; 3-ER-334-340
Flight-track locations	Term used in the Noise Technical Report, which states that Existing 2022 flight-track location information would remain the same for the Future Proposed Action.	2-ER-75; 2-ER-76
FONSI/ROD	Finding of No Significant Impact/Record of Decision. FAA's September 24, 2025, final decision approving federal actions associated with the SAMP Near-Term Projects challenged in these petitions.	1-ER-2-25
HAWKZ	A named Standard Terminal Arrival Route (STAR) for arrivals to Seattle-Tacoma International Airport from the southwest. FAA's response to Vashon also refers to the "HAWKZ RNAV approach."	2-ER-66; 3-ER-312
NES	Neighborhood Environmental Survey. FAA's survey of community response to aircraft noise, published by FAA in 2021 and submitted to FAA by Vashon during the SAMP comment process.	86 Fed. Reg. 2722, 2723–25 (Jan. 13, 2021); 3-ER-307-310; 3-ER-334-340
Part 150	FAA's Airport Noise Compatibility Planning process governed by 14 C.F.R. Part 150.	14 C.F.R. Part 150; *see* 2-ER-278-287; 3-ER-308-311
RNAV	Area Navigation.	2-ER-67; 3-ER-312
SAMP	Sustainable Airport Master Plan. The Port of Seattle's airport master-planning process from which the Near-Term Projects arose.	1-ER-4; 2-ER-28-29

STATEMENT OF JURISDICTION

The Federal Aviation Administration ("FAA") issued the challenged Finding of No Significant Impact/Record of Decision ("FONSI/ROD") for the Sustainable Airport Master Plan Near-Term Projects (the "Projects") at the Seattle-Tacoma International Airport (the "Airport") on September 24, 2025. 1-ER-2, 1-ER-24. The order expressly states that it is a final FAA order subject to exclusive review under 49 U.S.C. § 46110. 1-ER-24. Vashon Island Fair Skies, Inc. ("Vashon") filed its petition in No. 25-7373 on November 21, 2025, and the Cities of Burien, Des Moines, and SeaTac (collectively the "Cities") filed their petition in No. 25-7439 on November 24, 2025.

Section 46110(a) permits a person with a substantial interest in an FAA order to seek review in the D.C. Circuit or in the circuit where the person resides or has its principal place of business. Vashon has its principal place of business in the State of Washington, and the Cities are Washington municipalities. Venue therefore is proper in this Court. 49 U.S.C. § 46110(a).

The Court has exclusive jurisdiction to affirm, amend, modify, or set aside the FAA order and may order further proceedings. 49 U.S.C. § 46110(c). Petitioners presented the material objections addressed in this brief during the administrative process. Vashon presented the noise-threshold, study-area, and arrival-profile objections, 3-ER-304-313. The Cities presented noise, transportation, and

procedure-change objections, 2-ER-277-293.

The FONSI/ROD is final because it states that it is FAA's final decision, approves and directs implementation, unconditionally approves portions of the Airport Layout Plan, approves equipment relocations and resulting procedure updates, and satisfies the environmental prerequisite for future federal funding. 1-ER-6-7, 1-ER-24. A final environmental approval remains reviewable even though later project-specific permits, designs, or funding decisions may follow. *City of Los Angeles v. FAA*, 63 F.4th 835, 841–42 (9th Cir. 2023).

Timeliness runs from issuance of the September 24, 2025, order challenged here, not from earlier planning documents, draft analyses, or public comments. 49 U.S.C. § 46110(a). The petitions seek review of the final FONSI/ROD and its incorporated Final EA. 1-ER-25. Vashon filed within sixty days. The Cities filed on Monday, November 24, 2025. Because the sixtieth day fell on Sunday, November 23, the period continued through Monday, November 24, 2025. Fed. R. App. P. 26(a)(1)(C).

STATEMENT OF THE ISSUES PRESENTED FOR REVIEW

1. The National Environmental Policy Act of 1969 ("NEPA"), 42 U.S.C. § 4321 *et seq.,* requires scientific integrity and reliable data in environmental review, and the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 551-559, 701-706, requires an agency to explain material evidence contrary to its decision. FAA's own 2021 Neighborhood Environmental Survey ("NES") showed that community annoyance at 65 DNL far exceeds the response relationship underlying FAA's traditional 65-DNL screen. Did FAA violate NEPA and the APA by using that screen to find no significant noise impact from adding 4,439 residents to the 65-DNL contour without explaining why the NES did not affect this project-level finding?

2. A mitigated Finding Of No Significant Impact ("FONSI") may rely on mitigation only when the agency reasonably explains why the mitigation measures are sufficiently developed and committed to reducing significant impacts below significance. FAA found significant traffic impacts and relied on mitigation to eliminate them; its traffic analysis said written mitigation agreements would be finalized before the FONSI/ROD, but the FONSI/ROD acknowledged that those agreements remained unfinished. Did FAA violate NEPA and the APA by failing to explain why its construction-time condition supplied equivalent implementation assurance?

3. FAA said observed track location, density, width, and utilization informed its noise model. Vashon asked FAA to compare actual HAWKZ arrivals over North Vashon with the model's track and profile assumptions. FAA answered by pointing to the resulting 65-DNL contour, although its own data showed a HAWKZ segment west of the contour's receptor grid. Did FAA act arbitrarily and capriciously by rejecting the validation request with the model's output without explaining whether the model represented the operations Vashon identified?

4. NEPA and the APA require reasoned decision-making about the environmental effects of the action the agency approves, not an unexplained mismatch between the approved action and the assumptions used to analyze it. FAA modeled future noise on the premise that flight-track locations would remain unchanged while approving flight-procedure updates whose extent would be determined later during design. Did FAA act arbitrarily and capriciously by failing to establish that those updates fit the model's premise or reserve them for later environmental review?

PERTINENT LEGAL PROVISIONS

Pursuant to Ninth Circuit Rule 28-2.7, the pertinent statutory provisions, the pertinent federal regulations, and the pertinent FAA Order provisions governing this petition are reproduced verbatim, with appropriate citation, in the Addendum bound at the end of this brief.

STATEMENT OF THE CASE

In their public comments, Vashon and the Cities asked the FAA to study and disclose how the Projects at the Airport would affect the surrounding communities and those beneath its flight paths. The Projects would increase airport activity and associated effects on surrounding communities. FAA forecast 35,018 more annual aircraft operations with the Projects than without them by 2037, 2-ER-46, projected that the 65-DNL contour would include 4,439 additional residents and 1,851 additional homes, 2-ER-55-56, and identified project-generated traffic that would cause significant failures at local intersections. 1-ER-15. Vashon's comments focused on concentrated RNAV arrivals over the island. The Cities' comments identified noise, traffic, and procedure effects in communities surrounding the Airport. 2-ER-278-287; 3-ER-304-313. In the comments relevant here, Vashon and the Cities asked FAA to examine how those project-generated effects were measured and mitigated.

FAA and the Port began the environmental review of the Projects in July 2018. 2-ER-29. The review used 2032 as the opening year and 2037 as an additional analysis year for noise, air quality, greenhouse gases, and traffic. 2-ER-29; 2-ER-46. Vashon raised the NES and HAWKZ/profile issues; the Cities raised noise, traffic, and procedure concerns. 2-ER-278-287; 3-ER-304-313. FAA issued the Final EA and FONSI/ROD on September 24, 2025. 1-ER-2; 1-ER-24.

I. The Near-Term Projects Would Add Airport Activity Through 2037.

A. The SAMP moved from a long-term vision to thirty-one near-term projects.

The Airport is operated by the Port of Seattle (the "Port") in southern King County, Washington. 1-ER-4. In 2015, the Port began drafting a Sustainable Airport Master Plan ("SAMP") to address anticipated passenger growth and airport-facility needs. 1-ER-4, 2-ER-28. The plan's Long-Term Vision contemplated development through 2034, but FAA and the Port concluded that long-term airfield and airspace limitations required another planning study and were not yet ready for environmental review. 1-ER-4, 2-ER-28-29. The Port then identified thirty-one Projects to address needs expected before completion of that later study. 1-ER-4-6, 2-ER-28-29.

The projects relevant to these petitions include airfield work requiring equipment relocations and resulting procedure updates, passenger and cargo facilities, roadway and ground-transportation facilities, employee parking, expanded fuel storage, and supporting infrastructure. 1-ER-4-6, 2-ER-36-40.

B. FAA compared projected operations with and without the Near-Term Projects.

FAA analyzed implementation of the Projects as the Proposed Action and compared it with a No Action Alternative in 2032, when the Projects are expected to be substantially operational. FAA also examined 2037 for noise, air quality,

greenhouse gases, and traffic. 2-ER-46. FAA projected 475,655 annual aircraft operations with the Projects in 2032, compared with 466,900 without them. In 2037, it projected 509,892 operations with the projects, compared with 474,874 without them, a difference of 35,018 annual operations. 2-ER-46.

II. FAA Applied the 65-DNL Significance Screen After Publishing the Neighborhood Environmental Survey.

A. FAA modeled additional operations and expanded 65-DNL exposure.

FAA evaluated operational aircraft noise using DNL and Order 1050.1F's 65-DNL significance screen. DNL is an energy-average metric that combines operations over twenty-four hours and adds a ten-decibel penalty to nighttime events. 2-ER-44-45. Order 1050.1F treats a project as causing a significant aircraft-noise impact when it produces a 1.5-DNL or greater increase in a noise-sensitive area already exposed to 65 DNL or more, and the Final EA applied that screen to the 65-, 70-, and 75-DNL contours. 2-ER-45, 2-ER-49-56. Vashon Island lies under Seattle arrival routes beyond the airport boundary. Vashon told FAA that concentrated RNAV arrivals cross the island at altitudes and in patterns that a daily average and standard arrival profiles do not adequately describe. 3-ER-304-13.

The model nevertheless projected more people and homes within the 65-DNL contour. By 2037, the Proposed Action would expand that contour by 0.66 square miles, increase housing units inside it from 7,166 to 9,017, and increase population from 16,297 to 20,736. 2-ER-55-56. That placed an additional 1,851

homes and 4,439 people inside the contour. FAA found no significant operational-noise impact because the modeled incremental changes inside the contour ranged from 0.0 to 0.6 DNL. 2-ER-55-56, 2-ER-77.

B. The NES reported much higher annoyance at 65 DNL than the older FICON relationship.

Before the Final EA, FAA had published the results of the Neighborhood Environmental Survey ("NES"). The NES collected responses from just over 10,000 people living around a balanced sample of twenty airports selected to be nationally representative and generated a national DNL dose-response curve for high annoyance. 3-ER-327; 3-ER-334-343. The report compared that contemporary response relationship with the older Schultz/FICON relationship that informed federal aviation-noise policy. 3-ER-327; 3-ER-334-343; *see also* *Overview of FAA Aircraft Noise Policy and Research Efforts*, 86 Fed. Reg. 2722, 2723–25 (Jan. 13, 2021). At 65 DNL, the FICON curve predicted that 12.3 percent of people would be highly annoyed, while the NES national curve predicted 65.7 percent, with a 95-percent confidence interval of 60.1 to 70.9 percent. 3-ER-327; 3-ER-340; 86 Fed. Reg. at 2725. FAA's notice stated that the dose-response methodology remained supported but that the underlying social-survey data were, on average, more than forty years old and warranted updating. *Id.* The NES itself likewise explained that the Schultz relationship rested on surveys from the 1960s and 1970s and that the FICON curve drew on data from the 1960s through the

1980s and was several decades old. 3-ER-327; 3-ER-343; 86 Fed. Reg. at 2725. The notice further recognized that supplementary metrics may help describe noise characteristics not captured by DNL alone, while stating that existing regulations and orders would remain in effect unless changed. *Id.* at 2727–28.

C. Vashon put the NES and the 65-DNL project finding before FAA.

Vashon's comment did four things. First, it compared the FICON and NES response rates at 50, 55, 60, and 65 DNL. Then it challenged exclusive reliance on 65 DNL. Next it described Vashon's low ambient environment, and finally, it urged use of event- and ambient-sensitive information. 3-ER-307-10. Vashon also challenged the standard arrival profiles used in the Aviation Environmental Design Tool ("AEDT") and asked FAA to compare those profiles with actual flight data for arrivals over the island. 3-ER-310-12. The comment thus placed both FAA's newer community-response data and the route-specific profile concern squarely before the agency.

FAA did not discuss the NES figures in its response to Vashon. Instead, it referred Vashon's noise-policy concern to general responses explaining that FAA would continue to use DNL and 65 DNL while its national policy review remained pending, and that the Port was separately updating its voluntary Part 150 noise-compatibility program. 3-ER-308-11. FAA similarly answered the Cities that Order 1050.1F defined significance, the modeled increases did not meet that

definition, and additional noise concerns would be forwarded to the Part 150 team. 2-ER-278-87. FAA acknowledged increases in nighttime operations and increases in schools within the 65-DNL contour but again answered that the 1.5-DNL significance increment was not met. 2-ER-278-87.

III. FAA Found Significant Category 1 Traffic Impacts and Relied on Mitigation.

A. FAA classified Category 1 intersection failures as significant impacts.

Surface transportation produced a separate set of acknowledged impacts. FAA studied 114 intersections for No Action and 111 for the Proposed Action. 1-ER-15. It placed intersections into four categories. Category 1 meant that the added project trips caused an intersection to fail the governing mobility standard. FAA identified four Category 1 intersections in 2032 and eight in 2037 and expressly called Category 1 failures significant impacts. *Id.* Category 2 intersections already failed without the project but experienced added delay from the project. FAA identified eleven in 2032 and eighteen in 2037. *Id.* Category 3 intersections met the standard in both scenarios but experienced added delay. FAA identified sixty-three in 2032 and fifty-four in 2037. *Id.*

The transportation record contemplated mitigation through capital projects and proportional payments developed with the responsible jurisdictions. 2-ER-57-63, 2-ER-79-235. The Washington State Department of Transportation ("WSDOT") told the project team that Intersections 23, 24, and 33 required

attention because added delays would be significant, and it emphasized that the concept for Intersection 33 would have to be acceptable to both WSDOT and the City of SeaTac. 3-ER-319. The final tables identify a roundabout for Intersection 23, a roundabout for Intersection 24, and a signal for Intersection 33. 2-ER-58-62. They also identify proportional contributions at other locations, sometimes leaving the post-mitigation level of service as not applicable. 2-ER-59-62.

B. Appendix L expected pre-decision mitigation agreements, but they remained unfinished at the time the FONSI/ROD was signed.

Appendix L stated that written agreements with each responsible jurisdiction would be finalized before the FONSI/ROD and would contain the "specific terms and mitigation requirements" agreed upon. 2-ER-181. The FONSI/ROD instead stated that the Port and local jurisdictions were still formalizing memoranda of understanding, and it imposed only a construction-time condition requiring mitigation under regulations, standards, or agreements in place at the time of construction. 1-ER-15, 1-ER-18-21.

IV. FAA Answered Vashon's HAWKZ Profile Concern by Referring to the 65-DNL Contour.

A. FAA acknowledged no custom HAWKZ profile was modeled.

FAA's answer to the profile objection was more specific. FAA agreed that no custom profile had been created for the HAWKZ RNAV approach. 3-ER-312. It reasoned that aircraft over Vashon remain approximately twenty to twenty-eight

miles from the runway, while FAA modeling guidance begins arrival receptors at the start of the modeled profile or ten nautical miles from the threshold. *Id.* It then explained that Vashon is outside, and not close to, the 65-DNL contour, so differences between standard and actual altitudes over Vashon would not normally be studied because they would not change the location of that contour. *Id.*

B. FAA's own October 2022 data placed an identified HAWKZ level-off west of the receptor grid.

The fixed receptor grid used for the SAMP contour had a western boundary at longitude -122.385218. 3-ER-318. FAA's October 2022 arrival data identify a HAWKZ7 A320 to Runway 16R that leveled at approximately 6,032 feet for 35 seconds over 2.29 nautical miles, along a segment near longitude -122.4556. 3-ER-362-65. The identified level-off segment was therefore west of the receptor grid. Vashon had asked FAA to compare actual HAWKZ operations with the model. 3-ER-310-12. FAA's response did not discuss that segment or explain why the contour nevertheless answered Vashon's route-specific concern.

C. Earlier FAA materials provided route-specific context for Vashon's HAWKZ concern.

The SAMP Noise Protocol stated that flight-track definition, location, and percent utilization were based on eight months of 2022 EnvironmentalVue data "and previous studies." 2-ER-78. The administrative record includes the earlier Greener Skies EA for the same arrival system, which modeled a selected North

Vashon receptor and projected a 1.9-DNL Proposed-Action increase in each study year even though absolute exposure remained below 45 DNL. 3-ER-361. FAA's later Sea-Tac presentation labeled the post-Greener Skies corridor a "NextGen Narrowed Approach Path." 3-ER-357. While these materials provide context for Vashon's route-specific request, they do not establish the SAMP noise increment.

V. The Noise Model Assumed Unchanged Flight Tracks While Procedure Updates Remained to Be Defined.

A. FAA assumed future flight-track locations would remain unchanged.

The project also requires changes to aviation procedures. FAA stated that airfield projects A01 through A10 require relocation of FAA-owned equipment and associated infrastructure, and that the relocations require modifications to existing procedures. 1-ER-6, 2-ER-29. FAA acknowledged that the extent of the relocations and procedure changes was not yet known and would be determined during design. *Id.* Project A01 is already described as relocating a glideslope antenna used to provide vertical guidance for an instrument approach, adjusting the glideslope angle and precision approach path indicator, and amending flight procedures to accommodate the change. 2-ER-30.

The Noise Technical Report assumed that flight-track locations for the Future (2037) Proposed Action would remain the same as the Existing (2022) Condition. 2-ER-75; 2-ER-76. It separately disclosed one expected vertical change: Project A01 would produce a "slightly higher" Runway 34R arrival profile because

the glideslope would be relocated. FAA did not model that vertical adjustment because AEDT lacked a function to reflect it and characterized the omission as "conservative." 2-ER-75 n.13; 2-ER-76 n.14. That footnote addressed the A01 glideslope relocation; the record continued to state that the extent of the other procedure modifications would be determined during design. 2-ER-29-30.

B. FAA approved procedure updates whose extent would be determined during design.

FAA gave the Cities two descriptions of the future procedure changes. It stated that "most" modifications were "expected to be minor," 2-ER-281, 2-ER-287, 2-ER-293, but it also stated that the "extent" of the relocations and modifications was "not known" and would be determined during design. 1-ER-6. FAA further stated that completion of an airspace study was not required to implement the Near-Term Projects. 3-ER-317. The FONSI/ROD approved the equipment relocations and resulting flight-procedure updates on that record. 1-ER-6.

On September 24, 2025, FAA approved the federal actions associated with the Near-Term Projects and concluded, with listed mitigation, that the Projects would not significantly affect the human environment. 1-ER-2-25. At the time of that decision, FAA had not discussed the NES response rates in answering Vashon; the traffic mitigation agreements were still being formalized; FAA's HAWKZ

response did not discuss the identified level-off segment west of the receptor grid or explain why the contour answered Vashon's request to compare actual HAWKZ operations with the model; and the extent of the approved procedure updates remained to be determined during design while the noise analysis assumed unchanged flight-track locations. 1-ER-6; 1-ER-15; 2-ER-75; 2-ER-76; 3-ER-308-12; 3-ER-318; 3-ER-362-65. FAA issued a FONSI/ROD rather than an EIS. 1-ER-22-25.

SUMMARY OF ARGUMENT

The Court should vacate the FONSI/ROD because each of Petitioners' four claims exposes the same narrow defect: FAA changed, left unresolved, or failed to connect a material premise on which its no-significant-impact finding depended.

First, FAA's own Neighborhood Environmental Survey supplied material contrary evidence about community response at the 65-DNL threshold FAA used to find no significant noise impact, but FAA never explained what that evidence meant for this Project's finding. By 2037, the Project would add 4,439 residents and 1,851 homes to the 65-DNL contour, 2-ER-55-56, while the NES estimated 65.7 percent highly annoyed, with a 95-percent confidence interval of 60.1 to 70.9 percent. 3-ER-327; 3-ER-340. FAA could keep DNL and its existing national framework, but once Vashon placed that modern survey before the agency, NEPA's scientific-integrity and reliable-data provisions and the APA required FAA to explain why the survey did not matter to this project-level FONSI/ROD. 42 U.S.C. § 4332(2)(D)–(E); *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

Congress's aviation-noise statute reinforces why the explanation mattered. It directs FAA to use a noise-measurement system reliably related to surveyed human reaction and an exposure system that accounts for intensity, duration, frequency, and timing. 49 U.S.C. § 47502(1)(A), (2). Petitioners seek project-level

explanations for the approvals FAA issued, not a judicial rewrite of national noise policy, flight paths, traffic designs, or procedure updates.

Second, FAA found significant traffic impacts and relied on mitigation to eliminate them but never explained why its final construction-time mechanism replaced the pre-decision agreements its analysis said would contain the specific mitigation terms. FAA itself classified Category 1 intersection impacts as significant and relied on mitigation to remove that significance. 2-ER-58; 2-ER-63. Appendix L stated that written agreements with each responsible jurisdiction, containing the specific mitigation terms, would be finalized before the FONSI/ROD. 2-ER-181. The FONSI/ROD acknowledged that those agreements were still being formalized. 1-ER-15. FAA imposed a construction-time condition tied to applicable regulations, standards, or agreements, 1-ER-18, but never explained why that different mechanism supplied equivalent implementation assurance.

Third, FAA used the model's output to reject Vashon's request to validate the model's route-specific HAWKZ inputs. FAA said observed track location, density, width, and utilization informed the model. 2-ER-74; 2-ER-78. Vashon asked FAA to compare actual HAWKZ arrivals over North Vashon with the track and profile assumptions used in that model. 3-ER-310-12. FAA answered principally that Vashon lay outside the resulting 65-DNL contour. 3-ER-312. But

FAA's own October 2022 data identified a HAWKZ7 level-off west of the receptor grid used to calculate that contour. 3-ER-318; 3-ER-362-65. That fact does not prove AEDT omitted the aircraft. It matters because the contour was model output, while Vashon's concern was whether the route-specific inputs represented the operations FAA's own data showed. And because FAA carried the 2022 flight-track representation forward into the 2037 Proposed Action analysis, which forecast 35,018 additional annual operations, 2-ER-65; 2-ER-76, the unanswered validation question bore on the Project analysis itself. FAA never explained that connection.

Fourth, FAA approved later-defined flight-procedure changes without establishing that they fit its noise model's unchanged-track premise or reserving them for later review. FAA modeled future noise on the premise that flight-track locations would remain unchanged yet approved resulting flight-procedure updates for Projects A01 through A10 whose extent would be determined during design. 1-ER-6, 2-ER-29-30, 2-ER-75, 2-ER-76. The Runway 34R footnote addressed one bounded vertical change and called its omission conservative, but it did not establish that the other approved updates preserved the model's unchanged-track premise. FAA never determined whether that premise applied to the remaining updates and neither bounded them nor clearly reserved them for a later environmental decision.

Each error sits on a decisional hinge, not a harmless side issue: an unexplained noise screen that FAA used to find no significant operational-noise effect; mitigation relied on to erase impacts FAA had already classified as significant; a contour invoked without explaining why it answered Vashon's route-specific HAWKZ request; and later-defined procedure updates approved without determining whether they fit the very model the project-wide noise finding rested on.

Petitioners expressly seek vacatur, not remand without vacatur. Vacatur would not terminate existing Airport operations. It would set aside the challenged environmental approval for the incremental Near-Term Projects while FAA reconsiders the decision. 1-ER-24. *WildEarth Guardians v. U.S. Dep't of Agric. Animal & Plant Health Inspection Serv. Wildlife Servs.* illustrates the remedy where an Environmental Assessment ("EA") and FONSI lack a reasoned explanation addressing material evidence bearing on the agency's environmental conclusion. 135 F.4th 717, 736–39 (9th Cir. 2025). That relief does not require the Court to pick a technical outcome. It requires only that FAA supply the missing explanations and decide whether a revised EA supports a FONSI or an EIS is required.

STANDING

Petitioners support standing with declarations and record evidence. Article III requires concrete injury fairly traceable to the challenged action and likely redressable by a favorable decision. A procedural-injury plaintiff must show a protected concrete interest and a reasonable probability that the challenged action threatens it. *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 560–61 (1992); *City of Culver City v. FAA*, 167 F.4th 1260, 1264–65 (9th Cir. 2026). Vashon's members face additional noise on the same routes that already disrupt their homes, farms, and acreage, and the Cities face additional burdens on their own property, infrastructure, staff, and budgets. Because all Petitioners seek the same relief, vacatur of the September 24, 2025, FONSI/ROD and remand for lawful reconsideration, the Court need find only one Petitioner with standing for each claim. *See Rumsfeld v. Forum for Acad. & Institutional Rts., Inc.*, 547 U.S. 47, 52 n.2 (2006). But that shortcut applies only within a claim. Standing must independently exist for each claim and form of relief. *Davis v. FEC*, 554 U.S. 724, 734 (2008). As shown below, at least one Petitioner independently establishes standing for each claim.

I. Vashon has standing because FAA approved more operations on the same routes that already disturb its members' homes and outdoor use.

A. The additional overflights threaten Vashon members' concrete use and enjoyment of their homes, farms, and acreage.

Vashon has associational standing through members David Goebel and Robert K. Harmon. Both members have standing in their own right. Vashon's asserted interests are germane to its purpose of protecting Vashon and Maury Islands from excessive commercial-aviation noise. The record-based relief sought here requires no individualized member participation. *Hunt v. Wash. State Apple Advert. Comm'n*, 432 U.S. 333, 343 (1977). Goebel Decl. ¶¶ 1–3, 18–19. Harmon Decl. ¶¶ 1, 12–13. Both were members when Vashon petitioned for review and remain members. Goebel Decl. ¶ 1. Harmon Decl. ¶ 1.

Both members will remain exposed during the period of the challenged Projects. Goebel owns his North Vashon home and intends to remain there for the foreseeable future, including during the years in which FAA forecasts the additional operations. Goebel Decl. ¶ 5. Harmon likewise owns his Gorsuch-area home and intends to continue living there for the foreseeable future. Harmon Decl. ¶ 2.

Goebel has lived at his North Vashon home since 1998 and uses his 21-acre property daily for work, sleep, conversation, caring for horses, walking, and other outdoor activities. Goebel Decl. ¶¶ 5–6. Westside-downwind arrivals repeatedly

pass over or immediately adjacent to the property, interrupt his concentration more than one hundred times during south-flow days, disrupt outdoor use, and disturb sleep. *Id.* ¶¶ 7–8. Those effects on his home, work, sleep, and outdoor activities are concrete and particularized.

Harmon supplies the same kind of injury at a different location. He has lived on Vashon or Maury Island since 1998, owns his current Gorsuch-area home, and regularly uses its yard, deck, and garden. Harmon Decl. ¶¶ 2–3. He observes approximately one hundred overflights on a representative day; they interrupt conversations and music and disturb his sleep. *Id.* ¶¶ 4–5.

B. FAA's own forecasts tie the threatened increase directly to this FONSI/ROD.

The threatened increase is not attributed merely to preexisting flight procedures. FAA's Proposed Action-versus-No Action comparison attributes 8,755 additional annual aircraft operations in 2032 and 35,018 in 2037 to the approved Near-Term Projects. Final EA Appendix A, Table 6, 2-ER-65. FAA describes the 2037 difference as approximately 96 additional operations on an average annual day. Noise Technical Report at 2-ER-77. FAA also expects the Proposed Action operations to use the same flight-track locations as the 2022 existing condition because the projects propose no track changes. *Id.* at 2-ER-75, 2-ER-76.

FAA's own forecasts connect the approved Projects to additional overflights on the routes affecting Vashon's members. Existing arrivals already produce the

disturbances Goebel and Harmon describe. FAA attributes substantial additional operations to the Near-Term Projects and expects future flight-track locations to remain unchanged. Both members reasonably expect some of those additional arrivals to use the existing routes affecting their homes. Goebel Decl. ¶¶ 7, 9, 13–15; Harmon Decl. ¶¶ 7–10. Neither assumes that every additional operation will pass overhead. Goebel Decl. ¶ 15; Harmon Decl. ¶ 10. The agency's action-versus-no-action forecast, its same-track assumption, and the members' route-specific experience together establish a reasonable probability that this FONSI/ROD will increase the frequency or duration of disturbances they already experience.

City of Culver City confirms standing here rather than defeating it. There, the timely challenged 2018 amendments did not change flight paths, flight numbers, or aircraft types, and Malibu's declaration tied its asserted increase in flights and noise only to earlier procedures. 167 F.4th at 1262, 1265. Culver City submitted no declaration at all. *Id.* at 1265. Here, by contrast, the challenged September 2025 FONSI/ROD itself approves projects that FAA forecasts will add operations, and two member declarations connect that project-specific increment to existing routes affecting their homes, farms, and acreage. Goebel Decl. ¶¶ 13–15; Harmon Decl. ¶¶ 7–10.

The same evidence connects Vashon's concrete interests to its two procedural claims. Comment 037 contained both Vashon's challenge to FAA's 65-

DNL noise-significance framework and its route-specific HAWKZ/AEDT modeling concern, and FAA reproduced and answered the comment. Goebel Decl. ¶ 4. 3-ER-304-12. The NES claim concerns the standard FAA used to decide whether the additional operations required further analysis or mitigation. The HAWKZ/AEDT claim concerns FAA's modeling of arrivals over the island and its response to the route-specific concern. FAA acknowledged that HAWKZ passes over Vashon and that it created no custom profile for that route. Goebel Decl. ¶¶ 4, 9. Harmon Decl. ¶ 6. 3-ER-312. NEPA's procedures protect both members' concrete interests in having FAA evaluate the project-attributable noise threatening their use and enjoyment of their homes. *See City of Culver City*, 167 F.4th at 1264–65.

C. Vacatur and lawful reconsideration could reduce the threatened increase in Vashon members' injuries.

Vacatur would not eliminate existing operations, and Vashon does not claim otherwise. Goebel Decl. ¶ 16; Harmon Decl. ¶ 11. It would require FAA to reconsider the Near-Term Projects lawfully, and on remand FAA could withhold approval, approve fewer or differently phased projects, or impose conditions or mitigation that reduce additional operations or noise effects. A procedural-injury plaintiff need not prove a different substantive result; the possibility that lawful compliance could influence the decision and reduce the threatened injury is sufficient. *Cantrell v. City of Long Beach*, 241 F.3d 674, 682 (9th Cir. 2001).

II. The Cities have standing because the approved projects threaten their own property, infrastructure, and municipal resources.

The Cities have standing because the approved Projects threaten their own proprietary and managerial interests. Municipalities may protect proprietary interests as varied as their responsibilities, powers, and assets, including municipal property and resources. *City of Sausalito v. O'Neill*, 386 F.3d 1186, 1197-98 (9th Cir. 2004). The Cities rely on injuries to their own assets and operations, not *parens patriae* standing.

A. Additional aircraft operations threaten concrete City property and programs.

Each City follows the same standing chain: it identifies City-owned, operated, or leased property and the present effects on that property or on committed municipal resources. FAA forecasts additional operations on the existing tracks serving it. And the declarations explain how those additional operations will further impair the property's intended use or management. These are injuries to the Cities' own assets and operations, not abstract interests shared with the public. FAA itself identified numerous Burien and SeaTac parks and trails within the general study area. Final EA at 2-ER-43.

Burien owns or operates parks, trails, a wetland, and a community art center and leases a Public Works and Parks Maintenance facility from the Port. Larson Decl. ¶¶ 3–5. City staff report recurring, location-specific aircraft-noise

interference at several of those properties, including Southern Heights Park, which lies directly below a mapped existing flight track, and Moshier Community Art Center, where aircraft noise interferes with instruction and creative work. *Id.* ¶¶ 6–7. FAA forecasts additional operations on existing tracks and a larger 2037 noise contour, creating a reasonable probability of additional interference with Burien's use and management of its property. *Id.* ¶¶ 8–10; 2-ER-75, 2-ER-76, 2-ER-77.

The City of SeaTac owns or maintains Angle Lake Park and Nature Trail, SeaTac Des Moines Creek Park, Riverton Heights Park, and several trails and shared-use paths. Young Decl. ¶¶ 3–5; 2-ER-43. City mapping analysis compared those properties with FAA's 2032 Proposed Action contour and found that, except for Riverton Heights Park, each lies partly or wholly within it. Young Decl. ¶ 4 & Exs. A–B. Exhibit B is a May 2026 Washington State Environmental Policy Act ("SEPA") Draft EIS parks map used only to cross-check property locations, not as evidence from the challenged federal NEPA review. Existing operations are regularly audible, and additional operations threaten programs, communication, recreation, planning, and capital decisions. *Id.* ¶¶ 6–9. SeaTac also has concrete planning stakes in its proposed civic-campus site and emergency-services budget. *Id.* ¶¶ 11, 13.

Des Moines owns and manages waterfront, park, marina, trail, and recreational property. Caffrey Decl. ¶¶ 3–4. Aircraft are already regularly audible

at those properties and affect their event-rental use. *Id.* ¶ 4. Caffrey explains that additional aircraft-noise events would further diminish their quiet and recreational character and interfere with conversation and passive recreation. *Id.* ¶¶ 6–7. FAA's additional-operations forecast and 2037 contour expansion create a reasonable probability of further impairment of the City's use and management of its property. *Id.* ¶¶ 5–7; 2-ER-75, 2-ER-76, 2-ER-77.

Those municipal interests are continuing, not temporary. Burien, SeaTac, and Des Moines each intend to continue owning or operating, maintaining, and investing municipal resources in the affected properties. Larson Decl. ¶ 5; Young Decl. ¶ 5; Caffrey Decl. ¶ 4.

B. Project-generated traffic and mitigation impose additional burdens on City infrastructure, staff, and budgets.

The Near-Term Projects also impose concrete transportation burdens on the Cities. FAA identifies degraded service or added delay at named intersections in each City's jurisdiction and mitigation requiring signals, lane work, roundabouts, trail work, or proportionate payments. Final EA at 2-ER-58-62. The resulting municipal work is not a generalized objection to traffic.

For Burien, FAA projects project-caused failure or added delay at named intersections and identifies signal, lane, trail, and other improvements. 2-ER-58, 2-ER-60-61; Larson Decl. ¶¶ 13–15. Those improvements require project management, technical review, permitting, right-of-way and construction

coordination, and later operation or maintenance. Port funding does not eliminate Burien's staff and resource commitments. Larson Decl. ¶¶ 12–16.

For SeaTac, FAA identifies project-generated degradation or delay at named intersections and mitigation involving City signals, roads, roundabouts, and trails. 2-ER-58, 2-ER-60-62; Young Decl. ¶¶ 14–16. The work adds engineering, permit review, coordination, inspection, documentation, monitoring, and potential maintenance beyond baseline duties. *Id.* ¶¶ 17–18.

For Des Moines, FAA identifies project-generated delay at Pacific Highway S./S. 216th Street and Pacific Highway S./SR 516. 2-ER-59; Caffrey Decl. ¶ 10. The Port's proportionate payment under the City's traffic-impact-fee schedule mitigates an underlying project effect, but it does not erase the City's incremental planning, fee administration, review, coordination, and infrastructure responsibilities. Those project-specific responsibilities consume City staff and administrative resources and affect the operation and planning of City transportation facilities even where the Port pays a proportionate mitigation share. 2-ER-61; Caffrey Decl. ¶¶ 9–12.

The Cities' injuries are likewise redressable. Vacatur would not eliminate existing Airport operations or municipal duties that arise independently of the Projects, and the Cities do not claim otherwise. Larson Decl. ¶ 17; Young Decl. ¶ 19; Caffrey Decl. ¶ 13. On remand, FAA could withhold approval, approve fewer

or differently phased projects, select or require different mitigation, or impose conditions that reduce additional operations, noise events, surface traffic, effects on City property, or project-generated municipal work. Larson Decl. ¶ 17; Young Decl. ¶ 19; Caffrey Decl. ¶ 13.

III. The challenged FONSI/ROD, not preexisting Airport activity, causes the threatened increase.

FAA itself supplies causation. Its action-versus-no-action comparison attributes 8,755 additional annual operations in 2032, 35,018 in 2037, and identified intersection effects to the Projects. 2-ER-65. 2-ER-58-62. FAA expects the additional operations to use existing tracks and attributes the 2037 contour expansion primarily to approximately 96 additional operations on an average annual day. 2-ER-75-77. The declarations identify City property already affected along those tracks and project-specific transportation work tied to the approval. Larson Decl. ¶¶ 6–10, 12–16. Young Decl. ¶¶ 6–9, 14–18. Caffrey Decl. ¶¶ 4–7, 9–12.

That evidence supplies what *City of Culver City* found missing. Petitioners identify specific facts showing a reasonable probability that the timely challenged action itself threatens their concrete interests. 167 F.4th at 1264–65. The claim-specific map is straightforward. Vashon's member injuries support Argument I's project-wide noise-significance challenge and Argument III's HAWKZ/AEDT modeling challenge. The Cities' proprietary noise injuries independently support

Argument I and Argument IV's flight-procedure/model-premise challenge. Their infrastructure and resource injuries support Argument II's traffic-mitigation claim.

Petitioners' injuries also fall within NEPA's zone of interests. Vashon members assert injury to their use and enjoyment of their homes and outdoor environment from project-attributable aircraft noise. The Cities assert injury to their own parks, trails, transportation property, infrastructure, and environmental and land-management interests. Those are interests NEPA's procedures protect. *See City of Las Vegas v. FAA*, 570 F.3d 1109, 1114 (9th Cir. 2009).

STANDARD OF REVIEW

The Court reviews FAA's FONSI/ROD under the Administrative Procedure Act, which supplies the standard of review for NEPA claims brought under 49 U.S.C. § 46110. The Court must hold unlawful and set aside agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). Section 46110(c) separately provides that FAA's factual findings are conclusive when supported by substantial evidence. These standards do not authorize the Court to reweigh evidence or substitute its technical judgment for FAA's. They do require FAA to examine the relevant information and articulate a satisfactory explanation connecting the facts it found to the decision it made. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983); *Ctr. for Cmty. Action & Env't Just. v. FAA*, 61 F.4th 633, 639-40 (9th Cir. 2023) ("*Center for Community Action*").

NEPA review is substantially deferential. *Seven County Infrastructure Coalition v. Eagle County* instructs courts not to second-guess reasonable, fact-dependent agency choices about the scope, methodology, level of detail, or environmental consequences of a proposed action. 605 U.S. 168, 180–85 (2025). But *Seven County* also identifies the judicial question: whether the agency's final action was "reasonable and reasonably explained." *Id.* at 180, 185. While deference leaves FAA broad latitude to make technical judgments, it does not

permit a reviewing court to supply a missing rationale or infer an analytical step that the agency itself did not articulate. *See State Farm*, 463 U.S. at 43; *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947).

That distinction defines these petitions. Petitioners do not ask the Court to choose a noise metric, recalculate FAA's noise model, design traffic mitigation, or select flight procedures. They challenge whether FAA supplied a contemporaneous explanation connecting material record evidence and the analytical premises it chose to the FONSI/ROD it issued. Courts defer to reasoned technical judgments. *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 377–78 (1989). Deference cannot substitute for the reasoning necessary to determine whether such a judgment was actually made.

The same division of responsibility applies to NEPA's statutory requirements. Congress directed agencies to "ensure the professional integrity, including scientific integrity," of environmental analysis and to "make use of reliable data and resources." 42 U.S.C. § 4332(2)(D)–(E). The Court independently determines the meaning of those statutory commands. *Loper Bright Enterprises v. Raimondo*, 603 U.S. 369, 391–92 (2024). FAA retains substantial discretion over the reasonable technical means by which it satisfies them. See *Seven County*, 605 U.S. at 180–85; *Marsh*, 490 U.S. at 377–78. Petitioners accordingly seek enforcement of the statutory and APA requirements for reasoned decision-making,

not judicial selection among competing scientific methods.

The Ninth Circuit's FONSI cases reinforce that framework. An EA need not contain every detail that an EIS would contain, but it must be sufficient to establish the reasonableness of the agency's decision not to prepare an EIS. *Center for Community Action*, 61 F.4th at 639–40. The question is thus not whether the Court would have conducted a different environmental analysis, but whether FAA's contemporaneous record supplies a reasonable explanation for the no-significant-impact determination it actually made.

Argument II applies the same APA standard to FAA's mitigation-dependent traffic finding. FAA may choose among reasonable mitigation measures and implementation mechanisms, and the Court does not design them. But where mitigation supplies the premise for concluding that an acknowledged significant effect will no longer be significant, FAA must have a reasonable basis for that prediction and must explain the basis on which it relied. *See National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 733–35 (9th Cir. 2001) ("*Babbitt*"), abrogated on other grounds by *Monsanto Co. v. Geertson Seed Farms*, 561 U.S. 139, 157 (2010); *Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 477 (9th Cir. 2000).

Review is confined to the reasons FAA gave when it acted. *Chenery*, 332 U.S. at 196. Whether any identified error was material and the remedy that follows

are addressed below.

ARGUMENT

I. FAA's FONSI/ROD Must Be Vacated Because FAA Never Explained Why Its Own Neighborhood Environmental Survey Did Not Affect the Project-Wide Noise Significance Finding.

FAA's own 2021 Neighborhood Environmental Survey ("NES") supplied material evidence bearing directly on the 65-DNL[1] component of FAA's significance screen, but FAA never explained what that evidence meant for this Project's no-significant-impact finding. At 65 DNL, the older FICON relationship estimated that 12.3 percent of people would be highly annoyed. The NES's national curve estimated 65.7 percent, with a 95-percent confidence interval of 60.1 to 70.9 percent. 3-ER-327; 3-ER-340. By 2037, the Proposed Action would add 1,851 homes and 4,439 residents to the 65-DNL contour. 2-ER-55-56. FAA nevertheless concluded that "no significant noise impact would occur" because the project-caused increase did not reach 1.5 DNL. 1-ER-13. The NES neither

[1] DNL, or day-night average sound level, is FAA's twenty-four-hour energy-average aircraft-noise metric, with a ten-decibel weighting applied to nighttime noise events. FAA Order 1050.1F provides that a significant aircraft-noise impact occurs when a project causes a 1.5-DNL or greater increase in a noise-sensitive area exposed—or newly exposed—to 65 DNL or more. FAA Order 1050.1F, Exh. 4-1; 2-ER-45; 2-ER-51. Thus, the 1.5-DNL component measures project-caused change, while the 65-DNL component identifies the exposure level at which that increment meets FAA's significance criterion.

disproved the 1.5-DNL increment nor established a new significance threshold. But because FAA used 65 DNL as the exposure level at which a 1.5-DNL project-caused increase becomes significant, FAA had to explain why its own modern evidence showing a dramatically different community response at that same exposure level did not affect this Project's no-significance finding.

Because FAA never supplied that project-level explanation, the FONSI/ROD lacks the reasoned basis NEPA and the APA require and should be vacated and remanded.

A. FAA relied on the 65-DNL/1.5-DNL screen to find that thousands of additional residents within the 65-DNL contour would not experience a significant project-caused noise impact.

FAA's no-significant-impact finding rested on Order 1050.1F's 65-DNL/1.5-DNL screen. For 2037, the Proposed Action would expand the 65-DNL contour by 0.66 square miles and add 1,851 housing units and 4,439 people within it. 1-ER-13; 2-ER-55-56. FAA then concluded that no significant impact would occur because the project-caused increase at noise-sensitive areas did not reach the 1.5-DNL trigger. 1-ER-13.

The two components of FAA's screen serve distinct functions. The 1.5-DNL component measures the project-caused increment. The 65-DNL component

determines where that increment can count as significant. The NES did not purport to determine whether a 1.5-DNL increment is the correct measure of change. It bore directly on the 65-DNL threshold because it measured contemporary community reaction at 65 DNL, the exposure level FAA used to separate potentially significant residential noise effects from effects that do not qualify under the screen. 3-ER-334-36; 3-ER-340.

That distinction addresses FAA's likely contention that Petitioners conflate total exposure with incremental change. Petitioners rely on the NES to challenge the unexplained use of 65 DNL as the threshold, not to claim that the survey independently disproved the 1.5-DNL increment.

Congress made "surveyed reactions of individuals to noise" relevant to the reliability of FAA's aircraft-noise system. It directed FAA to establish a measurement system with "a highly reliable relationship between projected noise exposure and surveyed reactions of individuals to noise." 49 U.S.C. § 47502(1)(A). FAA's Part 150 regulation states the same objective. 14 C.F.R. § 150.1. Those provisions do not themselves establish a new NEPA significance threshold or require FAA to adopt the NES curve in this EA. They do, however, confirm why

the NES's changed exposure-response relationship was an important aspect of a decision that used 65 DNL to determine noise significance. NEPA likewise required scientific integrity and reliable data in the environmental document. 42 U.S.C. § 4332(2)(D)–(E). Nor does this claim require FAA to conduct new scientific research. *See* 42 U.S.C. § 4336(b)(3). The NES was FAA's own completed research, published before the Final EA and placed before the agency during the comment process. 3-ER-307-10; 3-ER-334-40. Petitioners ask FAA to explain the significance of data it already possessed, not to commission a new study.

Comm. for a Better Arvin v. U.S. EPA does not convert that point into a request to rewrite the statutes. There, the court rejected an agency's attempt to add an unexpressed feasibility exception to the Clean Air Act. *Comm. for a Better Arvin v. U.S. EPA,* No. 24-7270, slip op. at 12–17 (9th Cir. Aug. 5, 2026). Petitioners ask for the opposite. They do not ask the Court to add an NES threshold to NEPA or § 47502. They ask the Court to enforce the requirements Congress actually wrote—scientific integrity and reliable data—and the APA requirement that FAA explain why its own materially contrary evidence did not affect this

project-level FONSI/ROD.

B. Vashon preserved the NES issue, and the city comments show why FAA's unexplained reliance on the 65-DNL framework mattered on a project-wide basis.

Vashon preserved the NES issue by giving FAA the survey and tying it to the Project's 65-DNL significance finding. Vashon placed the NES before FAA during the comment period and argued that FAA's updated research required FAA to explain continued reliance on the traditional 65-DNL framework for this Project. 3-ER-304-13. That was not a generalized objection to aircraft noise or a demand that FAA adopt an outside study. The NES was FAA's nationwide survey of contemporary community response to aircraft-noise exposure. 3-ER-334-36. It generated a new national exposure-response curve using the same DNL metric FAA applied in the EA. 3-ER-334-36; 3-ER-340.

The city comments confirm that the same issue mattered project-wide, because FAA used the identical unexplained 65-DNL framework to answer community noise concerns across multiple jurisdictions.

Because Vashon tied the NES to FAA's significance finding, NEPA's hard-look requirement required FAA to confront that material scientific criticism. *See Marsh*, 490 U.S. at 378; *Center for Biological Diversity v. U.S. Forest Service*, 349

F.3d 1157, 1167–69 (9th Cir. 2003) (holding that an EIS had to disclose and respond to scientific evidence directly challenging the scientific basis of its analysis). Those authorities did not require FAA to adopt the NES as a new threshold. They required FAA to engage the material contrary scientific evidence and explain its project-level conclusion.

The NES difference was substantial enough to require a project-level response. At 65 DNL, the historical FICON curve estimated 12.3 percent highly annoyed, while the NES estimated 65.7 percent highly annoyed, with a 95-percent confidence interval of 60.1 to 70.9 percent. 3-ER-327; 3-ER-340. The NES thus indicated that the share of people highly annoyed at FAA's threshold level was more than five times the historical estimate. *Id.* Because the FONSI/ROD used that threshold to evaluate an action that would place 4,439 additional residents within the 65-DNL contour, the comment squarely presented the relationship among the new science, this Project, and FAA's significance finding. 1-ER-13; 3-ER-304-13.

FAA was not required to agree with Vashon or to respond separately to every sentence of its comment. An EA is sufficient when the agency addresses the comment's substantive concern and the basis for rejecting it can be discerned from

the record. *American Wild Horse Campaign v. Bernhardt*, 963 F.3d 1001, 1011–12 (9th Cir. 2020). But that rule presupposes that the agency addressed the concern. Here, no part of General Response 12 discussed the NES result, identified a methodological limitation, or explained why the changed relationship between 65 DNL and community response did not matter to this Project's significance finding. 2-ER-264.

Vashon also separately preserved the route-specific HAWKZ modeling concern, which Argument III addresses. FAA expressly responded to that comment. 3-ER-312. That preservation point matters here only to keep the arguments distinct. This Argument concerns FAA's unexplained use of the 65-DNL threshold in the project-level significance finding, while Argument III addresses FAA's separate use of the contour to reject Vashon's HAWKZ-specific modeling concern.

C. FAA explained why its national policy remained unchanged, but not why the NES was immaterial to this Project's FONSI/ROD.

General Response 12 addressed national policy, not the project-level NES problem. FAA said DNL and 65 DNL would remain the official metric and threshold while its national policy review proceeded. 2-ER-264. It did not explain

why the NES's 65-DNL response evidence was immaterial to this Project's significance finding.

FAA's responses to the city comments followed the same pattern. FAA invoked Order 1050.1F's 65-DNL/1.5-DNL significance threshold and redirected several noise-related concerns to the Part 150 process, again without addressing the NES evidence. 2-ER-279-82; 2-ER-285-87; 2-ER-291-94.

That answered why FAA continued to apply its existing framework. It did not answer why the changed relationship between 65 DNL and community response did not matter where the Project would add thousands of residents inside the contour defined by that threshold. 1-ER-13; 2-ER-264; 3-ER-340.

FAA cannot cure that omission with a litigation rationale. A reviewing court must evaluate the explanation the agency gave when it acted. *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947). The contemporaneous record explains the status of national policy, but it does not connect the NES evidence to the finding that this Project would have no significant noise impact.

The unexplained NES omission was material because the challenged screen supplied the reason FAA found no significant operational-noise effect. A reasoned

response to the NES could affect the scope of disclosure, mitigation, conditions, or the FONSI-versus-EIS determination.

II. FAA Relied on Mitigation to Eliminate Significant Traffic Impacts Without Explaining the Change in Its Implementation Mechanism.

Appendix L stated that written traffic-mitigation agreements would be "finalized before" the FONSI/ROD and would contain the "specific terms and mitigation requirements." 2-ER-181. The FONSI/ROD instead acknowledged that those commitments were still being formalized and imposed a construction-time condition tied to regulations, standards, or agreements in place when construction occurs. 1-ER-15, 1-ER-18.

That change matters because mitigation changed FAA's bottom line from significant Category 1 impacts to no significant impacts, and the record does not explain why the later mechanism supplied equivalent implementation assurance. 2-ER-58, 2-ER-63.

Examples include Intersections 23 and 24, where WSDOT identified significant delay concerns and the Final EA identified roundabouts, and Intersection 33, where WSDOT identified a complicated jurisdictional issue and the Final EA identified a signal. 3-ER-319; 2-ER-58-62.

A. FAA found Category 1 impacts significant and reached no significance only after mitigation.

FAA's own finding supplies the decisional hinge. Category 1 intersections are locations that would satisfy the applicable mobility standard without the Projects but fail because of project traffic. FAA identified four such intersections in 2032 and eight in 2037 and expressly determined that "Category 1 intersections were considered significant impacts and require mitigation." 2-ER-58. FAA then found that, "[w]ith the proposed mitigation, none of the impacted intersections would experience a significant impact." 2-ER-63. This claim therefore does not ask the Court to decide whether the congestion is significant. FAA already answered that question. The issue is whether FAA reasonably explained the mitigation premise that changed the result.

NEPA does not categorically require final, signed mitigation agreements before approval. *See Nat'l Parks & Conservation Ass'n v. U.S. Dep't of Transp.*, 222 F.3d 677, 681 n.4 (9th Cir. 2000) ("*Department of Transportation*"); *Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 473–77 (9th Cir. 2000). The issue here is whether FAA reasonably explained why the mechanism it adopted supplied the assurance its own project-specific analysis had assigned to

pre-decision written agreements.

FAA's operative NEPA procedures make implementation assurance part of the FONSI inquiry. The Final EA expressly states that this review, begun in July 2018, relies on FAA Order 1050.1F. 2-ER-28 n.1; 2-ER-29. For a mitigated FONSI, Order 1050.1F requires FAA to identify measures sufficient to reduce potential impacts below applicable significance thresholds and to have "ensured commitments to implement these measures." FAA Order 1050.1F, Paragraph 6-2.3.a.(4). The Order also states that the FONSI should reflect coordination of mitigation commitments with, and "consent and commitment from," entities having authority to implement specific measures. *Id.*, Paragraph 6-3.b.(3). And where mitigation is a condition of approval, FAA "should verify" before approval the authority to implement or enforce it, reasonably foreseeable funding, expected outcomes, and an appropriate implementation mechanism. *Id.*, Paragraph 4-4.c.(1)–(5). These provisions do not create a categorical signed-agreement requirement. They confirm only that implementation assurance is part of the basis for relying on mitigation to eliminate otherwise significant effects.

B. FAA's traffic analysis said written agreements with specific mitigation terms would be final before the FONSI/ROD, but the decision said they were still being formalized.

Appendix L identified the mechanism FAA expected to provide that assurance. It stated that the structure of mitigation agreements between the Port and each jurisdiction or agency would be formalized through written agreements, finalized before issuance of the FONSI/ROD, and would contain the "specific terms and mitigation requirements" agreed upon. 2-ER-181. That representation was project-specific. It tied the timing of the agreements to the very decision in which FAA would determine whether mitigation avoided significance.

The record shows why those terms were substantive rather than clerical. WSDOT identified Intersections 23, 24, and 33 as its highest-priority locations because the expected additional delays would be significant. 3-ER-319. WSDOT further explained that Intersection 33 would be the most complicated and would require a concept that mitigated SAMP impacts and was acceptable to both jurisdictions with authority over the intersection, WSDOT and SeaTac. *Id.* The Final EA later identified roundabout improvements for Intersections 23 and 24 and a signal improvement for Intersection 33. 2-ER-60-62. But naming the type of improvement did not fix the jurisdictional acceptance, design standards, cost

responsibility, timing, or implementation terms that determined whether the improvement could be carried out as assumed.

When FAA acted, however, the agreements were not final. After stating that, "[w]ith the proposed mitigation, none of the impacted intersections would experience a significant impact," it said mitigation had been coordinated with the jurisdictions and would be completed by 2032, but that the Port and local jurisdictions "are in the process of formalizing the mitigation commitments in a MOU with each of the jurisdictions." 2-ER-63. The FONSI/ROD likewise acknowledged that the commitments were still being formalized. 1-ER-15. FAA did not identify which material terms remained open, state that all substantive assent had already been secured, or explain why Appendix L's pre-FONSI benchmark no longer mattered.

FAA had the timing issue squarely before it. In response to SeaTac, FAA said it would prefer the Traffic Impact Mitigation Agreements to be signed before completion of the NEPA process but did not believe NEPA required that result. 2-ER-299. That general proposition is not disputed. But FAA's own project-specific traffic analysis said these agreements would be final before the FONSI/ROD and

would contain the specific mitigation terms. 2-ER-181. FAA's response to SeaTac did not reconcile that representation with the unfinished agreements or with the different implementation mechanism FAA ultimately adopted.

C. FAA's construction-time condition may ultimately suffice, but FAA never explained why it supplied equivalent implementation assurance.

FAA's strongest answer is the condition it placed in the FONSI/ROD. The order requires the Port to complete mitigation for Category 1, Category 2, and Category 3 intersections in accordance with each jurisdiction's applicable regulations, design standards, or agreement "in place at the time of construction." 1-ER-18. That is a meaningful commitment. It may ultimately provide adequate implementation assurance. Petitioners therefore do not argue that FAA adopted no traffic-mitigation plan or that the FONSI/ROD contains no mitigation condition.

The missing bridge is between that construction-time condition and Appendix L's pre-decision mechanism. FAA did not say that 1-ER-18 superseded the pre-decision agreement mechanism described in Appendix L, that all material jurisdictional terms had already been resolved, that remaining signatures were ministerial, or that compliance with future regulations, standards, or agreements provided equivalent certainty. Nor did it explain how a condition keyed to

whatever agreement is "in place at the time of construction" replaced written agreements that Appendix L said would contain the "specific terms and mitigation requirements" and would be final before the significance decision. 1-ER-18; 2-ER-181.

The mitigation tables do not cure that omission. The Final EA identifies proposed improvements and proportional-share contributions, and some entries forecast post-mitigation operating conditions. 2-ER-60-62. Those details strengthen FAA's case that the mitigation was more than aspirational. But Appendix L identified written agreements as the place where the parties would fix the specific terms and mitigation requirements. 2-ER-181. FAA could change that approach. What it could not do under reasoned decision-making was carry the no-significant-impact conclusion forward without explaining the change.

Because mitigation changed FAA's significance determination, the unexplained discrepancy was material.

III. FAA Could Not Reject Vashon's Route-Specific HAWKZ Validation Request by Pointing to the Model's Output Without Explaining Whether the Model Represented the Actual HAWKZ Operations Vashon Identified.

Vashon asked FAA to compare actual HAWKZ arrivals over North Vashon

with the track and profile assumptions used in its noise model. 3-ER-310-12. That request addressed inputs FAA itself said mattered, including observed track location, density, width, and utilization, which informed the model's representation of existing operations. 2-ER-74; 2-ER-78. FAA nevertheless answered principally by pointing to the resulting 65-DNL contour. 3-ER-312. FAA's own data made the unanswered validation question concrete. An October 2022 HAWKZ7 arrival included a level-off near longitude -122.4556, west of the receptor grid's -122.385218 boundary. 3-ER-318; 3-ER-362-65. That geographic fact does not establish that AEDT omitted the aircraft. It demonstrates why the model's output did not, without further explanation, answer Vashon's question whether the route-specific inputs represented the operations FAA's own data showed.

A. FAA's own modeling framework made actual HAWKZ track and profile data material to whether the model represented operations over Vashon.

FAA described the noise model as grounded in actual operations. The Noise Technical Report stated that consolidated tracks were developed from 2022 radar data, which supplied the "location, density, and width" of existing flight corridors. 2-ER-74. AEDT then distributed operations among a primary "backbone" track and adjacent dispersed tracks according to observed track density. *Id.* The Noise

Protocol likewise treated flight-track definition and location, as well as percentage of use, as model inputs based on eight specified months of 2022 EnvironmentalVue data "and previous studies." 2-ER-78. FAA then assumed that the Future (2037) Proposed Action would use the same flight-track locations as the Existing (2022) Condition. 2-ER-76.

The source of those track assumptions also warranted explanation once Vashon requested validation. FAA stated that track definition, location, and utilization rested on 2022 EnvironmentalVue data "and previous studies." 2-ER-78. The record contains an earlier FAA analysis of the same arrival system that used express HAWKZ routing allocations. 3-ER-360A. Those earlier allocations do not establish that the SAMP model copied them. But FAA never identified what, if anything, the "previous studies" contributed to the SAMP HAWKZ representation or explained how any inherited assumptions were checked against the 2022 operations that FAA said grounded the model. Vashon's request for an actual-versus-modeled comparison squarely presented that validation question. 3-ER-310-12.

Those choices made Vashon's concern relevant on FAA's own terms.

Vashon was not asking FAA—or the Court—to select a different noise model simply because it preferred another methodology. It asked FAA whether the model it chose actually represented the HAWKZ operations occurring over the island. 3-ER-310-12. Because FAA itself identified observed track location, density, width, and utilization as inputs to that model, 2-ER-74; 2-ER-78, comparing those inputs with actual HAWKZ operations bore directly on whether the modeled condition corresponded to the operations the model purported to represent.

The issue was not confined to the 2022 baseline. FAA expressly carried the Existing 2022 flight-track locations forward into the 2037 Proposed Action analysis, while forecasting 35,018 more annual operations with the Projects than without them. 2-ER-65; 2-ER-76. This argument does not depend on showing that all, or any particular percentage, of those additional operations would use HAWKZ. What matters is that FAA reused the 2022 track representation as a premise of its future-project analysis. Because FAA carried that representation forward into the Proposed Action analysis, Vashon's route-specific validation question bore on the model used to evaluate the Project's additional operations, not merely on historical noise.

The APA requires FAA to examine the relevant information and articulate a satisfactory explanation connecting the facts it found to the decision it made. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). That obligation remains when the subject is technical. Courts do not choose among reasonable scientific methodologies, but deference presupposes that the agency actually exercised its technical judgment and supplied a reasoned basis for the conclusion under review.

This Court applied that distinction to FAA noise analysis in *City of Los Angeles v. FAA*, 63 F.4th 835, 849–51 (9th Cir. 2023). FAA there analyzed construction noise using a methodology that effectively assumed construction equipment would operate one piece at a time. The Court did not calculate the correct noise level itself or prescribe a different model. It nevertheless held the analysis deficient because the conclusion rested on an unsupported operational premise and thus failed to account for an important aspect of the noise problem. *Id.* at 849–51. The relevant principle applies here without requiring the Court to decide any disputed matter of acoustics: technical deference does not require a court to accept a model output as an answer to a challenge concerning an input or

assumption when FAA has not explained the connection between the two.

Nor does Vashon's claim impose a duty to conduct new technical research. NEPA permits agencies to use reliable data sources and does not ordinarily require new scientific or technical research unless the statutory conditions are satisfied. 42 U.S.C. § 4336(b)(3). Vashon asked FAA to use data FAA already possessed. 3-ER-310-12. FAA itself said observed 2022 radar and EnvironmentalVue data informed the location and use of the modeled tracks. 2-ER-74; 2-ER-78. The issue is therefore not whether FAA should have commissioned a new study. It is whether FAA reasonably explained the relationship between the existing operational data and the modeling assumptions Vashon specifically questioned.

The administrative record supplied additional reason to address that relationship. An earlier FAA analysis of the same arrival system, the Greener Skies EA, modeled a selected North Vashon receptor and projected a 1.9-DNL Proposed-Action increase in each study year, although absolute exposure remained below 45 DNL. 3-ER-361. FAA later described the post-Greener Skies corridor as a "NextGen Narrowed Approach Path." 3-ER-357. Those earlier materials neither establish the SAMP noise increment, nor show that the SAMP model copied the

Greener Skies model. They instead provide context for why Vashon's request concerning the actual location and vertical profile of HAWKZ arrivals was not an abstract objection to modeling methodology.

B. FAA answered Vashon with the model's 65-DNL contour but never addressed the model-validation question Vashon raised.

FAA was not required to answer separately every sentence, study, or data point in a public comment. *See In Def. of Animals v. U.S. Dep't of the Interior*, 751 F.3d 1054, 1072–73 (9th Cir. 2014). But those cases do not permit an agency to substitute a different answer for the substantive concern a material comment presents.

The distinction is illustrated by *American Wild Horse Campaign v. Bernhardt*, 963 F.3d 1001, 1011–12 (9th Cir. 2020). There, the agency did not discuss every piece of information urged by the commenters, but the Court upheld its analysis because the agency had considered and addressed the relevant factor raised by the omitted information and explained why additional information was unavailable. *Id.* Similarly, *In Defense of Animals* rejected a demand for a detailed response to every contrary scientific study where the agency's environmental assessment had addressed the substantive scientific issue and supplied the basis for

its conclusion. 751 F.3d at 1072–73.

FAA's response here is different. Vashon did not merely submit competing literature and complain that FAA failed to discuss each source. It asked FAA to compare the model's treatment of HAWKZ with actual HAWKZ operations reflected in FAA's flight data. 3-ER-310-12. That went to whether the operational conditions FAA said informed its model were represented in the model.

FAA acknowledged that no custom profile had been developed for the HAWKZ RNAV arrival. 3-ER-312. It then stated that aircraft over Vashon generally remained twenty to twenty-eight nautical miles from the runway, while FAA modeling guidance begins arrival receptors at the beginning of the modeled profile or ten nautical miles from the runway threshold. *Id.* Finally, FAA explained that Vashon lies outside, and not close to, the 65-DNL contour and that differences between standard and actual altitudes over Vashon therefore would not normally be studied because they would not affect the location of that contour. *Id.*

Those points may bear on FAA's ultimate conclusion that any HAWKZ modeling difference would not affect the 65-DNL contour. But FAA did not connect that conclusion to the model-validation concern Vashon raised. It did not

identify a comparison between actual HAWKZ operations and the modeled track or profile. It did not explain that such a comparison had been performed elsewhere. And it did not explain why the location of the 65-DNL contour made validation of the route-specific inputs unnecessary when the contour itself was the model output Vashon had questioned.

The judicial task is limited. The Court can defer to a technical explanation FAA actually gave. It cannot supply one now. See *State Farm*, 463 U.S. at 43; *SEC v. Chenery Corp.*, 332 U.S. 194, 196 (1947).

C. FAA's representative-arrival check did not validate HAWKZ operations over Vashon, leaving the route-specific modeling concern unresolved.

FAA did conduct a separate comparison between an AEDT standard profile and radar data. But that comparison did not address the route-specific concern Vashon presented.

In the Air Quality Protocol, FAA stated that radar data confirmed that AEDT's standard profiles adequately represented actual altitude, speed, and thrust at the Airport. 2-ER-69. The illustrated comparison, however, used one week of Alaska Airlines B737-900 arrivals to Runway 16R and compared those operations with AEDT's 737800 standard arrival profile. 2-ER-70. The exhibit did not

identify HAWKZ or Vashon. *Id.* It therefore demonstrated that FAA had performed one type of actual-versus-modeled comparison, but it did not establish that FAA tested the route and operating condition Vashon specifically identified.

That circumstance reinforces, rather than eliminates, the missing explanation. FAA therefore cannot characterize Vashon's request as demanding a different methodology or new research. FAA itself treated an observed-radar-versus-standard-profile comparison as an appropriate way to test whether AEDT's standard profile represented actual operations. 2-ER-69-70. Vashon asked FAA to address that same validation question for the route and operating condition it identified. 3-ER-310-12. FAA's response identified no such comparison and did not explain why the Airport-wide comparison answered the HAWKZ-specific concern. 3-ER-312.

The omission was material because FAA used the 65-DNL contour not merely as background information but as its reason for rejecting Vashon's route-specific modeling concern. 3-ER-312. A reasoned comparison with the existing operational data could have produced any of several decision-relevant results: it could have confirmed that the SAMP model adequately represented HAWKZ

operations; it could have led FAA to adjust a track or profile representation; or it could have supplied a technical explanation demonstrating that any difference was too small or too remote to affect the Project's noise analysis or the FONSI. Petitioners do not ask the Court to predict which result FAA would reach.

What FAA could not do was use the contour as the answer to a challenge concerning whether the model adequately represented the operations producing that contour, without explaining the analytical step connecting the two. Because FAA never supplied that explanation, the Court cannot determine whether the response reflects a reasoned technical judgment to which deference is owed or simply assumes the answer to the question Vashon raised. The FONSI/ROD should therefore be vacated and remanded so FAA can make that determination in the first instance.

IV. FAA Approved Later-Defined Flight-Procedure Changes Without Establishing That They Fit Its Noise Model's Unchanged-Track Premise or Reserving Them for Later Environmental Review.

A. FAA approved procedure updates as part of the action while leaving their extent undefined.

The procedure updates were part of the approved action, but FAA never explained whether they fit the noise model's unchanged-track premise. FAA listed

approval of equipment relocations "as well as any resulting flight procedures updates from the relocation of navigational aids" among the federal actions necessary for the Proposed Action. 1-ER-6. Yet it also stated that the "extent" of those relocations and modifications was "not known" and would be determined during design and later said only that "most" modifications were "expected to be minor." 1-ER-6; 2-ER-281.

Seven County does not place those approved updates outside NEPA review. That decision permits agencies to exclude effects of separate upstream or downstream projects, especially those outside the agency's regulatory authority, but it keeps NEPA focused on the "proposed action" under review. 605 U.S. at 186–90. Petitioners do not ask FAA to predict a future regional airspace redesign. They challenge FAA's treatment of procedure changes the FONSI/ROD itself approved as part of the Near-Term Projects.

Project A01 illustrates the point. It relocates the Runway 34R glideslope antenna, adjusts the glideslope angle and precision approach path indicator, and amends flight procedures to accommodate the change. 2-ER-30. Those are components and direct operational consequences of the approved action, not

effects caused only in a "but for" sense by a later independent project. FAA controls the equipment relocation and resulting procedure updates, and the order directs the federal actions to proceed. 1-ER-6, 1-ER-24.

The mismatch is straightforward. FAA modeled future noise on the premise that flight-track locations would remain unchanged. 2-ER-75; 2-ER-76. It then approved later-defined procedure updates without determining whether that premise applied to them. FAA could have bounded the updates, confirmed that they preserved the modeled tracks, or reserved any update outside the modeled premise for later environmental review. The record does none of those things.

Nor did FAA reserve these updates for a later environmental decision before implementation. The FONSI/ROD does not state that procedure approval is withheld pending later review. It lists approval of the equipment relocations and resulting procedure updates among the federal actions necessary for the Proposed Action and directs "that agency action be taken to carry out implementation of the Proposed Action." 1-ER-4, 1-ER-6, 1-ER-24. *Conner* illustrates the relevant line. Later review can suffice when the present action preserves the agency's authority to prevent the later activity, but not when the present approval relinquishes that

option. *Conner v. Burford*, 848 F.2d 1441, 1446–51 (9th Cir. 1988); *accord* *Metcalf v. Daley*, 214 F.3d 1135, 1143–45 (9th Cir. 2000). FAA also stated that completion of an airspace study "is not required for implementation of the NTPs." 3-ER-317. The order therefore does not explain what future process, if any, would ensure environmental review before an update outside the model's premise could take effect.

B. FAA's Runway 34R disclosure does not establish that the other approved procedure changes fit the model's unchanged-track premise.

The Noise Technical Report began from the assumption that flight-track locations for the Future (2037) Proposed Action would remain the same as the Existing (2022) Condition. 2-ER-75; 2-ER-76. Its footnotes disclosed one known exception. Because Project A01 relocates the Runway 34R glideslope, FAA expected the Runway 34R arrival profile to be "slightly higher." 2-ER-75 n.13; 2-ER-76 n.14. FAA did not include that adjustment because AEDT lacked a function to reflect it and stated that omitting the higher profile produced a conservative noise analysis. *Id.*

The one omitted higher profile, standing alone, does not show that the model understated noise. If FAA had approved only that bounded vertical adjustment, the

harmless-error argument would have considerably more force. But the footnote matters for a different reason. It shows that FAA knew at least one resulting procedure would differ from the modeled future condition, yet FAA approved the remaining procedure updates without establishing whether they preserved the model's unchanged-flight-track premise. 1-ER-6. The footnote addresses the one identified vertical change; it does not establish that the other approved updates fit the model.

C. FAA's "conservative" label does not establish that its unchanged-track premise applies to the remaining approved updates.

An agency may rely on a conservative assumption when the record explains what the assumption covers and why it cannot understate the relevant effect. But the "conservative" label here reaches only the omitted Runway 34R vertical adjustment. 2-ER-75 n.13; 2-ER-76 n.14. It does not establish that the unchanged-track premise applies to the other approved updates, and FAA's own comment responses do not establish that it does.

FAA's own comment response underscores the limit of that conclusion. FAA said: "Most of these modifications are expected to be minor changes to accommodate the shift in equipment location." 2-ER-281 (emphasis added); *see*

also 2-ER-287, 2-ER-293. "Most" leaves the remainder unidentified; "expected" reflects that the procedures had not yet been designed; and "minor" describes the anticipated equipment-related change without confirming that it preserves the modeled tracks. The record thus supplies no basis for concluding that the unchanged-track premise applies to the updates the footnote does not address.

The distinction matters because FAA used unchanged flight-track information to model future noise and relied on that model to issue the project-wide FONSI/ROD. 2-ER-75; 2-ER-76; 1-ER-13. A conclusion about one higher profile cannot support an undefined class of updates that FAA never checked against that premise. FAA could have described a bounded range, confirmed which changes preserve the modeled tracks, or reserved any procedure outside that range for later NEPA review. The FAA did none of these things.

Technical limitations in AEDT do not cure that mismatch. FAA could use a qualitative or bounding analysis where quantification is unavailable, or reserve approval until the relevant information exists. AEDT's inability to represent a change does not explain why FAA approved updates that had not been checked against the model's unchanged-track premise. *City of Los Angeles* likewise rejected

an FAA noise conclusion that depended on an operational assumption the record did not support. 63 F.4th at 849–51.

FAA's failure to determine whether its modeling premise applies to the approved updates is material, and that omission was prejudicial because it existed at the point FAA made the environmental decision. The no-significance determination rests on the premise that future flight tracks would remain unchanged, 2-ER-75; 2-ER-76; 1-ER-13, and the missing information concerns the location and altitude of flight procedures—variables that determine where aircraft noise is distributed. FAA said only that "most" modifications were "expected" to be minor, 2-ER-281, and completion of the airspace study was not required for implementation. 2-ER-317. A lawful analysis therefore could matter to the approval itself: FAA could limit the present approval to updates that preserve the modeled tracks, reserve other updates for a later environmental decision before implementation, impose conditions defining the permissible range, or reconsider the no-significant-impact determination.

That also answers *Seven County*'s remedial concern. This is not a case in which additional environmental discussion necessarily would leave the approval

unchanged. *See* 605 U.S. at 185. The unresolved issue is whether an approved component of the action fits the premise on which FAA's project-wide noise finding rests. The Court need not decide what the later procedures should be. It need only require FAA to determine, before environmentally clearing them, whether they remain within the analysis supporting the FONSI/ROD.

MATERIALITY AND REMEDY

Each defect goes to the core of FAA's no-significant-impact finding, not a peripheral detail. The NES omission concerns the noise screen FAA used to find no significant operational-noise impact despite adding 4,439 residents and 1,851 homes to the 65-DNL contour. 2-ER-55-56. The traffic-mitigation gap goes to the mechanism FAA relied on to convert acknowledged significant intersection impacts into no significant impacts. 2-ER-58, 2-ER-63. For HAWKZ, the defect lie in FAA's use of the 65-DNL contour to reject a request to compare actual route-specific operations with the model without explaining why that contour answered the request. 3-ER-310-12; 3-ER-318; 3-ER-362-65. And the procedure-update issue turns on whether the action FAA approved fits the unchanged-track premise on which the noise model rested. 1-ER-6; 2-ER-75; 2-ER-76

Seven County does not render these defects harmless. It cautions that an inadequate environmental analysis need not disturb project approval where there is no reason to believe further analysis could affect the agency's decision. 605 U.S. at 185. Here the record supplies that reason claim by claim. Mitigation was the premise that converted FAA's admitted significant traffic impacts into no significant impacts. 2-ER-58; 2-ER-63. A reasoned response to the NES could affect project-level noise disclosure, mitigation, conditions, or the FONSI determination. A HAWKZ comparison could validate the existing model, alter its

track or profile representation, or establish why no change was necessary. And analysis of the later-defined procedure updates could limit the present approval, require later environmental review, or alter the noise finding. The Court therefore need not speculate that lawful reconsideration would produce the same decision.

Arvin, slip op. at 21–22, does not justify leaving this FONSI/ROD in force. That decision rests on the settled rule that "[t]he traditional remedy for erroneous administrative decisions is vacatur, but we will leave invalid agency action in place when equity demands that we do so." *Migrant Clinicians Network v. EPA*, 88 F.4th 830, 847 (9th Cir. 2023) (citation modified), quoted in *Arvin*, slip op. at 21. The panel remanded without vacatur only because the petitioners had not requested vacatur and because vacating EPA's rule would have left the San Joaquin Valley without contingency measures while EPA reconsidered it. *Arvin*, slip op. at 21–22. Neither circumstance is present here. Petitioners seek vacatur. And vacatur would not terminate existing Airport operations or remove a freestanding environmental-protection program. It would set aside the challenged environmental approval for the incremental Near-Term Projects while FAA reconsiders the decision. The FONSI/ROD itself states that it "does not constitute a commitment of funds" under the Airport Improvement Program, although it fulfills the environmental prerequisite for future grants and directs implementation. 1-ER-24.

This Circuit treats vacatur as "the presumptive remedy under the APA," with

remand without vacatur reserved for "limited circumstances." *WildEarth Guardians,* 135 F.4th at 738 (citation omitted). *WildEarth Guardians* also illustrates the remedy where an EA and FONSI lack a reasoned explanation addressing material evidence. The Court vacated both and remanded for the agency to determine whether a revised EA or EIS was warranted. *Id.* at 736–39. The record deficiencies here likewise bear directly on FAA's no-significant-impact determination and require FAA, not the Court, to supply the missing analysis on remand.

The first *Allied-Signal* factor, seriousness, favors vacatur. *See Cal. Cmtys. Against Toxics v. EPA*, 688 F.3d 989, 992 (9th Cir. 2012) (quoting *Allied-Signal, Inc. v. U.S. Nuclear Regul. Comm'n*, 988 F.2d 146, 150–51 (D.C. Cir. 1993)); *Migrant Clinicians Network*, 88 F.4th at 847. The errors set out above are not peripheral defects correctable while leaving the decisional basis untouched. Each goes to the reliability of the record FAA used to reach its no-significance determination. A lawful reconsideration could change disclosure, mitigation, phasing, approval conditions, or the FONSI-versus-EIS determination.

The second *Allied-Signal* factor does not supply the dispositive counterweight that drove *Arvin*. There, vacatur itself would have removed contingency measures protecting air quality during remand. *Arvin*, slip op. at 22. Here, leaving the FONSI/ROD in place would instead allow the challenged

approval to continue satisfying environmental prerequisites and directing implementation while FAA supplies explanations it did not give when it acted. 1-ER-24. Any concrete disruption FAA may identify can be weighed under *Allied-Signal*. Neither *Arvin* nor the underlying test presumes that ordinary project-delay consequences override serious defects at the core of a no-significance determination.

The remedy should therefore remain narrow but effective. The Court need not dictate the technical result, it should vacate the FONSI/ROD and remand so FAA can supply the missing explanations and decide, on a complete and reasoned record, whether a revised EA supports a FONSI or an EIS is required.

CONCLUSION

For the foregoing reasons, Petitioners Vashon Island Fair Skies, the City of Burien, the City of Des Moines, and the City of SeaTac respectfully request that the Court grant the petitions for review, vacate FAA's September 24, 2025, Finding of No Significant Impact/Record of Decision for the Sustainable Airport Master Plan Near-Term Projects, and remand to the Federal Aviation Administration for further proceedings consistent with the Court's opinion.

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: _____

Steven M. Taber

Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

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9th Cir. Case Number(s) 25-7373, 25-7439

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Signature /sSteven M. Taber **Date** August 20, 2026
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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing document on this date with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system.

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: Steven M. Taber

Steven M. Taber

Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

STATEMENT OF RELATED CASES

Pursuant to Ninth Circuit Rule 28-2.6, Petitioners are aware of no related cases pending in this Court.

Nos. 25-7373 & 25-7439
(Consolidated)

In the
UNITED STATES COURT OF APPEALS
for the Ninth Circuit

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

Consolidated with No. 25-7439
CITY OF BURIEN, et al.
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

ADDENDUM TO CONSOLIDATED OPENING BRIEF OF VASHON ISLAND FAIR SKIES, INC., CITY OF BURIEN, CITY OF DES MOINES, AND CITY OF SEATAC

On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com

Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

ADDENDUM

Pertinent statutes, regulations, and FAA Order provisions reproduced verbatim pursuant to Ninth Circuit Rule 28-2.7.

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42 U.S.C. § 4332(2) — Cooperation of Agencies (excerpt)

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall—

(A) utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) consistent with the provisions of this chapter and except where compliance would be inconsistent with other statutory requirements, include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) reasonably foreseeable environmental effects of the proposed agency

action;

(ii) any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented;

(iii) a reasonable range of alternatives to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal;

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(v) any irreversible and irretrievable commitments of Federal resources which would be involved in the proposed agency action should it be implemented.

Prior to making any detailed statement, the head of the lead agency shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, and shall accompany the proposal through the existing agency review processes;

(D) ensure the professional integrity, including scientific integrity, of the discussion and analysis in an environmental document;

(E) make use of reliable data and resources in carrying out this chapter;

(F) consistent with the provisions of this chapter, study, develop, and describe technically and economically feasible alternatives; . . . .

42 U.S.C. § 4336(b) — Procedure for Determination of Level of Review (excerpt)

(b) Levels of review

(1) Environmental impact statement

An agency shall issue an environmental impact statement with respect to a proposed agency action requiring an environmental document that has a reasonably foreseeable significant effect on the quality of the human environment.

(2) Environmental assessment

An agency shall prepare an environmental assessment with respect to a proposed agency action that does not have a reasonably foreseeable significant effect on the quality of the human environment, or if the significance of such effect is unknown, unless the agency finds that the proposed agency action is excluded pursuant to one of the agency's categorical exclusions, another agency's categorical exclusions consistent with section 4336c of this title, or another provision of law. Such environmental assessment shall be a concise public document prepared by a Federal agency to set forth the basis of such agency's finding of no significant impact or determination that an environmental impact statement is necessary.

(3) Sources of information

In making a determination under this subsection, an agency—

(A) may make use of any reliable data source; and

(B) is not required to undertake new scientific or technical research unless the new scientific or technical research is essential to a reasoned choice among alternatives, and the overall costs and time frame of obtaining it are not unreasonable.

49 U.S.C. § 47502 — Noise Measurement and Exposure Systems and Identifying Land Use Compatible with Noise Exposure

After consultation with the Administrator of the Environmental Protection Agency and United States Government, State, and interstate agencies that the Secretary of Transportation considers appropriate, the Secretary shall by regulation—

(1) establish a single system of measuring noise that—

(A) has a highly reliable relationship between projected noise exposure and surveyed reactions of individuals to noise; and

(B) is applied uniformly in measuring noise at airports and the surrounding area;

(2) establish a single system for determining the exposure of individuals to noise resulting from airport operations, including noise intensity, duration, frequency, and time of occurrence; and

(3) identify land uses normally compatible with various exposures of individuals to noise.

14 C.F.R. § 150.1 — Scope and Purpose

This part prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. It prescribes single systems for—

(a) measuring noise at airports and surrounding areas that generally provides a highly reliable relationship between projected noise exposure and surveyed reaction of people to noise; and

(b) determining exposure of individuals to noise that results from the operations of an airport.

This part also identifies those land uses which are normally compatible with various levels of exposure to noise by individuals. It provides technical assistance to airport operators, in conjunction with other local, State, and Federal authorities, to prepare and execute appropriate noise compatibility planning and implementation programs.

14 C.F.R. § 150.7 — Definitions (excerpt)

As used in this part, unless the context requires otherwise, the following terms have the following meanings.

*

Day-night average sound level (DNL) means the 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m., and midnight, local time. The symbol for DNL is Ldn.

*

FAA Order 1050.1F, Exhibit 4-1 — Significance Determination for FAA Actions (Noise and Compatible Land Use, excerpt)

Significance Threshold: The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.

Factors to Consider: Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks; national wildlife and waterfowl refuges; and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question. For example, the DNL 65 dB threshold does not adequately address the impacts of noise on visitors to areas within a national park or national wildlife and waterfowl refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

FAA Order 1050.1F, ¶ 4-4.c — Mitigation; Mitigation Made A Condition of FAA Approval

c. Mitigation Made a Condition of FAA Approval. When specific mitigation is made a condition of project approval, the FAA or another appropriate entity must implement the mitigation. Prior to project approval, the FAA should verify that:

(1) The FAA has sufficient legal authority to implement or enforce implementation of the mitigation;

(2) Funding for implementation of the mitigation is reasonably foreseeable;

(3) The mitigation is clearly specified in terms of expected outcomes, which may include measurable performance standards;

(4) Any required mitigation has been clearly identified as a condition of approval in the EA/FONSI or ROD; and

(5) Appropriate language is used in grant agreements, licenses, contract specifications, operating specifications, directives, other project review or implementation procedures, or in other appropriate mechanisms to ensure mitigation set forth as a condition of approval is implemented.

FAA Order 1050.1F, Paragraph 6-2.3 — Mitigation Considerations for Environmental Assessments (excerpt)

6-2.3. Mitigation Considerations for Environmental Assessments. An EA may include discussion of reasonable mitigation measures. If mitigation is discussed in an EA, the discussion must be in sufficient detail to describe the impacts of the mitigation. EMS data collection, tracking, and analysis may be useful in the consideration of appropriate mitigation measures. An EMS may also be useful for tracking and monitoring mitigation commitments. Environmental impacts resulting from mitigation should be considered in the EA and FONSI, when applicable. Mitigation and other conditions established in the EA and FONSI, or during their review, and included as a condition of the project approval or licensing, must be implemented and/or monitored by the FAA or other entity responsible for implementing and/or monitoring mitigation (*see* Paragraph 4-4.d regarding mitigation monitoring). Proposed changes in, or deletion of, a mitigation measure that was included as a condition of approval of the FONSI must be reviewed by the same FAA LOB/SO that reviewed the original FONSI and must be approved and signed by the approving official. If the responsible FAA official determines that changes in mitigation would result in significant impacts and the FAA wants to pursue these changes, the responsible FAA official must initiate the EIS process by issuing an NOI to prepare an EIS unless actions can be taken to reduce the impact(s) below the level of significance.

a. Mitigated FONSIs. If the responsible FAA official determines that mitigation measures can reduce potentially significant adverse impacts below the level of significance, these mitigation measures can be used to support a FONSI, provided that:

(1) The agency took a "hard look" at the problem;

(2) The agency identified the relevant areas of environmental concern;

(3) The EA supports the agency's determination that the potential impacts will be insignificant; and

(4) The agency has identified mitigation measures that will be sufficient to reduce potential impacts below applicable significance thresholds and has ensured commitments to implement these measures.

Mitigation that is used to support a mitigated FONSI must be included as a condition of project approval (*see* Paragraph 4-4, Mitigation). In these cases, if the FAA's decision to act is not otherwise evidenced by a final decision document such as a rule, license, or approval, the responsible FAA official must use a FONSI/ROD to document the decision (*see* Paragraph 6-4, Decision Documents for Findings of No Significant Impact). The FONSI/ROD or other decision document must identify those mitigation measures the FAA is adopting and identify any monitoring and enforcement program applicable to such measures (*see* Paragraph 4-4, Mitigation). If the responsible FAA official determines that a

mitigation measure has not been implemented or the implemented mitigation is failing to mitigate environmental impacts as predicted, and as a result a significant impact may occur, the responsible FAA official must initiate the EIS process by issuing a NOI to prepare an EIS if there remains discretionary FAA action to be taken related to the project.

FAA Order 1050.1F, Paragraph 6-3.b — Finding of No Significant Impact: Content (excerpt)

b. Content. There is no specified format for FONSIs. The FONSI may be attached to an EA, or the EA and FONSI may be combined into a single document. If the FONSI is attached or combined with the EA, it need not repeat the discussion in the EA. If the FONSI is not attached or combined with the EA, the FONSI must include a summary of the EA and note any other environmental documents related to it. The FONSI must:

(1) Briefly describe the proposed action, the purpose and need, and the alternatives considered (including the no action alternative); and assess and document all relevant matters necessary to support the conclusion that the proposed action would not significantly affect the quality of the human environment;

(2) Determine the proposed action's consistency or inconsistency with community planning, and document the basis for the determination;

(3) Present any mitigation measures that are a condition of project approval. The FONSI should also reflect coordination of mitigation commitments (including any applicable monitoring program) with, and consent and commitment from, those entities with the authority to implement specific mitigation measures committed to in the FONSI; and

(4) Reflect compliance with all applicable environmental requirements,

including interagency and intergovernmental coordination and consultation, public involvement, and documentation requirements. Findings and determinations required under special purpose laws and requirements, regulations, and orders, if not made in the EA, must be included in the FONSI.

***Overview of FAA Aircraft Noise Policy and Research Efforts*,**
86 Fed. Reg. 2722, (Jan. 13, 2021)

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–2020–1157]

Agency Information Collection Activities: Requests for Comments; Clearance of a Renewed Approval of Information Collection: Commercial Space Transportation Licensing Regulations

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice and request for comments.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, FAA invites public comments about our intention to request the Office of Management and Budget (OMB) approval to renew an information collection. The information will determine if applicant proposals for conducting commercial space launches can be accomplished according to regulations issued by the Office of the Associate Administrator for Commercial Space Transportation.

DATES: Written comments should be submitted by March 15, 2021.

ADDRESSES: Please send written comments:

By Electronic Docket: www.regulations.gov (Enter docket number into search field).

By mail: Charles Huet, 800 Independence Avenue SW, Room 331, Washington, DC, 20591.

By fax: 202–267–5463.

FOR FURTHER INFORMATION CONTACT: Charles Huet by email at: *Charles.huet@faa.gov;* phone: 202–267–7427.

SUPPLEMENTARY INFORMATION:

Public Comments Invited: You are asked to comment on any aspect of this information collection, including (a) Whether the proposed collection of information is necessary for FAA's performance; (b) the accuracy of the estimated burden; (c) ways for FAA to enhance the quality, utility and clarity of the information collection; and (d) ways that the burden could be minimized without reducing the quality of the collected information. The agency will summarize and/or include your comments in the request for OMB's clearance of this information collection.

OMB Control Number: 2120–0608.

Title: Commercial Space Transportation Licensing Regulations.

Form Numbers: FAA Form 8800–1.

Type of Review: Renewal of an information collection.

Background: The Commercial Space Launch Act of 1984, 49 U.S.C. App. §§ 2601–2623, as recodified at 49 U.S.C. Subtitle IX, Ch. 701—Commercial Space Launch Activities, 49 U.S.C. 70101–70119 (1994), requires certain data be provided in applying for a license to conduct commercial space launch activities. These data are required to demonstrate to the Federal Aviation Administration (FAA), Associate Administrator for Commercial Space Transportation (AST), that a license applicant's proposed activities meet applicable public safety, national security, and foreign policy interests of the United States.

Respondents: Approximately 17 space launch applicants renewing applications.

Frequency: Information is collected on occasion.

Estimated Average Burden per Response: 163 hours.

Estimated Total Annual Burden: 2,779 hours.

Issued in Washington, DC.

Kelvin Coleman,

Deputy Associate Administrator, Commercial Space Transportation, Federal Aviation Administration.

[FR Doc. 2021–00480 Filed 1–12–21; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

[Docket No. FAA–2021–0037]

Overview of FAA Aircraft Noise Policy and Research Efforts: Request for Input on Research Activities To Inform Aircraft Noise Policy

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Notice of research programs and request for comments.

SUMMARY: The FAA is releasing a summary to the public of the research programs it sponsors on civil aircraft noise that could potentially inform future aircraft noise policy. The FAA invites public comment on the scope and applicability of these research initiatives to address aircraft noise.

The FAA will not make any determinations based on the findings of these research programs for the FAA's noise policies, including any potential revised use of the Day-Night Average Sound Level (DNL) noise metric, until it has carefully considered public and other stakeholder input along with any additional research needed to improve the understanding of the effects of aircraft noise exposure on communities.

DATES: Comments on this notice must identify the docket number and be received on or before March 15, 2021.

ADDRESSES: Send comments identified by docket number FAA–2021–0037 using any of the following methods:

- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov* and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M–30; U.S. Department of Transportation, 1200 New Jersey Avenue SE, Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at (202) 493–2251.

Privacy: The FAA will post all comments it receives, without change, to *http://www.regulations.gov,* including any personal information the commenter provides. Using the search function of the docket website, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477–19478), as well as at *http://DocketsInfo.dot.gov.*

Docket: Background documents or comments received may be read at *http://www.regulations.gov* at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE, Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Mr. Donald Scata, Office of Environment and Energy (AEE–100), Federal Aviation Administration, 800 Independence Ave. SW, Washington, DC 20591. Telephone: (202) 267–0606. Email address: *NoiseResearchFRN@faa.gov.*

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Background Information

Since the mid-1970s, the number of people living in areas exposed to significant levels of aircraft noise [1] in the United States has declined from roughly 7 million to just over 400,000 today. At the same time, the number of commercial enplanements has increased from approximately 200 million in 1975 to approximately 930 million in 2018. The single most influential factor in that decline was the phased transition to quieter aircraft, which effectively reduced the size of the areas around airports experiencing significant noise levels. That transition was the result of the development of new technology by aircraft and engine manufacturers; establishment of increasingly stringent noise standards for civil subsonic aircraft,[2] investments by U.S. airlines in newer, quieter aircraft; and requirements by the FAA and the United States Congress to phase out operations by older, noisier aircraft.

A second factor has been cooperative efforts by airports, airlines and other aircraft operators, State and local governments, and communities to reduce the number of people living in areas near airports exposed to significant levels of aircraft noise. Under the FAA's Airport Noise Compatibility Planning Program,[3] airports may voluntarily initiate a collaborative process to consider measures that reduce existing noncompatible land uses and prevent new noncompatible land uses in areas exposed to significant levels of aircraft noise. Since 1983, more than 250 airports have used this process to consider changes to local land use planning and zoning, sound insulation, acquisition of homes and other noise-sensitive property, aircraft noise abatement routes and procedures, and other measures. Over $6 billion in funding has been provided for airports to undertake noise compatibility programs and implement noise mitigation measures. The FAA encourages the process by providing financial and technical assistance to airport sponsors to develop Noise Exposure Maps and Noise Compatibility Programs, and implement eligible noise-related mitigation measures recommended in the program, depending upon the availability of funding.

In addition to noise compatibility planning, the FAA also issues grants to airport operators and units of local government to fund mitigation projects, most notably to sound-insulate homes, schools, and other noise-sensitive facilities. While sound insulation reduces indoor noise levels, it does not address concerns about noise interfering with the enjoyment of the outdoors. Moreover, there are limits to the effectiveness of sound insulation. In some areas with elevated noise levels, sound insulation may not sufficiently reduce interior noise levels to meet established interior noise standards.[4] Conversely, in areas where overall noise levels are lower, interior noise standards may already be met without additional sound insulation treatments.[5]

Today's civilian aircraft are quieter than at any time in the history of jet-powered flight. The FAA, aircraft manufacturers, and airlines continue to work toward further reducing aircraft noise at the source.[6] As an example, the noise produced by one Boeing 707–200 flight, typical in the 1970s, is equivalent in noise to 30 Boeing 737–800 flights that are typical today.[7] As a result, for many years there was a steady decline in the number of people exposed to significant noise in communities located near airports. In recent years, however, as aviation industry growth has led to an increase in operations in many areas, the number of people and the size of the areas experiencing significant aircraft noise has started to show a gradual expansion. The introduction of Performance Based Navigation (PBN) procedures, as needed to safely and efficiently modernize the national air transportation system,[8] has also provided noise benefits for many by allowing for new and more efficient flight paths, but has in some places resulted in community concerns, particularly related to increased concentration of flights. In 2016, the FAA released an update to the FAA Community Involvement Manual to reaffirm the FAA's commitment to inform and involve the public, and to give meaningful consideration to community concerns and views as the FAA makes aviation decisions that affect community interests. The FAA has since developed and begun implementing a comprehensive and strategic approach to transform and enhance FAA community involvement practices, including working through airport community roundtables, to equitably discuss opportunities to shift or, when possible, reduce aircraft noise exposure.

Overview of FAA Research on Aircraft Noise

Recognizing that aircraft noise remains a primary concern of many stakeholders, the FAA is actively working to understand, manage, and reduce the environmental impacts of global aviation through research, technological innovation, policy, and outreach to benefit the public.

With the vision of removing environmental constraints on aviation growth by achieving quieter, cleaner, and more efficient air transportation, the FAA has worked closely with a number of industry, academic, and governmental stakeholders to assemble a comprehensive portfolio of research activities (including leveraging research undertaken by others) aimed at guiding investments in scientific studies, analytical tools, and innovative technologies to better understand and manage aircraft noise. However, due to the complex nature of aircraft noise and the varied priorities and concerns of stakeholders, no single set of findings can completely guide decision making. A broad understanding of aircraft noise and any potential impacts, from many different perspectives, is therefore needed. Summaries of the FAA's key

[1] Under longstanding FAA policy, the threshold of significant aircraft noise exposure in residential areas is a Day-Night Average Sound Level of 65 decibels (dB). See the ''Aviation Noise Abatement Policy,'' issued by the Secretary of Transportation and the FAA Administrator in 1976. This document is available on the FAA website at *https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/*.

[2] Consistent with International Civil Aviation Organization standards, FAA has set increasingly more stringent aircraft certification noise standards, such as the Stage 5 noise certification standard. 82 FR 46123 (October 4, 2017).

[3] This process is outlined under 49 U.S.C. 47501 *et seq.,* as implemented by 14 CFR part 150.

[4] FAA Order 5100.38D, Appendix R.

[5] P.J. Wolfe et al., 2016 Costs and benefits of US aviation noise land-use policies Transportation Research Part D 44 (2016) 147–156, *http://dx.doi.org/10.1016/j.trd.2016.02.010.*

[6] See, for example, information on the FAA's ''Continuous Lower Energy, Emissions, and Noise'' (CLEEN) Program at: *https://www.faa.gov/about/office_org/headquarters_offices/apl/research/aircraft_technology/cleen/*.

[7] Based on an average of approach and takeoff certificated noise levels as defined in 14 CFR part 36.

[8] See Section 213, ''Acceleration of NextGen Technologies,'' of the FAA Modernization and Reform Act of 2012, Public Law 112–95, 213, 126 Stat. 11, 46–50 (2012), 49 U.S.C. 40101 note (PBN implementation required at key airports by statutory deadline).

research, tools, and technology programs designed to potentially inform aircraft noise policy are provided below.

(1) Effects of Aircraft Noise on Individuals and Communities

Speech Interference and Children's Learning

Much of our current understanding on speech interference due to noise was established by the Environmental Protection Agency (EPA) in the 1970s.[9] The findings from these early research assessments are still relevant for today's considerations on the impacts from aircraft noise. However, the FAA is also investigating whether there are related considerations warranting more detailed studies. One area in particular is the potential effects of aviation noise on reading comprehension and learning motivation in children. Initial research in this area has shown there are challenges in designing effective studies, and this continues to be an area of interest to better inform noise mitigation and abatement strategies for schools and other noise-sensitive facilities. While additional research in this area is still being explored, the FAA has invested more than $440 million in sound insulation treatments at schools around the country [10] in order to mitigate any potential issues related to aircraft noise.

Health and Human Impacts Research

While community annoyance due to aircraft noise exposure provides a useful summary measure that captures public perceptions of noise, a full understanding of the impact of noise on communities requires a careful consideration of the potential physiological impacts as well. Knowledge of physiological impacts could also help the FAA develop targeted measures to address aircraft noise. Emerging research capabilities are providing new opportunities to examine specific impacts of noise on humans. When these are examined in a holistic manner with research on community annoyance, they could further inform aircraft noise policy considerations. The FAA is conducting research on the potential impacts of aircraft noise on cardiovascular health and sleep disturbance, as described below.

Impacts to Cardiovascular Health

In partnership with academic researchers that are being led by the Boston University School of Public Health, the FAA is working to understand the relationship between aircraft noise exposure and cardiovascular health. The researchers are doing this by leveraging existing national longitudinal health cohorts wherein statistically large numbers of people provide data about their health on a periodic basis over the course of many years. These studies are typically used to understand the relative risk of different factors like diet on different health outcomes like heart disease. The Boston University team is expanding the list of factors to include aircraft noise exposure such that it can be placed in context with other factors that could increase one's risk of cardiovascular disease. The team is leveraging existing collaborations with well-recognized and respected health cohorts including the Nurses' Health Studies and the Health Professionals Follow-Up Study, as well as a complementary study at Boston University that is examining the Women' Heath Initiative cohort through funding from the National Institutes of Health.

Sleep Disturbance

The FAA is working with a team led by the University of Pennsylvania School of Medicine to conduct a national sleep study that will quantify the impact of aircraft noise exposure on sleep. The study will collect nationally representative information on the probability of being awoken by aircraft noise exposure. The study will start with input being requested from approximately 25,000 respondents through a mail survey. These surveys will be used to determine the eligibility of respondents for a detailed field study that will involve roughly 400 volunteers. The volunteers in the detailed field study will use equipment provided by the research team to collect both noise and electrocardiography data in their homes while they sleep. The electrocardiography data combined with information on the level of aircraft noise exposure will advance our understanding of the physiological effects of aircraft noise on sleep.

Economic Impacts

In addition to the aforementioned community and physiological impacts, the FAA is also working with researchers at Massachusetts Institute of Technology (MIT) to conduct an empirical assessment of the economic impacts to businesses located underneath aircraft flight paths. This assessment will take into account the economic benefits from aviation activities, as well as potential environmental and health impacts that might reduce economic productivity. The FAA is also in the developmental stage of a research project that would build on existing work done by MIT that has used housing value data to reveal the willingness of people to pay to avoid aircraft noise exposure. This research is intended to serve as a follow on to the Neighborhood Environmental Survey (described in the next section), to determine whether the findings of that survey on residents' sensitivity to aviation noise is also reflected in their ''revealed preferences'' when making housing location decisions.

Neighborhood Environmental Survey

To review and improve the agency's understanding of community response to aircraft noise, the FAA initiated the *Neighborhood Environmental Survey* (NES) to help inform ongoing research and policy priorities on aviation noise. Section 187 of the FAA Reauthorization Act of 2018 [11] requires the Administrator of the FAA to ''*conclude the Administrator's ongoing review of the relationship between aircraft noise exposure and its effects on communities around airports . . . [and] submit to Congress a report containing the results of the review.*''

Due to the interest from Congress and other stakeholders in the findings of this research, an expanded summary is provided in this notice below. The full text of the NES report, including a detailed description of the methodology and findings, as well as additional background material to help inform readers, is available on the FAA's website at: *www.faa.gov/go/aviationnoise.*

Overview of the Survey

Working with statisticians and noise experts,[12] the FAA worked with other Federal agencies that have statutory, regulatory, or other policy interests in aviation noise, to conduct a nationwide survey to update the scientific evidence on the relationship between aircraft noise exposure and its annoyance effects on communities around airports, based on today's aircraft fleet and operations. The NES included a range of questions on a variety of environmental concerns, including aviation noise exposure.

The team of expert consultants, under direction from the FAA, surveyed residents living around representative U.S. airports, drawing upon well-established research methods in order to

[9] EPA, 1973, Public Health and Welfare Criteria For Noise, *https://nepis.epa.gov/.*

[10] Provided through Airport Improvement Program funding since 1994.

[11] Public Law 115–254.

[12] The FAA contracted with Westat, a leading statistics firm, and HMMH, a leading noise consultancy, to conduct the survey.

ensure scientific integrity and historical continuity with prior studies, while also employing advancements in techniques for noise modeling and social surveys. The NES consisted of over 10,000 mail responses from residents in communities around 20 statistically representative airports across the Nation, making it the single largest survey of this type undertaken at one time. In addition to the mail responses, the consultants also conducted a follow-up phone survey, which included over 2,000 responses to a series of more detailed questions. The FAA is now considering the full NES results, in conjunction with additional research findings as they become available, to determine how they may inform its noise policy considerations.

Overview of Community Response to Noise

Historically, two of the main types of information considered by the FAA and other Federal agencies in relating noise exposure to community response have been: (1) Case studies analyzing individual and group actions (*e.g.,* complaints or legal action) taken by residents of communities in response to noise; and (2) social surveys (such as the NES) that elicit information from community residents regarding their level of noise-induced annoyance. Annoyance is defined as a ''summary measure of the general adverse reaction of people to noise that causes interference with speech, sleep, the desire for a tranquil environment, and the ability to use the telephone, radio, or television satisfactorily.'' [13] The results of social surveys of noise-induced annoyance are typically plotted as ''dose-response curves'' on a graph showing the relationship between the level of DNL [14] cumulative noise exposure and the percentage of the population that is ''highly annoyed.''

Current FAA noise policy is informed by a dose-response curve initially created in the 1970s known as the *Schultz Curve.*[15] This dose-response curve is generally accepted as a representation of noise impacts and has been revalidated by subsequent analyses over the years.[16] The dose-response relationship it depicts has provided the best tool available to predict noise-induced annoyance for several decades. In 1992, the Federal Interagency Committee on Noise (FICON) reviewed the use of the *Schultz Curve,* and created an updated version of the curve using additional social survey data.[17] The updated dose response curve was found to agree within one to two percent of the original curve, leading FICON to conclude that ''the updated *Schultz Curve* remains the best available source of empirical dosage-effect to predict community response to transportation noise.'' [18] According to the 1992 FICON Report, the DNL-annoyance relationship depicted on the *Schultz Curve* ''is an invaluable aid in assessing community response as it relates the response to increases in both sound intensity and frequency of occurrence.'' Although the predicted annoyance, in terms of absolute levels, may vary among different communities, the *Schultz Curve* can reliably indicate changes in the level of annoyance for defined ranges of sound exposure for any given community.[19] While the validity of the dose-response methodology used to create the *Schultz Curve* remains well supported, its underlying social survey data, including the additional data used by FICON to update the curve, is now on average more than 40 years old and warrants an update. The NES was conducted to create a new nationally representative dose-response curve to understand how community response to aircraft noise may have changed.

The NES's collection of a nationally representative dataset on community annoyance in response to aircraft noise provides a contemporary update to the *Schultz Curve,* including technical refinements to improve its reliability. As with the *Schultz Curve,* the NES describes community annoyance in terms of the percentage of people who are ''highly annoyed'' and describes aircraft noise exposure in terms of the DNL noise metric. Based on the 1992 FICON Report, discussed previously, both the percentage of population highly annoyed and the DNL noise metric have continued to be recognized for this purpose including by FICON's successor, the Federal Interagency Committee on Aviation Noise in its 2018 report.[20]

NES Results

Compared with the *Schultz Curve* representing transportation noise, the NES results show a substantially higher percentage of people highly annoyed over the entire range of aircraft noise levels (*i.e.,* from DNL 50 to 75 dB) at which the NES was conducted. This includes an increase in annoyance at lower noise levels. The NES results also show proportionally less change in annoyance from the lower noise levels to the higher noise levels.

Comparing the percent of population highly annoyed due to noise exposure between the updated *Schultz Curve* for transportation noise in the 1992 FICON Report and the NES:

- At a noise exposure level of DNL 65 dB, the updated *Schultz Curve* from the 1992 FICON Report indicated that 12.3 percent of people were highly annoyed, compared to between 60.1 percent and 70.9 percent within a 95 percent confidence limit from the NES.
- At a noise exposure level of DNL 60 dB, the updated Schultz Curve from the 1992 FICON Report indicated that 6.5 percent of people were highly annoyed, compared to between 43.8 percent and 53.7 percent within a 95 percent confidence limit from the NES.
- At a noise exposure level of DNL 55 dB, the updated Schultz Curve from the 1992 FICON Report indicated that 3.3 percent of people were highly annoyed, compared to between 27.8 percent and 36.8 percent within a 95 percent confidence limit from the NES.
- At a noise exposure level of DNL 50 dB, the updated Schultz Curve from the 1992 FICON Report indicated that 1.7 percent of people were highly annoyed, compared to between 15.4 percent and 23.4 percent within a 95 percent confidence limit from the NES.

Graphics comparing the updated *Schultz Curve* from the 1992 FICON Report and the curve from the NES are provided on the FAA website at *www.faa.gov/go/aviationnoise.*

[13] Federal Agency Review of Selected Airport Noise Analysis Issues (FICON), 1992.

[14] The Day-Night Average Sound Level (DNL or Ldn) is the 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m., and midnight, local time. See 14 CFR 150.7.

[15] See Schultz, T.J. 1978, ''Synthesis of Social Surveys on Noise Annoyance,'' *Journal of the Acoustical Society of America* 64(2): 377–405.

[16] See Fidell, S., D. Barber, ''Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise,'' *Journal of the Acoustical Society of America,* 89, January 1991, pp. 221–233; also see Finegold, L.S., C.S. Harris, and H.E. von Gierke, 1992, Applied Acoustical Report: Criteria for Assessment of Noise Impacts on People, *Journal of the Acoustical Society of America,* June 1992; also see Finegold, L.S., C.S. Harris, and H.E. von Gierke, 1994, Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People, Noise Control Engineering Journal, Volume 42, Number 1, January–February 1994, pp. 25–30.

[17] The FICON 1992 analysis added to the Schultz Curve's original database of 161 survey data points and calculated an updated dose-response curve using the same methodology but with a total of 400 survey data points.

[18] FICON, 1992.

[19] Ibid., vol. 1, p. 2–6.

[20] Federal Interagency Committee on Aviation Noise Research Review of Selected Aviation Noise Issues (FICAN), 2018.

Advancements in Survey Methodology

Earlier work to understand community response to noise, including Schultz's dose-response analysis, was based on the premise that the annoyance from any source of noise would be the same for a given DNL noise level. However, more recent work has shown that aircraft noise often results in higher levels of annoyance compared to the same level of noise from ground transportation sources.[21] There have been relatively few surveys of communities in the United States about aircraft noise undertaken over the last four decades. However, other countries around the world have conducted aircraft noise surveys during this time considering aircraft noise separately from noise from other modes of transportation. The results of these surveys, as reflected in a dose-response relationship published by the International Organization for Standardization,[22] have consistently shown higher levels of annoyance than exhibited by the *Schultz Curve.* Informed by these results, the national dose-response curve in the NES report reflects only responses to the question about aircraft noise exposure.

Other Factors

In addition to enhancements in survey techniques and changes to the way aircraft operate, there are likely other factors contributing to a change in the way communities respond to aircraft noise. Future work is needed to fully understand the specific drivers behind these reasons, but several possibilities include:

- Changes to where people are choosing to live, including societal migration to increasingly urban environments.[23] Additionally, growth and changes to the makeup of suburban communities and their proximity to urban hubs may also be influencing factors on community expectations for aircraft noise exposure.
- How people work and live, including influencing factors such as increased in-home business and teleworking in today's economy.[24] Changes in expectations for spending time outdoors versus indoors and the associated aircraft noise exposure may also be a factor.
- The rise of social media, the internet, and other national and global information sources, leading to an increased awareness and perception of local and national noise issues.
- Overall societal response to noise due to a combination of these or other factors.

In addition to the NES, which focuses on annoyance, the FAA is also engaged in a range of research initiatives aimed at providing information on other impacts of aircraft noise, including effects on children's learning, sleep disturbance, and potential health effects. Each of these research initiatives focuses on a distinct type of potential adverse effect associated with aviation noise exposure. The potential adverse effects explored by these initiatives may also be factors influencing the annoyance reported by the NES. However, research in these areas is still ongoing and therefore was not specifically addressed by the NES. Additional details on these research programs is provided below.

(2) Noise Modeling, Noise Metrics, and Environmental Data Visualization

As a core component of FAA's work to address aircraft noise, as well as a requirement of its environmental regulatory commitments, the FAA must maintain the ability to accurately quantify aircraft noise exposure around airports and throughout the National Airspace System. High-fidelity modeling is the only practical method to accomplish this objective, as aircraft noise needs to be quantified over relatively large scales in an efficient and consistent manner. For more than four decades, the FAA has worked closely with industry, academic, and governmental stakeholders to advance research and development in aircraft noise modeling. This effort advances the analytical tools, metrics, data, and standards required to provide high quality results to inform the public and other stakeholders about noise exposure levels. The FAA has also been actively exploring ways to use emerging technologies to visualize environmental data including noise exposure.

Aviation Environmental Design Tool

The Aviation Environmental Design Tool (AEDT) is the FAA's required noise and environmental modeling application for all U.S. domestic regulatory analyses requiring FAA review. The AEDT also provides analysis support for the International Civil Aviation Organization—Committee on Aviation Environmental Protection, and is used as a research and assessment tool by other Federal agencies, universities, and industry stakeholders.

Through collaborations with government, university, and industry partners, the FAA actively manages AEDT to ensure that features and capabilities are developed to meet expanding environmental analysis needs, and to ensure that as new data and technologies become available they are incorporated in order to enhance modeling accuracy and efficiency. The AEDT builds on a legacy of noise modeling development, and is based on detailed aircraft-specific noise measurements and internationally accepted aircraft performance models and standards. A dynamic development process is used to create new versions of AEDT. This process allows for new features and capabilities to be added as needed, for example, when required by policy updates or informed by emerging research findings.

Noise Screening

Building from the high-fidelity noise modeling capabilities available through AEDT, the FAA is also working to develop an updated noise screening tool. This updated noise screening tool will use a simplified noise modeling process to facilitate an expedited review of proposed Federal actions where significant noise impacts are not expected. Such an approach is beneficial where a proposed Federal Action is limited in scope and could qualify for a categorical exclusion under the FAA's procedures for implementing the National Environmental Policy Act (NEPA).[25] The primary goal of updating the noise screening tool is to decrease the amount of time that an analyst will need to conduct an assessment while also ensuring a fully validated result that is readily understandable by the public. While the output from a noise screening tool cannot provide the same level of detail as a comprehensive modeling tool, the simplified process provides for an expedited initial view of

[21] See, for example: Janssen, S., &, Vos, H. (2011). Dose-Response Relationship between DNL and Aircraft Noise Annoyance: Contribution of TNO. Retrieved from TNO Report TNO–060–UT–2011–00207.

[22] International Organization for Standardization. (2016, March 1, 2016). International Standard 1996–1, Acoustics—Description Measurement and Assessment of Environmental Noise—Part 1: Basic Quantities and Assessment Procedures, 3rd edition.

[23] The U.S. Census Bureau indicates that the percentage of the population living in urban areas has increased from 73.6 percent in 1970 to 80.7 percent in 2010, an increase of 7.1 percent.

[24] Work to explore changes to how population distribution throughout the day are related to aircraft noise exposure is planned under Airport Cooperative Research Project (ACRP) 02–84 [Anticipated] *http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4421.*

[25] See FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* Chapter 5 (''Categorical Exclusions'').

any potential changes in aircraft noise exposure.

Environmental Data Visualization

The FAA has been developing ways to utilize geospatial data to improve the agency's ability to communicate environmental data to the public. For example, the FAA has designed an Environmental Visualization Tool to take advantage of the availability of high quality geospatial data to deliver an agency-wide resource using a consistent, common visual language. Once fully implemented, this common visualization platform will serve the needs of multiple environmental programs within the FAA, including those presenting aircraft noise data to the public.

Supplemental Noise Metrics

The FAA's primary noise metric, DNL, was developed and validated to identify significant aviation noise exposure for land use and mitigation planning as well as for determining significant change in noise exposure under NEPA review. In some cases, however, it can be useful to supplement DNL with the use of other noise metrics. While other noise metrics may not provide as complete an understanding of the cumulative noise exposure from activity around an airport and its associated airspace, they often can provide opportunities to communicate the specific characteristics of noise changes due to the unique aspects of a proposed action. The FAA's NEPA procedures address the use of supplemental noise metrics.[26] To assist the public in understanding noise impacts, and to better facilitate communication among communities interested in systematic departure flight track dispersion, the FAA is working to assess the use of potential supplemental metrics. For a supplemental metric to be effective in evaluating potential means of achieving flight track dispersion, and to ensure that communities understand the impacts of dispersion (*i.e.,* that dispersion does not eliminate noise but rather it may move noise to other neighborhoods), the supplemental metric will need to effectively communicate the changes in noise exposure that will occur in all of the communities affected by the change, both those that would be exposed to less noise and those that would be exposed to more noise.[27]

(3) Reduction, Abatement, and Mitigation of Aviation Noise

To directly address noise concerns, the FAA sponsors multiple research programs to explore different concepts for aircraft noise reduction. As aircraft noise is a complex issue, no single concept is capable of providing a universal solution. However, by conducting research across different areas, the FAA is developing solutions to reduce noise at its source, abate noise through operations, and mitigate the effects of noise on communities. The intent of this approach is to have a variety of options to reduce the noise being experienced by those living near airports around the country and to have options that could be tailored to specific airports.

Aircraft Source Noise Reduction

As noted previously, the single most influential factor in the historical decline in noise exposure was the phased transition to quieter aircraft. Through the public-private partnership of the Continuous Lower Energy, Emissions, and Noise (CLEEN) Program, the FAA and industry are working together to develop technologies that will enable manufacturers to create aircraft and engines with lower noise and emissions as well as improved fuel efficiency.[28] The technologies being accelerated by the CLEEN Program have relatively large technological risk. Government resources help mitigate this risk and incentivize aviation manufacturers to invest and develop these technologies. By cost-sharing the development with the FAA, industry is willing to accept the greater risk and can better support the business case for this technological development. Once entered into service, the CLEEN technologies will provide societal benefits in terms of reduced noise, fuel burn, and emissions throughout the fleet for years to come. In addition to the benefits provided by technologies developed under the CLEEN, the program leads to advances in the analysis and design tools that are used on every aircraft or engine product being made by these companies; this extends the benefits of the CLEEN Program well beyond the individual technologies being matured.

As new aircraft and engine technologies lead to quieter aircraft over time, the FAA works to establish aircraft certification standards based on noise stringency requirements. These standards are a requirement of the airworthiness process and are described in 14 CFR part 36. These requirements do not force manufactures to develop new technology. However, as new noise reduction technologies emerge they do ensure that new aircraft continue to meet increasingly quieter standards within the bounds of what is technologically feasible and economically reasonable.

Noise Abatement

The FAA is also supporting multiple efforts to identify means to abate noise through changes in how aircraft are operated in the airspace over communities. In the immediate vicinity of an airport, use of voluntary noise abatement departure procedures (NADP) has been a longstanding technique available to reduce noise. Recent research is examining the effectiveness of these procedures and identifying means of improving their use.

As the FAA works to modernize the National Airspace System, new aircraft flight procedures have been designed to take advantage of PBN technologies. To better understand both the environmental benefits and challenges posed by PBN, the FAA is working to re-examine ways to routinely consider noise during flight procedure design. This effort includes an exploration of how PBN can better control flight paths and move them away from noise-sensitive areas, how changes in aircraft performance could be safely managed to reduce noise, and how systematic departure flight track dispersion can be implemented to abate noise concerns.

In a recent partnership with the Massachusetts Port Authority (Massport) and MIT, the FAA jointly contributed to research considering how Area Navigation (RNAV) PBN procedures could be designed and implemented to reduce noise. Multiple concepts were explored that highlighted how collaborations between the FAA, airport operators, and community members can produce innovative noise abatement strategies.

A recently completed analysis of operational procedures that resulted from the Massport-MIT–FAA partnership shows that for modern aircraft on departure, changes in aircraft climb speed have minimal impact on the overall aircraft departure noise. The current best practice for NADP, using International Civil Aviation Organization distant community or

[26] See FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* Appendix B, paragraph B–1.6; *1050.1F Desk Reference,* Section 11.4.

[27] FAA, 2020, Report to Congress: FAA Reauthorization Act of 2018 (Pub. L. 115–254) Section 188 and Sec 173, *https://www.faa.gov/about/plans_reports/congress/media/Day-Night_Average_Sound_Levels_COMPLETED_report_w_letters.pdf.*

[28] See, for example, information on the FAA's ''Continuous Lower Energy, Emissions, and Noise'' (CLEEN) Program at: *https://www.faa.gov/about/office_org/headquarters_offices/apl/research/aircraft_technology/cleen/.*

''*NADP–2*'' departure procedure, has been shown to minimize modeled noise impacts. This analysis also shows that for modern aircraft on arrival, changes in approach airspeed could have a noticeable impact (reductions of 4–8 dBA) on the overall aircraft noise at relatively large distances from touching down (between 10 and 25 nautical miles from the runway). While NADP procedures have the potential to reduce community noise, they may also have implementation challenges that will need to be overcome. Research is ongoing at MIT to address these challenges.[29]

In addition to airplane operations, the FAA is also examining the potential for helicopter noise abatement through changes in operational procedures. The FAA has partnered with the Volpe Center, the National Aeronautics and Space Administration, the Pennsylvania State University, and operator organizations to explore new ways to safely fly rotorcraft while also reducing noise through the Fly Neighborly Program.[30]

Noise Mitigation Research

Noise mitigation is the effort to take actions to reduce the impact of aircraft noise exposure that occurs. The primary mitigation strategies involve encouraging responsible land use planning in airport communities and, where appropriate, the application of sound insulation treatments to eligible homes or other noise-sensitive public buildings (*e.g.,* schools or hospitals). In extreme cases where sound insulation technologies cannot provide adequate mitigation, the acquisition of residential homes and conversion to non-residential land use is also an option.

As sound insulation treatment costs have continued to rise and new research on the human impacts from noise becomes available, the FAA is exploring the cost-benefit calculus of existing noise mitigation strategies and technologies in order to better direct where and how limited mitigation resources should be applied. Recent academic research [31] and internal assessments have raised questions about the benefits of sound insulation relative to the costs. While the relative benefits of sound insulation for noise exposures above DNL 65dB will depend on the individual home treatment costs, minimal benefit can be expected for sound insulation treatments applied for noise exposures below DNL 65dB.

Aircraft Noise Policy Background

Community response to noise has historically been a primary factor underlying the FAA's noise-related policies, including the establishment of DNL 65 dB as the threshold of ''significant'' aircraft noise exposure. The FAA has been using a DNL of 65 dB as the basis for: (1) Setting the agency's policy goal of reducing the number of people exposed to significant aircraft noise; [32] (2) the level of aircraft noise exposure below which residential land use is ''normally compatible,'' as defined in regulations implementing the Aviation Safety and Noise Abatement Act of 1979,[33] and (3) the level of aircraft noise exposure below which noise impacts of FAA actions in residential areas are not considered ''significant'' under section 102(2)(C) of the National Environmental Policy Act of 1969.[34]

Research results, as reflected in the programs and studies described in this notice, will provide new information on how aircraft noise in communities near airports may be effectively managed and will inform future decision making on the FAA's aircraft noise policies.

However, as previously stated, the FAA will not make any determinations on implications from these emerging research results for FAA noise policies until it has carefully considered public and other stakeholder input, and assesses the factors behind any increases in community impacts from aircraft noise exposure. Unless and until any changes become effective, all existing FAA regulations, orders, and policies remain in effect. The FAA is committed to informing and involving the public, and to giving meaningful consideration to community concerns and views as the FAA makes aviation decisions that affect them.

Comments Invited

The FAA recognizes that a range of factors may be driving concerns due to aircraft noise. However, as outlined in this notice, a broad understanding of aircraft noise and its potential impacts is needed in order to better manage and reduce concerns from aviation noise.

The FAA is inviting comments on these concerns to assist the agency in assessing how resources should be directed to better understand and manage the factors underlying the concern from aircraft noise exposure.

Comments that focus on the questions listed below will be most helpful. The more specific the comments, the more useful they will be in the FAA's considerations.

(1) What, if any, additional investigation, analysis, or research should be undertaken in each of the following three categories as described in this notice:

- Effects of Aircraft Noise on Individuals and Communities;
- Noise Modeling, Noise Metrics, and Environmental Data Visualization; and
- Reduction, Abatement, and Mitigation of Aviation Noise?

(2) As outlined in this notice, the FAA recognizes that a range of factors may be driving the increase in annoyance shown in the Neighborhood Environmental Survey results compared to earlier transportation noise annoyance surveys—including survey methodology, changes in how commercial aircraft operate, population distribution, how people live and work, and societal response to noise. The FAA requests input on the factors that may be contributing to the increase in annoyance shown in the survey results.

(3) What, if any, additional categories of investigation, analysis, or research should be undertaken to inform FAA noise policy?

Authority: National Environmental Policy Act (NEPA) 42 U.S.C. 4321 *et. seq.*, Aviation Safety and Noise Abatement Act (ASNA) 49 U.S.C. 47501 et. *seq.*, Federal Aviation Act, 49 U.S.C. 44715.

Issued in Washington, DC.

Kevin Welsh,

Director, Office of Environment and Energy.

[FR Doc. 2021–00564 Filed 1–12–21; 8:45 am]

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[29] *https://ascent.aero/project/analytical-approach-for-quantifying-noise-from-advanced-operational-procedures/, https://ascent.aero/project/aircraft-noise-abatement-procedure-modeling-and-validation/.*

[30] *https://www.rotor.org/initiatives/fly-neighborly.*

[31] Wolfe, Malina, Barrett & Waitz 2016, Cost and benefits of US Aviation noise land-use policies, Transportation Research Part D.

[32] See ''Aviation Environmental and Energy Policy Statement,'' 77 FR 43137, 43138 (July 23, 2012), available on the FAA website at [URL]. The ''noise goal'' identified in this document includes ''[r]educ[ing] the number of people exposed to significant noise around U.S. airports.''

[33] 49 U.S.C. 47502. The regulations implementing this section are codified at 14 CFR part 150.

[34] 49 U.S.C. 4332(2)(C). See FAA Order 1050.1F, ''Environmental Impacts: Policies and Procedures'' (2015), Exhibit 4–1. The significance threshold for noise used for NEPA purposes in FAA Order 1050.1F is also used by the FAA for determining significant adverse noise effects under 49 U.S.C. 47106(c)(1)(B) for airport development projects involving the location of an airport or runway or a major runway extension. See 80 FR 44209, 44223 (July 24, 2015) (preamble to FAA Order 1050.1F).

Nos. 25-7373 & 25-7439
(Consolidated)

In the
UNITED STATES COURT OF APPEALS
for the Ninth Circuit

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

Consolidated with No. 25-7439
CITY OF BURIEN, et al.
Petitioners,

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PORT OF SEATTLE,
Intervenor-Respondent.

PETITIONERS' EXCERPTS OF RECORD INDEX VOLUME
On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com
Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

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Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN, INC.

By: Steven M. Taber

Steven M. Taber

Attorneys for the Petitioners, Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing document on this date with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system.

Service on Case Participants Who Are Registered for Electronic Filing:

I certify that I served the foregoing document to all registered case participants on this date via filing and notice generated through the Appellate Electronic Filing system.

PETITIONERS' EXCERPTS OF RECORD INDEX VOLUME

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners, Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

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PETITIONERS' EXCERPTS OF RECORD VOLUME 1 OF 3

On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com
Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

U.S. Department of Transportation

Federal Aviation Administration

Northwest Mountain Region

Finding of No Significant Impact/ Record of Decision

For the Sustainable Airport Master Plan Near-Term Projects at the Seattle-Tacoma International Airport

Seattle, Washington

EAXX-021-12-ARP-17297535477

September 2025

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I. Introduction

This document serves as the Federal Aviation Administration's (FAA) Finding of No Significant Impact/Record of Decision (FONSI/ROD) and provides the final agency determinations and approvals for the federal actions necessary to implement the Sustainable Airport Master Plan (SAMP) Near-Term projects (NTPs) at the Seattle-Tacoma International Airport (SEA). This FONSI/ROD is based on the information and analysis contained in the Final Environmental Assessment (FEA) dated September 2025, which is hereby incorporated by reference. The FEA has been prepared pursuant to Section 102(2)(c) of the National Environmental Policy Act (NEPA) and in accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*[1] and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The FEA documents the evaluation of the reasonably foreseeable environmental impacts associated with the proposed improvements.

II. Background (Section 1.2 of the FEA)

SEA is a commercial service airport located primarily within the City of SeaTac in southern King County, Washington, approximately 12 miles south of downtown Seattle and 20 miles north of the City of Tacoma (Exhibit 3-1 of the FEA). SEA is generally bound by SR 99 to the east, SR 509 to the west, S. 142nd Place to the north, and S. 200th Street to the south. Additional land owned by the Port for runway protection and noise compatibility extends northward to S. 136th Street and southward to S. 216th Street.

In 2015, SEA initiated the SAMP, which identified a Long-Term Vision (LTV) to accommodate future passenger levels and address identified needs for SEA over the 20-year planning horizon (through 2034). One of the overarching needs identified was to improve the experience for passengers at SEA. The current passenger processing functions, such as on-site parking, check-in hall, security screening, holdrooms, and the number of gates, were limited or undersized for the number of passengers SEA served in 2018 and continue to be undersized. The results of these limitations are crowded spaces, long lines, and delayed flights. These problems are expected to worsen as passenger demand increases.

The SAMP ultimately concluded that even with the implementation of the LTV, unconstrained 20-year demand would result in airfield congestion and high levels of delay. This congestion and delay would occur primarily due to limitations in the airfield/airspace system. The Port of Seattle (Port) and FAA determined that addressing these long-term airfield/airspace limitations is outside of the scope of SAMP and that a more comprehensive airfield and airspace planning study is needed to understand if additional actions would be required before the LTV could be implemented. Because additional planning is needed, the FAA determined that the LTV was not yet ready for environmental review.

The Port developed the NTPs to address near-term needs. The NTPs include 31 projects that improve the efficiency and safety of SEA, access to SEA, and support facilities for the airlines and SEA. Because the NTPs focus on a more immediate timeframe and address needs that are distinct from what may come from future planning, the NTPs are independent from the LTV. The FAA determined that the NTPs were ready for environmental review.

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[1] FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, was published on July 3, 2025. Projects that commence after July 3, 2025, are required to comply with FAA Order 1050.1G, while those projects already underway by that date may follow FAA Order 1050.1F. This EA relies upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity*, EO 14154, *Unleashing American Energy*, and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County*, 605 U.S. _ (2025).

III. Proposed Action (Section 1.3 of the FEA)

The NTPs are collectively referred to as the Proposed Action, which are described in Table 1-2 and shown on Exhibit 1-1 of the FEA. The Proposed Action also includes the construction and operation of associated program support projects, operational infrastructure improvements, and stormwater drainage system and industrial wastewater system improvements necessary for the implementation of the NTPs. The Proposed Action includes:

- A01 – Extension of parallel Taxiways A and B by approximately 1800 feet.
- A02 – Construction of Runway 16R/34L blast pads.
- A03 – Taxiway C/D reconfiguration and Runway Incursion Mitigation (RIM).
- A04 – Relocation of portion of Taxiway B to meet standards.
- A05 – Construction of a north holding pad (approximately 90,000 square feet).
- A06 – Construction of a new high-speed exit for Runway 34L arrivals between Taxiways J and E.
- A07 – Taxiway D extension of approximately 500 from Runway 16C/34C west to Taxiway T.
- A08 – North cargo hardstand construction (approximately 360,000 square feet).
- A09 – Construction of a central hardstand (approximately 292,000 square feet).
- A10 – Taxiway fillets construction.
- T01 – Construction of a multi-level terminal concourse and aircraft apron (up to 19 gates).
- T02 – Construction of an additional multi-level passenger terminal and parking garage.
- C01 – Cargo 4 warehouse construction to replace Cargo 6 warehouse demolished for T01.
- C02 – Construction of a cargo warehouse north of State Route (SR) 518.
- C03 – Cargo warehouse construction north of SR 518.
- L01 – Relocation of North Airport Expressway southbound lanes for the construction A09 and T01.
- L02 – Elevated busway and stations at the Main Terminal, Second Terminal, and Rental Car Facility.
- L03 – Construction of a loop ramp and split-level curbsides for the Second Terminal.
- L04 – Northeast ground transportation center construction on north side of existing parking garage.
- L05 – Relocation of the ground transportation holding lot displaced by L02 north of SR 518.
- L07 – Construction of employee parking garage north of SR 518.
- S01 – Fuel farm expansion (four new settling tanks and one blending tank).
- S02 – Relocation of ARFF facility for construction of T01.
- S03 – Construction of secondary ARFF facility.
- S04 – Relocation of the fuel rack from Cargo 6 to Cargo 3 for construction of T01.
- S05 – Triculator relocation to north cargo area for construction of A09.
- S06 – Relocation of deicing tanks to a northern and southern location.
- S07 – Construction of westside maintenance campus.
- S08 – Airline support building construction in north cargo for construction of T01 and A08.
- S09 – Expansion of the AMB/AFCO III building to replace displaced airline support facilities.
- S10 – Construction of centralized receiving and distribution center north of SR 518.
- Expansion of stormwater/industrial wastewater infrastructure.
- Construction of stormwater management facilities and storm drainage vaults.
- Installation of utilities (sewer, water, natural gas, fuel, and IT).
- Central mechanical plant upgrades.

Section 163 of the FAA Reauthorization Act of 2018, H. R. 302, (Public Law (P.L.) 115-254) and Section 743 of the FAA Reauthorization Act of 2024, H.R. 3935 (P.L. 118-63) limited FAA's approval authority to portions of Airport Layout Plans (ALPs) that meet certain statutorily defined criteria and prohibited the FAA from directly or indirectly regulating airport land use unless certain exceptions exist. While the Proposed Action details the Port's intended development at SEA, only some of these development components now are subject to federal approval and/or funding. However, the entire Proposed Action is analyzed in the FEA.

The airfield projects (A01-A10) would require the FAA to relocate FAA-owned equipment (including navigational and visual aids (NAVAIDs)) and associated infrastructure. These relocations would also require modifications to existing procedures. The extent of these relocations and modifications are not known at this time and would be determined during the design of the Proposed Action. The analysis in the FEA includes details that are currently known.

IV. Purpose and Need (Section 1.6 of the FEA)

The purpose and need for the Proposed Action is to accommodate 56 MAP (million annual passengers) at an optimal level of service (LOS) and projected cargo levels; provide airfield infrastructure that meets current FAA airport design standards; enhance the efficiency of the overall taxiway layout; and meet projected fuel storage demand including SAF initiatives.

The Proposed Action addresses five independent needs that affect the future ability of SEA to maintain its essential function as the primary commercial airport in the Pacific Northwest (Section 1.6.2 of the FEA). The five needs are:

1. Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS.
2. Insufficient facilities to accommodate projected cargo levels.
3. Portions of the airfield no longer meet current FAA airport design standards.
4. Inefficient / inadequate taxiway layout.
5. Lack of fuel storage to meet projected demand and the Port's SAF initiative.

Based on these needs, the purposes of the Proposed Action are to provide (Section 1.6.3 of the FEA):

1. Passenger processing facilities and gates to accommodate projected 56 MAP at an optimal LOS.
2. Cargo facilities to accommodate projected cargo demand.
3. Airfield infrastructure to meet current FAA airport design standards.
4. Improvements to enhance the efficiency of the overall taxiway layout.
5. Additional fuel storage facilities to meet projected demand and the Port's SAF initiative.

V. Agency Actions and Approvals (Section 1.4 of the FEA)

The FAA actions, determinations, and approvals necessary for the Proposed Action to proceed include:

- Unconditional approval of the ALP to depict those portions of the Proposed Action subject to FAA review and approval pursuant to 49 U.S.C. § 47107(a)(16)(B).
- Approval and construction/relocation of FAA-owned equipment and associated infrastructure as well as any resulting flight procedures updates from the relocation of navigational aids.
- Release of federal obligations to use property for non-aeronautical purposes, including any obligations under 49 U.S.C. § 47107, in accordance with FAA Order 5190.6B.
- Approval of changes to the airport certification manual pursuant to 14 CFR Part 139.
- Determination of project eligibility for Airport Improvement Program (AIP) funding and to impose Passenger Facility Charges in accordance with 49 U.S.C. §§ 47101-47144.

VI. Alternatives (Chapter 2 of the FEA)

The FEA identified and evaluated reasonable alternatives that may meet the purpose and need in accordance with NEPA and FAA Orders 1050.1F and 5050.4B. In addition, in accordance with FAA Order 1050.1F Section 6-2.1(d), the No Action alternative was carried forward as a baseline for comparison to the other action alternatives. Chapter 2 of the FEA presents the alternatives analysis.

Section 2.3 of the FEA explains the alternative evaluation process and provides the alternatives that were considered, which were derived from the SAMP process and from public input provided during the scoping process. The first level screening examined whether the alternative met the Purpose and Need. If the alternative satisfied the Purpose and Need, it moved to the second level. The second level screening evaluated which alternatives were reasonable and feasible based on a qualitative evaluation of factors related to operational impacts and cost. Alternatives that were determined to be reasonable and feasible were carried forward for detailed environmental impact analysis.

Based on the analysis of the alternatives for the individual needs, the FEA evaluated three alternatives:

Alternative 1 - No Action (Section 2.4 of the FEA):

The No Action Alternative assumes none of the federal actions or physical improvements included in the Proposed Action would occur. The No Action includes projects that have recently been constructed, or would be constructed by 2032, as part of the future base case. This includes the North Satellite Redevelopment program, International Arrivals Facility, Terminal Renovations, C Concourse Expansion, A Concourse Building Expansion, Widen Arrivals Drive project, and Runway Renumbering. These projects are independent from the Proposed Action and have received or will receive separate environmental reviews and approvals.

Alternative 2 - Proposed Action (Section 2.6 of the FEA):

Alternative 2, Proposed Action, represents a composite of Alternative 1-A (T01 and T02), Alternative 2-A (A08, C01, C02, C03, S07, S08, and S09), Alternative 3-A1 (A02), Alternative 3-B (A03 and A10), Alternative 3-C1 (A04), Alternative 4-A (A01), Alternative 4-B (A06 and A07), and Alternative 5-A (S01).

Alternative 3 - Hybrid Terminal Option (Section 2.6 of the FEA):

Alternative 3, the Hybrid Terminal Option, includes the same elements as Alternative 2: Proposed Action except for the terminal and gate location (Alternative 1-E instead of Alternative 1-A).

VII. Affected Environment (Chapter 3 of the FEA)

SEA is located primarily within the City of SeaTac in southern King County, Washington on approximately 2,800 acres of land. Cities nearest to SEA include Burien, Des Moines, Normandy Park, SeaTac, and Tukwila, as well as portions of unincorporated King County. The area around SEA has the highly developed character of a mature suburban community. Land uses directly adjacent to airport property include park land, residential, industrial, and commercial.

The General Study Area (GSA) (Exhibit 3-2 in the FEA) represents the area where reasonably foreseeable direct or indirect impacts may occur due to the implementation of the Proposed Action or alternatives. The GSA includes an area encompassing 3,692 acres (5.8 square miles). The GSA is loosely bounded by S. 140th Street to the north, 33rd Avenue S. to the east, S. 20th Street to the south, and Des Moines Way to the west. The study area for certain resources varies from the GSA. Where that occurs, the applicable study area is explained in the resource section.

The GSA and Endangered Species Act (ESA) Study Area (Figure 3-3 in the FEA) is composed primarily of developed areas (buildings and paved surfaces) with areas of vegetated habitats (managed strips adjacent to runways and taxiways, open fields and shrublands, forested areas, stormwater ponds, and wetlands). Vegetated habitats are actively managed to prevent flight corridor obstructions and wildlife hazards. Common bird species present within the GSA include waterfowl (geese and ducks), gulls, pigeons, starlings, and raptors (hawks and owls). Common animals include coyotes, mice, rabbits, racoons, beavers, and several fish species. Several ESA-listed species and designated critical habitat have the potential to occur within the ESA Study Area (Table 3-5 of the FEA).

Current activities at SEA that generate or involve the use of hazardous materials include aircraft fueling; maintenance of aircraft, GSE, motor vehicles, buildings, and Airport grounds; various Port maintenance shop operations; and construction activities. SEA is considered a federal Small Quantity Generator by the US Environmental Protection Agency (EPA) and a State of Washington Medium Quantity Generator, generating 19,891 pounds of hazardous waste in 2022. Based on a review of the WSDE's *What's in My Neighborhood* mapping tool, there have been 58 documented incidents of contamination within the GSA, of which 22 are within SEA property (Table 3-13 in the FEA). Per- and polyfluoroalkyl substances (PFAS) at SEA were primarily found in aqueous film-forming foam (AFFF), a Class B firefighting foam used to fight aviation and other chemical fires. A review of the Port's records indicates a total of 16 areas where AFFF has been deployed for an incident, used for training purposes, stored, or identified in water sampling (Sites H-59 through H-75 in Table 3-13).

SEA uses a centralized waste collection system divided between terminal and support areas and airfield areas. Municipal Solid Wastes (MSW or garbage) collected from terminal and support areas are transported to central collection sites on SEA, where MSW vendors who are under contract with the Port collect them for offsite disposal. Flight kitchens, some cargo operators, and airline maintenance hangars manage their waste separately from the Airport system. Each centralized waste collection site has at least one compactor for comingled recyclables and one compactor for garbage. Additional containers for compostable material, used cooking oil, scrap metal, construction debris, and garbage are located at various terminal loading docks and remote collection sites. Multiple service providers haul garbage, recyclables, compostable waste, and other waste from compactors, drop boxes, and dumpsters in the Port's central waste collection sites.

Stell Environmental Enterprises, Inc completed a cultural resource survey of the Area of Potential Effect (Exhibit 3-6 in the FEA) in February 2021 and documented four archaeological sites and 12 historic properties. None of the sites were determined to be eligible for listing on the National Register of Historic Places (NRHP). Fieldwork Studio LLC (Fieldwork) completed a focused reconnaissance survey in December 2023 and an evaluation of the Washington Memorial Park Cemetery in March 2024. None of the properties documented were determined to be eligible for listing on the NRHP.

The 65 DNL noise contour of the Existing (2022) Condition encompasses 8.8 total square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County (Exhibit 3-9 in the FEA). The 65 DNL contour extends approximately 3.4 miles to the north and 2.8 miles south of SEA and is made up of a mix of residential, commercial, and industrial land uses.

The surface transportation study focused on 108 traffic intersections where direct or indirect traffic impacts may occur due to implementation of the Action Alternatives (Exhibit 3-15 in the FEA). The study measured average vehicle delay (in seconds) and LOS at each intersection. The intersection LOS was ranked from A to F, with A representing a free flow condition, and F representing a high level of congestion. Intersection LOS results were compared to mobility standards to identify intersections that do not meet mobility standards. Of the 108 existing study intersections analyzed, 102 currently meet mobility standards (LOS).

The GSA is in King County, within the nearshore sub-watershed of Washington's Water Resource Inventory Area 9 and within the State of Washington's Coastal Zone Management Program. The GSA contains portions of the Miller Creek / Walker Creek, Gilliam Creek / Lower Green River, and Des Moines Creek drainage basins (Exhibit 3-17 in the FEA). There are 31 wetlands (approximately 68 acres), five streams, and seven ditches (tributaries) within the GSA (Exhibits 3-18 through 3-21). SEA's stormwater drainage system (SDS) and industrial wastewater system (IWS) are separate systems that operate independently of each other. The SDS collects stormwater from approximately 1,200 acres while the IWS collects stormwater from the approximately 375 acres where industrial activities are conducted, primarily in the area surrounding the Main Terminal and cargo complex. The 100-year and 500-year floodplains are associated with Miller Creek and are located west and north of Runway 16R (Exhibit 3-22 of the FEA). Several regional aquifers underlie the GSA, the shallowest of which is about 50 to 60 feet beneath ground surface near the terminal. Portions of three Well Head Protection Areas are located within the GSA. PFAS levels in the Tyee Well were found to exceed the State Action Level and this well was removed from service.

The Proposed Action would occur in an area considered in attainment for all criteria pollutants.

The following resources were determined not to be present and were not analyzed in the FEA:

- Farmlands
- Natural Area Preserves or Natural Resource Conservation Areas
- Section 6(f) funded properties
- State listed or sensitive species
- Wild and Scenic Rivers

VIII. Environmental Consequences (Chapter 4 of the FEA)

Environmental impact categories identified in FAA Orders 1050.1F and 5050.4B were evaluated in the FEA. The reasonably foreseeable environmental effects of the No Action Alternative, the Proposed Action, and the Hybrid Terminal Option are included in Chapter 4 of the FEA. Below is a summary of the findings.

A. Air Quality (Section 4.3.1 of the FEA)

SEA is in an area that is considered in attainment for all National Ambient Air Quality Standards (NAAQS). The air quality analysis included criteria air pollutants carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter less than or equal to ten microns aerodynamic diameter (PM_{10}), and fine particulate matter less than or equal to 2.5 microns aerodynamic diameter ($PM_{2.5}$). Because emissions of ozone (O_3) cannot be calculated directly, volatile organic compounds (VOCs) and oxides of nitrogen (NO_X) (precursors to O_3 formation) are used as surrogates. Lead was not included because Avgas fueling ceased at SEA in 2018 and the Proposed Action does not involve any potentially significant source of lead emissions.

Emissions of all pollutants are expected to be greater with the Future (2032 and 2037) Proposed Action and Hybrid Terminal Option than the Future (2032 and 2037) No Action due to the increased aircraft operations, taxi times, and motor vehicles. The largest increase would be to CO and NO_x. The Hybrid Terminal Option would have slightly higher construction emissions than the Proposed Action due to changes in the construction schedule but would have the same operational emissions. Based on coordination with the Puget Sound Clean Air Agency, the potential increase in criteria pollutant emissions would not be expected to create any new violation of the NAAQS.

B. Biological Resources (Section 4.3.2 of the FEA)

A Biological Evaluation (BE) was prepared to evaluate the Proposed Action's potential effects on ESA-listed species and critical habitats that potentially occur in the ESA Study Area. The FAA determined the Action Alternatives would not result in direct effects on ESA-listed species or critical habitat. Indirect effects could result from delayed consequences associated with operational treated stormwater runoff and industrial wastewater discharges generated by the Action Alternatives but would likely not adversely affect ESA-listed species (Table 4-11 of the FEA). The Action Alternatives were also evaluated for potential effects on essential fish habitat (EFH). It was determined that the Action Alternatives may affect, but are not likely to adversely affect, EFH for groundfish, coastal pelagic, and Pacific salmon species in Puget Sound and EFH for Pacific salmon species in the Duwamish River and tributaries that drain to Puget Sound from SEA. Any effect to EFH would result from delayed consequences associated with operational treated stormwater runoff and industrial wastewater discharges that are generated by the Action Alternatives.

FAA initiated Section 7 and EFH consultation with the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS) on June 30, 2025. NMFS responded by issuing a Biological Opinion on July 28, 2025. The USFWS responded by issuing a Biological Opinion on September 23, 2025. The Biological Opinions include information regarding the Proposed Action, species information, effects of the Proposed Action, and conservation recommendations. See Appendix D of the FEA for the BE and Biological Opinions.

Migratory birds and non-listed species may be impacted by the proposed removal of vegetation and trees. Approximately 56.4 acres of land that currently has trees, shrubs, and maintained grassy areas would be cleared for the construction of the C02, C03, L05, L07, S07, and S10. Some migratory birds and non-listed species may be displaced due to loss of habitat; however, it is likely that these species would relocate to surrounding areas providing similar habitat. For this reason, the reasonably foreseeable impacts to migratory birds and non-listed fish and wildlife species would not be significant. No impacts on bald eagles or golden eagles are anticipated, because no nests or roosting sites have been documented within the GSA.

C. Greenhouse Gas Emissions (Section 4.3.3 of the FEA)

The Action Alternatives would increase GHG emissions as compared to the No Action Alternative. The Proposed Action would increase Scope 1, 2 and 3 GHG emissions by 152,703 (2.1 percent) CO_2e MT over the No Action Alternative in 2032 and by 539,569 (7.4 percent) CO_2e MT in 2037. The Hybrid Terminal Option would increase Scope 1, 2 and 3 GHG emissions by 156,611 (2.2 percent) MT over the No Action Alternative in 2032 and by 539,569 MT (7.4 percent) in 2037. The majority of the GHG emissions increase comes from Scope 3 sources, which are not under the direct control of the Port.

D. Coastal Resources (Section 4.3.4 of the FEA)

Four of the airfield projects (A01, A02, A04, and A06) would require the FAA to relocate FAA-owned equipment (including navigational and visual aids) and associated infrastructure. Relocations of equipment would occur on the airfield. The FAA determined that the proposed FAA activities would be undertaken in a manner so as not to affect the coastal resources or uses of the Washington State Coastal Zone Management Program and submitted a Negative Determination to the Washington State Department of Ecology (WSDE) Federal Consistency Coordinator on July 2, 2024. WSDE did not have any concerns about the Negative Determination. Therefore, the Proposed Action would not result in significant effects on coastal resources.

E. Department of Transportation Act: Section 4(f) (Section 4.3.5 of the FEA)

Neither Action Alternative would result in a physical use of a Section 4(f) property. The assessment of potential constructive use impacts focused on changes in noise exposure and concluded that none of the Section 4(f) resources would experience a substantial impairment due to increases in noise from operations or construction of either Action Alternative. Therefore, the Action Alternatives would not result in significant impacts to Section 4(f) resources.

F. Hazardous Materials, Pollution Prevention, and Solid Waste (Section 4.3.6 of the FEA)

The Action Alternatives would utilize construction equipment containing hazardous substances such as oil, fuel, solvents, batteries, or other similar products. All hazardous materials used during construction would be handled, stored, and disposed of in accordance with federal, state, and local requirements.

Eleven documented incidents of hazardous materials contamination, including five potential PFAS contaminated sites, are located within the limits of disturbance of one or more elements of the Action Alternatives (Table 4-21 of the FEA). All work within an area of contamination would be conducted in accordance with the Port's Construction General Requirements for handling contaminated soil. These general requirements include utilizing an approved Contaminated Soils Management Plan identifying disposal facilities and appropriate BMPs. The Port would ensure work is conducted in accordance with all applicable regulations, including PFAS regulations, in place at the time of construction.

All material excavated from within the project area would be tested prior to disposal. Any material found to be contaminated would either be removed and disposed of in accordance with federal, state, and local requirements, encapsulated on-site to minimize any human health or environmental exposure risk, or remediated below established cleanup levels. As is standard for Port construction projects, all excavations would be monitored by a trained environmental professional for evidence of unanticipated contaminated soils under SEA's Environmental Agent Work Plan. None of the hazardous materials known to potentially be encountered are uncommon and the Port would comply with applicable rules and regulations to handle and dispose of the materials safely.

The Action Alternatives include the demolition of 12 existing buildings. Nine of these structures have the potential to contain regulated building materials including, but not limited to, asbestos-containing materials, lead paint, and mercury (commonly found in fluorescent light tubes and thermostats). Previous surveys of four of the buildings confirmed varying amounts of regulated building materials in three out of the four buildings (167A, 170A, and 170W). No regulated building materials were found in Building 161A. In addition, because most of these structures have been used for maintenance or storage of equipment, each has the potential for underground fuel lines, utility lines, or areas of subsurface contamination.

Port construction requirements require the development of a pollution prevention plan that includes an inventory/inspection of known hazardous materials in the buildings and on the site, a hazardous material cleanup and disposal plan, and a site-specific plan outlining administrative, operational, and structural BMPs that would be implemented to minimize risks and respond to any incidents should they occur. A Contractor's Safety Plan is also required by the Port to document site-specific emergency procedures and safety requirements. These requirements would avoid or minimize risks of exposure or offsite pollutant transport. Therefore, the Proposed Action would have no effect on hazardous materials and significance thresholds would not be exceeded.

Construction activities associated with the Action Alternatives would generate additional solid waste, such as construction debris, building materials, and other materials commonly associated with construction. The selected contractor would be responsible for managing and disposing of construction generated waste in accordance with a Waste Management Plan. The Port's existing Waste Diversion and Recycling Program would also apply, and the selected contractor would be expected to meet the goal of diverting at least 90 percent of construction debris from the landfill.

The additional passengers utilizing the new facilities would result in an increase in solid waste being generated. Waste generation forecasts for the Action Alternatives were based on passenger projections, historic data on waste generated per passenger, past analysis of increases in square footage of food service concessionaires, and modeling related to increases in square footage of facilities. The additional waste would not be significantly more than the No Action. There is sufficient landfill capacity to accommodate the additional solid waste. Because neither alternative would result in appreciably different quantity of waste; different methods of collection or disposal; exceedance of disposal capacity; or changes in waste diversion and recycling, no significant impacts related to solid waste would be expected.

G. Historical, Architectural, Archeological and Cultural Resources (Section 4.3.7 of the FEA)

There are no NRHP-eligible properties located within the APE. However, there is the potential to locate resources during ground disturbing activities. Therefore, FAA and the Port agreed to prepare an Inadvertent Discovery Plan for all projects, and to have an archaeological monitor on-site during ground disturbing activities for C03, S10, T02, L03, L05, L07, and the southern half of C02 given the potential to locate resources in these areas. FAA submitted a finding of No Adverse Effect to DAHP on August 3, 2021. DAHP concurred with the finding on August 30, 2021. The FAA initiated government-to-government consultation with ten Native American Tribes on July 28, 2021. Three tribes responded (two did not have comments and one requested the inclusion of an Inadvertent Discovery Plan as part of the Proposed Action).

The FAA updated the APE to include potential visual impacts from C02 and C03 and DAHP concurred with the updated APE on November 16, 2023. FAA submitted an updated finding of No Adverse Effect to DAHP on July 11, 2024, and DAHP concurred with the updated finding on July 12, 2024. The FAA submitted an updated finding of No Adverse Effect to clarify previous eligibility determinations on July 16, 2025, and DAHP concurred with the updated finding on July 21, 2025.

H. Land Use (Section 4.3.8 of the FEA)

The Action Alternatives would occur entirely on Port-owned property and would be consistent with the conditionally approved ALP. Each of the local land use plans for jurisdictions adjacent to or in the vicinity of SEA have recognized airport operations, including in some cases specifically addressing the potential for additional development of Airport property or property in the vicinity of SEA for Airport related operations. The State Growth Management Act, RCW 36.70.547, further protects airport development and operations from inconsistent or incompatible land uses being developed adjacent to the airport. Therefore, the Proposed Action would not significantly impact land uses within the study area.

I. Natural Resources and Energy Supplies (Section 4.3.9 of the FEA)

The new facilities proposed as part of the Action Alternatives would result in an increase in demand for energy and water, but that increase can be met by available supply. The Action Alternatives would address the jet fuel storage concerns, improve resiliency for emergencies as well as day-to-day operations, and would provide storage and blending infrastructure to support the Port's SAF goal to power every flight fueled at SEA with at least a ten percent blend of SAF. The increased use of SAF would reduce the demand for Jet A fuel. Anticipated increases in diesel and gasoline usage would not result in a significant impact because diesel and gasoline are not in short supply in the region.

The construction of the Action Alternatives would require the use of other natural resources such as sand, gravel, concrete, asphalt, and water, in addition to construction materials such as steel, wood, and glass. Metal wiring and plastic insulation would be used for new lighting. These construction materials are not in short supply in the Seattle-Tacoma area and construction of the Action Alternatives is unlikely to exceed the available supply of these materials.

Therefore, there would be no significant impacts to natural resources or energy supply.

J. Noise and Noise-Compatible Land Use (Section 4.3.10 of the FEA)

The 65+ DNL of the Future (2032) Action Alternatives noise exposure contour encompasses approximately 10.25 square miles, which is 0.15 square miles larger than the Future (2032) No Action noise exposure contour (Exhibit 4-2 of the FEA). The 65+ DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA and includes a mix of residential, commercial, and industrial land uses. The Future (2032) Action Alternatives would increase the total number of housing units by 337 and population by 824 within the 65+ DNL as compared to the Future (2032) No Action. This increase corresponds to the increase in operations between the two alternatives. The Future (2032) Action Alternatives would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2032) No Action.

The 65+ DNL of the Future (2037) Action Alternatives noise exposure contour encompasses 9.82 square miles, which is 0.66 square miles larger than the Future (2037) No Action noise exposure contour (Exhibit 4-3 of the FEA). This area is smaller than the 65+ DNL of the Future (2032) Action Alternatives due to the increase in the number of Boeing 737-7/8/9 MAX aircraft. The 65+ DNL contour extends approximately 3.7 miles to the north and 3.2 miles south of SEA and includes a mix of residential, commercial, and industrial land uses. The Future (2037) Action Alternatives would increase the total number of housing units by 1,851 and population by 4,439 within the 65+ DNL as compared to the Future (2037) No Action. The Future (2037) Action Alternatives would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2037) No Action. Therefore, no significant noise impact would occur because of implementing the Action Alternatives.

Based on a screening analysis, a detailed construction noise assessment was completed for NTPs C02 and C03 as the projects are directly adjacent to residential properties. The residential properties are located east of 24th Avenue S., west of 30th Avenue S., and south of S. 148th Street. Construction for C02 would start in 2026 (lasting approximately 18 months) and construction for C03 would start in 2028 (lasting around 16 months). The assessment determined noise from construction may occasionally exceed ambient noise levels and be noticeable to residential properties. The short-term increase in noise during construction would be temporary.

For C02, there are 13 residential properties that would experience a noticeable increase (over 3 dB) in construction noise intermittently during construction. The longest continuous duration would be

approximately 18 weeks. For C03, there are eight residential properties that would experience a noticeable increase (over 3 dB) in construction noise periodically during construction. The longest duration would be approximately 26 weeks.

Construction-related noise increases would be minimized through strict adherence to the Port's Construction General Requirements, by meeting the State of Washington and City of SeaTac requirements and utilizing BMPs. In addition, most of the residential properties adjacent to the C02 and C03 sites that would experience a noticeable temporary noise increase have received sound insulation through the Port's Sound Insulation Program which reduces the noise that enters the interior of the structure.

K. Socioeconomic and Children's Environmental Health and Safety Risks (Section 4.3.11 of the FEA)

The Action Alternatives would support long-term economic growth for the Puget Sound region and the area near SEA by providing facilities necessary to accommodate future passenger and cargo growth. The proposed Second Terminal would directly create new airline support jobs (such as ticket counter agents, gate attendants, etc.), new restaurant and retail jobs (for the new food and shopping establishments), and new jobs associated with operation and maintenance of the new facilities. Temporary growth in economic activity for local businesses would occur from the creation of construction jobs and supporting businesses. Additional indirect growth in economic activity may occur from passengers using nearby hotels, restaurants, etc. The overall effect on the economic environment of the GSA would be beneficial and no adverse impacts to economic resources are expected.

The construction and implementation of the Action Alternatives would occur on existing Port-owned property. There would be no land acquisition. Construction of C02 and C03 would likely eliminate access to 24th Avenue S. from S. 150th Street. While final design of C02 and C03 would be needed to determine if the access would be eliminated, the analysis in this EA assumed the access was eliminated to disclose the potential impacts. Drivers wanting to access 24th Avenue S. from S. 150th Street would have to utilize S. 152nd Street or S. 148th Street. This would add a maximum of 0.75 miles to the trip compared to the current access. While this would result in slightly longer drives for approximately 60 homes located along the western portion of S. 150th Street, there would be reasonable alternative routes, and this would not be considered a significant division of this community. Therefore, the Action Alternatives would not result in significant impacts related to division of communities.

Neither alternative would result in the relocation of residences. The Doug Fox Lot and PACCAR Aviation would be directly impacted by the Action Alternatives. The Doug Fox Lot, which is a parking business that leases Port-owned property, would be closed due to the proposed construction of the Second Terminal and parking garage. The Port would either not renew the lease (set to expire in June 2026) or would exercise termination rights within the lease. There are numerous other parking options near SEA for passengers to use, including the proposed parking garage. The approximately 25 Doug Fox Lot employees would likely find replacement employment with Port offered employment assistance. While this would result in the loss of revenue for the operator of the Doug Fox Lot, this is not considered a significant economic impact.

PACCAR Aviation, located off Starling Drive, has approximately 14 employees at this location to support the company's corporate aviation functions. This facility would close due to the proposed construction of the ARFF. The Port would either not renew the lease or would exercise termination rights within the lease. It is anticipated that the business and employees would relocate to another airport in the region. While this would result in the termination of the lease for PACCAR at this site, this is not considered a significant economic impact due to the scale of the operation and the ability of the employees to be relocated.

The Action Alternatives would not result in significant changes to children's health and safety risks including air, food, drinking water, recreational waters, soil, or products children may use or to which they would be

exposed. The Action Alternatives could result in non-permanent noise impacts during construction of C02 and C03. Though there are no schools are in areas where construction noise impacts were identified, children living in this area may experience temporary increases in noise during construction. No significant noise impacts were identified, and there are no separate noise impact standards for children.

L. Surface Transportation (Section 4.3.12 of the FEA)

The surface transportation study evaluated 114 intersections within the Surface Transportation Study Area for the No Action and 111 intersections for the Action Alternatives to identify roadway intersections that would fail to meet local and agency mobility standards in 2032 and 2037. The analysis assumed the SR 509 Phase 2 extension and transportation and infrastructure projects would be constructed by 2032.

The intersections were sorted into one of four categories depending on the results of the analysis:

- Category 1: Intersection has a LOS deficiency because of additional trips added by the Action Alternatives. Four intersections in 2032 and eight intersections in 2037.
- Category 2: Intersection has a LOS deficiency in No Action and delay increases due to trips generated by the Action Alternatives. Eleven intersections in 2032 and 18 intersections in 2037.
- Category 3: Intersection meets the mobility standard in both No Action and Action Alternatives, but Action Alternatives add delay. Sixty-three intersections in 2032 and 54 intersections in 2037.
- Category 4: Intersection delay improves or does not change with the Action Alternatives. Thirty-eight intersections in 2032 and 36 intersections in 2037.

Category 1 intersections are considered significant impacts. With the proposed mitigation, none of the impacted intersections would have a significant impact. Based on meetings and coordination with the local jurisdictions, the proposed mitigation for Category 1 intersections is shown in Table 4-36 of the FEA and the proposed mitigation for Category 2 intersections is shown in Table 4-37. In addition, mitigation for Category 3 intersections in the City of SeaTac will be provided in accordance with the ILA between the City of SeaTac and the Port. The Port and the local jurisdictions are in the process of formalizing the mitigation commitments in a MOU with each of the jurisdictions. More details on each intersection, improvements recommended and coordination with the local jurisdictions can be found in Appendix L of the FEA.

M. Visual Effects (Section 4.3.13 of the FEA)

The Port's Interlocal Agreement (ILA) with the City of SeaTac regulates land uses differently based on whether the land is within the Airport Activity Area (AAA); within the AAA but adjacent to public right-of-way, public property owned by another agency, or privately owned property (Edge Properties); or outside the AAA. Each category has its own specific requirements related to lighting and visual screening.

The Action Alternatives include new sources of light emissions from the illumination of new buildings and parking areas. Most of the projects would be built inside the AAA and would not be distinguishable from the ambient lighting. NTPs L01, L02, L03, L04, S07, S08, and T02 would be on Edge Properties. The changes in light intensity caused by these elements on Edge Properties within and adjacent to the AAA (Table 4-38 of the FEA) would not have significant impacts. NTPs C02, CO3, L05, L07, and S10 would be located on Port-owned property that is outside of the AAA and would be subject to measures within the ILA and City of SeaTac Municipal Code. Changes in light intensity caused by the Action Alternatives would not be considered significant.

The Action Alternatives would include new Airport related development that would affect the viewshed by adding new visual features. Most of the Action Alternatives would occur within the AAA. In those locations, the intensity of this existing land use is such that many of the proposed visual elements of the Action Alternatives would be consistent with the visual character and would not significantly alter the visual setting. Some of the elements would be located on Edge Properties (L01, L02, L03, L04, S07, S08, and T02), with potential to affect adjacent properties (Table 4-40 of the FEA). The impacts from these new elements would be isolated and limited to views from certain angles or vantage points. Certain elements of the Action Alternatives would be located on Port-owned property that is outside of the AAA (C02, C03, L05, L07, and S10). Development in these areas would be subject to measures within the ILA and City of SeaTac Municipal Code. No significant changes to the visual character of the area, noticeable contrasts with existing visual character, or obstructions of important visual resources are expected to occur because of any of these elements of the Action Alternatives.

N. Water Resources (Section 4.3.14 of the FEA)

Wetlands (Section 4.3.14.2 of the FEA)

The Action Alternatives would permanently impact up to 0.79 acres of jurisdictional wetlands and 2.66 acres of wetland buffers (Tables 4-42 and 4-43 of the FEA). Avoidance and minimization of wetlands impacts were incorporated to the extent possible for the Proposed Action. The Airport Sponsor will obtain a U.S. Army Corps of Engineers Section 404 permit for the wetland impacts. As required for the Section 404 permit, the Airport Sponsor will develop and implement a mitigation plan to compensate for all unavoidable wetland and wetland buffer impacts and obtain all applicable permits prior to construction.

The Action Alternatives would result in temporary construction impacts where wetland and wetland buffers would be affected by clearing and ground disturbing work during construction activities. These areas would be revegetated following construction and restored to their pre-construction condition. Temporary construction impacts would total 0.21 acres of wetlands and 3.43 acres of wetland buffers.

No significant wetland impacts would occur with the Action Alternatives.

Surface Waters (Section 4.3.14.3 of the FEA)

The Action Alternatives would permanently impact a total of 0.01 acres of streams and 0.01 acres of potentially jurisdictional ditches. The ditches are considered potentially jurisdictional based on the duration of flow and the fact that they discharge to receiving waters that are under jurisdiction of the USACE. The stream impacts would be associated with a crossing of Miller Creek for an access road for the Westside Maintenance Campus. The Action Alternatives would also result in permanent stream buffer impacts totaling 0.12 acre.

Temporary stream impacts include 0.07 acres to the East Fork Des Moines Creek resulting from construction activities associated with S01. Additionally, construction of the access road for S07 would temporarily impact 0.01 acres of Miller Creek. The Action Alternatives would also result in temporary stream buffer impacts totaling 0.20 acres. These impacts are not considered significant and would only occur during certain construction-related activities. These areas would be returned to their pre-construction condition after construction activities have been completed.

The Action Alternatives would add new impervious areas and replace existing impervious surfaces. The addition of impervious surfaces would be partially offset by the demolition of select impervious surfaces. Overall, the total impervious area at SEA would increase by a net additional 71 acres, of which 50 acres are pollutant-generating impervious surface (a 5.4% increase in pollutant-generating impervious surface area).

The Action Alternatives include improvements to and expansion of the Stormwater Drainage System and Industrial Wastewater System to provide the additional detention and treatment capacity needed to

support NTP development. All new pollutant generating impervious surfaces would be treated prior to draining to the Puget Sound via Miller, Walker, or Des Moines creeks or the IWTP discharge. With the planned measures previously described in place, the Proposed Action would not result in significant impacts to surface waters, nor would it result in an exceedance of water quality standards or contamination of public drinking water supply.

Floodplains (Section 4.3.14.4 of the FEA)

The Action Alternatives would not directly impact any floodplains or adversely affect any beneficial floodplain values. Two of the NTPs, L07 and S10, are near floodplains but would not extend into the adjacent 100- or 500-year floodplain areas. The S. 157th Place access road included as part of the Westside Maintenance Project (S07) includes replacing a culvert and paving within a 100- and 500-year floodplain. The culvert would be designed to maintain the conveyance and storage capacity of the existing floodplain. Therefore, the Proposed Action would not result in significant impacts to the floodplain because they would not result in (1) a considerable probability of loss of human life, (2) likely future damage associated with the encroachment that could be substantial in cost or extent, or (3) a notable adverse impact on the floodplain's natural and beneficial floodplain values.

Groundwater (Section 4.3.14.5 of the FEA)

Groundwater resources include Wellhead Protection Areas (WHPA) and regional aquifers. The Action Alternatives would result in permanent impacts to 43.6 acres and temporary impacts to 2.34 acres within the WHPA for Riverton Heights #1 and Riverton Heights #2. These impacts would be associated primarily with C02, C03, L05, and utility line connections. Note that these two wells are adjacent to each other, and the protection areas almost completely overlap. The impact calculation considers each wellhead protection area separately; thus, the impact is essentially counted twice. The Action Alternatives would permanently impact 6.25 acres and temporarily impact 5.21 acres of the wellhead protection area for Tyee Well AFR835. Operations at this wellhead were voluntarily suspended due to samples exceeding the Washington Department of Health State Action Levels for PFAS. The Action Alternatives would permanently impact 2.24 acres of the wellhead protection area associated with the McMicken Heights well east of the Airport due to a utility line connection.

A Phase 1 Groundwater Study completed in July 2008 determined that groundwater contamination at SEA does not threaten groundwater quality outside of the Aircraft Operations and Maintenance Area (AOMA). This was confirmed through groundwater sampling events from 2011 through 2015. The groundwater sampling delineated the downgradient extents of the modelled contaminant plumes (which were smaller than predicted by the model) and confirmed that the contaminants in the plumes will not impact potential local receptors (surface water bodies or drinking water supply wells), nor extend beyond the AOMA. This is due to the geology, hydrogeology, and hydrostratigraphy of the area. The Action Alternatives are not located within a Critical Aquifer Recharge Area.

Construction and operation of the Proposed Action would abide by all applicable regulations related to spill prevention and control regulations to prevent spills from causing significant adverse impacts on groundwater. These regulations also specify required cleanup/mitigation actions should a spill occur. To document that construction actions have not impacted groundwater quality within or downgradient of the work area, the Port will monitor groundwater during and following completion of construction. Therefore, no significant impacts to groundwater are anticipated.

Because the Proposed Action would not cause impacts to groundwater that would exceed applicable groundwater quality standards, and because the Proposed Action would not contaminate an aquifer used for public water supply, no significant impacts are anticipated.

IX. Mitigation (Chapter 4 of the FEA)

The Port has committed to the following mitigation measures as part of the Proposed Action:

- Complete mitigation for Category 1, Category 2, and Category 3 intersections in accordance with each jurisdiction's applicable regulations, design standards, or agreement in place at the time of construction. Category 3 mitigation is limited to the City of SeaTac based on coordination with WSDOT, Burien, Des Moines, City of SeaTac, and Tukwila.

ID	Intersection	Category	Jurisdiction	Proposed Mitigation	Future LOS with Mitigation
98	Des Moines Memorial Dr. at S. 168th St.	Cateogry #1	City of Burien	Construct new signal, provide dedicated WB left turn lane, & provide shared WB through/right turn lane. Westside Trail will be maintained/improved with no change in access.	A / B
14	Des Moines Mem. Dr. at S. 144th St.	Cateogry #1	City of SeaTac	Widen east leg to provide a WB left turn lane, widen south leg to provide a NB right turn lane, & modify traffic signal. Westside Trail will be replaced/improved with no change in access.	D / D
17	24th Ave. S. at S. 146th St.	Cateogry #1	City of SeaTac	Install signal & add leading protected NB left turn phase.	B / B
48	8th Ave. S. at S. 156th St.	Cateogry #1	City of SeaTac	Shift SB lanes west to add dedicated SB left & right turn lanes, add dedicated NB left turn lane, & modify signal timing with protected left turns for all approaches. Westside Trail will be replaced/improved with no change in access.	D / E
96	16th Ave. S. at S. 144th St.	Cateogry #1	City of SeaTac	Construct an eastbound right turn lane.	C / C
102	S. 152nd St. at Des Moines Mem Dr S.	Cateogry #1	City of SeaTac	Construct single leg roundabout to consolidate Intersections 100, 101, & 102. Westside Trail will be maintained/improved with no change in access	A / A
24	SR 518 WB Off-ramp at Des Moines Mem. Dr	Cateogry #1	WSDOT	Construct single leg roundabout where WB approach would be converted to a left turn lane & yield right turn lane. Westside Trail will be replaced/improved with no change in access.	A / A
42	SR 518 EB Off-ramp & 51st Ave. S.	Cateogry #1	WSDOT	Mitigation not required - WSDOT	N/A
83	Military Rd. S. at SB I-5 Ramps at S. 200th St	Cateogry #1	WSDOT	Mitigation not required - WSDOT	N/A
86	Military Rd. S. at NB I-5 Ramps	Cateogry #1	WSDOT	Mitigation not required - WSDOT	N/A
49	1st Ave S. at SW 160th St.	Category #2	City of Burien	Pay proportionate share of corridor improvement (Project #22 on Burien's TIP) costs equal to percentage of total trips by NTPs in 2037 (1%).	N/A
ID	Intersection	Category	Jurisdiction	Proposed Mitigation	Future LOS with Mitigation

89	Pacific Hwy S. at S. 216th St	Category #2	City of Des Moines	See intersection #93	N/A
93	Pacific Hwy S. at SR 516	Category #2	City of Des Moines	Pay proportionate share for delay added by NTP trips based on the total number of PM peak hour trips added & City's traffic impact fee schedule.	N/A
54	Host Rd. at S. 160th St/SR 518 EB On-ramp	Category #2	City of SeaTac	Construct a signal.	A / A
101	8th Ave S. at Des Moines Mem Dr	Category #2	City of SeaTac	See Intersection #102	A / A
105	34th Ave S. at S. 160th St	Category #2	City of SeaTac	Construct a roundabout.	A / A
106	Military Rd S. at S. 164th St at 42nd Ave S	Category #2	City of SeaTac	Pay proportionate share of roundabout construction costs equal to percentage of total intersection trips generated by NTPs in 2037 (4%). Constructed costs based on project costs identified for Project ST 116 in the City of SeaTac's Transportation Master Plan.	N/A
107	34th Ave S. at S. 170th Street	Category #2	City of SeaTac	Pay proportionate share of corridor improvement costs equal to percentage of total intersection trips generated by NTPs in 2037 (1%). Constructed costs based on project costs identified for Project ST 016 in the City of SeaTac's TIP.	N/A
109	Military Rd S. at S. 216th Street	Category #2	City of SeaTac	Pay proportionate share of channelization improvement costs equal to percentage of total intersection trips generated by NTPs in 2037 (2%). Constructed costs based on costs identified for Project ST 140 in the City of SeaTac's TIP	N/A
21	SR 509 SB Ramps at SW 148th St	Category #2	WSDOT	Mitigation not required - WSDOT	N/A
23	SR 518 EB Ramps and Des Moines Mem Dr	Category #2	WSDOT	Construct roundabout & accommodate West Side Trail connection along east side of Des Moines Memorial Dr S. The Westside Trail will be replaced/ improved with no change in access.	A / A
28	SR 518 EB Off-Ramp at S 154th St	Category #2	WSDOT	Mitigation not required - WSDOT	N/A
33	SR 518 WB Ramp at S. 154th St	Category #2	WSDOT	Construct a signal.	C / C
37	International Blvd at S. 154th St	Category #2	WSDOT	Mitigation not required - WSDOT	N/A
78	NB I-5 Ramps at S. 188th St	Category #2	WSDOT	Mitigation not required - WSDOT	N/A
94	SB I-5 Ramps at SR 516	Category #2	WSDOT	Mitigation not required - WSDOT	N/A

- Minimizing take associated with water quality degradation in Puget Sound from stormwater and wastewater discharges as described in the proposed action.
- Ensuring the project does not exceed the design specifications and creates no more than 51 acres of PGIS, unless otherwise coordinated with FAA, NMFS West Coast Region, and USFWS. The Port will be responsible for tracking development of the Proposed Action and amount of PGIS and notify the FAA if the Proposed Action will exceed 51 net acres of PGIS (for those projects that the FAA has authority over) prior to construction of the excess PGIS. The FAA will be responsible for coordinating with NMFS and/or USFWS if the PGIS exceeds 51 net acres.
- Providing the FAA with an as-built report including the total acres of PGIS within 30 days following project completion. The FAA will be responsible for coordinating the report with NMFS and USFWS. The FAA shall provide an as-built report including the total area of PGIS to NMFS within 90 days following project completion. This report should be sent to projectreports.wcr@noaa.gov including "Attn: WCRO-2025-01881" within the subject line.
- Carrying out the operation and maintenance plans described in the *Seattle-Tacoma International Airport Stormwater Pollution Prevention Plan* (Port of Seattle 2022 or most recent) to ensure that facilities or systems that are used to manage stormwater and wastewater at SEA are properly operated and maintained. The Port shall maintain records of inspection and maintenance to document compliance with the standards provided in the *Seattle-Tacoma International Airport Stormwater Pollution Prevention Plan* (Port of Seattle 2022 or most recent). Records do not need to be provided to NMFS unless requested.
- The Port will submit reports to the FAA and the USFWS each biennium, or as agreed to and documented, for the record. Each report shall document the most recently implemented NTPs (and SDS or IWS improvements) and shall include a quantification of associated new and replaced PGIS. Reports shall be submitted to the Washington Fish and Wildlife Office in Lacey, Washington (WashingtonFWO@fws.gov) and copied to the Assistant Field Supervisor or assigned lead consultation biologist by December 31 of each year that activities are completed.
- Utilizing Best Management Practices (BMPs) to limit impacts during construction. This includes, but is not limited to, utilizing BMPs to minimize surface transportation impacts, protect against sediment and soils entering nearby streams or creeks, reduce construction noise, and minimize increases in air emissions and water usage.
- Implementing strategies outlined in their April 2024 Land Stewardship Plan.
- Having a qualified biologist conduct a pre-construction nest survey 7-10 days before the start of construction and adhering to King County development standards for migratory birds. If nests are found, the USFWS' Nationwide Standard Conservation Measures will be used to develop BMPs.
- Adhering to the applicable FAA Advisory Circulars, including, but not limited to, FAA AC 150/5370-10, *Standard Specifications for Construction of Airports* and FAA AC 150/5200-33, *Hazardous Wildlife Attractants on or Near Airports*.
- Monitoring contaminant levels in groundwater during and following completion of construction.
- Developing and implementing an Inadvertent Discovery Plan during construction.
- Having an archaeological monitor on-site during ground disturbing activities for projects in C03, S10, T02, L03, L05, L07, and the southern half of C02.
    - The archaeological monitor shall work with the FAA and the Port to develop an archaeological monitoring scope and plan at least 60 days prior to construction.

- The archaeological monitor shall provide all monitoring logs, photos, a summary of activities monitored and dates, and a synthesis of any background research that directly addresses the question of prior disturbance in the area to the FAA and the Port within 30 days following the completion of monitoring.

- Developing a compensatory wetland mitigation plan to avoid and minimize wetland impacts.
- Designing the S. 157th Place access road and culvert replacement as part of S07 to maintain the conveyance and storage capacity of the existing floodplain.
- Obtaining all applicable permits prior to construction, including, but not limited to, a USACE Section 404 permit for discharge of dredged or fill material into waters of the US as well as a NPDES permit.
- Ensuring no vehicle or material storage occurs in wetland areas or other sensitive areas.
- Handling, storing, and disposing of hazardous materials in accordance with applicable federal, state and/or local regulations.

X. Public Involvement (Appendix O of the FEA)

The Scoping period opened on July 30, 2018 and lasted for 60 days, closing on September 28, 2018. The Port and the FAA advertised the Scoping period through newspaper advertisements, direct mail, and social media in five languages (English, Somali, Spanish, Vietnamese, and Arabic). The Port held an Agency Scoping Meeting and four Public Scoping Meetings during the 60-day Scoping period. The Scoping Report, comments submitted, and other details can be found in Appendix N of the FEA.

The Draft EA was released for agency and public review on October 21st, 2024, and comments were accepted through December 13th, 2024. The FAA initially planned to circulate the draft EA for a 30-day public comment period upon release on October 21, 2024, but extended the comment period to 45-days prior to the release of the draft EA at the request of the Port based on the complexity of the analysis. On November 8, 2024, the FAA then extended the comment period to Friday, December 13th after taking into consideration community interest and the placement of Thanksgiving within the comment period. Notice of this extension was provided at the public meetings, posted on the project website, and provided to the people who requested the extension. To facilitate comments, four public meetings were held in the Cities of Federal Way, Des Moines, SeaTac, and Burien, Washington. Comments could be submitted in writing (either at a public meeting or by mail), orally to a stenographer at the public meetings, and/or electronically (either by email or through the project website).

The Airport Sponsor received a total of 595 comment submissions on the Draft EA. The FAA and the Port considered and addressed each individual comment provided; however, individual responses are not required as part of the EA process. A copy of the comments and responses to those comments are provided in Appendix O of the FEA.

Several sections of the FEA were updated from the Draft EA in response to comments received and regulatory changes. The revisions are listed in **Table A** of the FEA.

XI. Agency Findings

The FAA makes the following determinations for the Proposed Action based upon a careful review of the attached FEA, comments on the Draft EA, and appropriate supporting information.

The following determinations are prescribed by the statutory provisions set forth in the Airport and Airway Improvement Act of 1982, as codified in 49 USC §47106 and 47107.

i. The project is reasonably consistent with existing plans of public agencies responsible for development of the area surrounding the airport (49 USC §47106(a)(1)).

The determination prescribed by this statutory provision is a precondition to agency approval of project grant funding applications. Construction of the Proposed Action would occur entirely on Airport property and would be consistent with the plans, goals and policies for the area, including the Port and City of SeaTac ILA, City of SeaTac Comprehensive Plan, Des Moines Comprehensive Plan, the Burien Plan, Tukwila Comprehensive Plan, and the Puget Sound Regional Council Vision 2050 (Appendix H of the FEA).

Title 36, Chapter 36.70.547 of the Revised Code of Washington requires every county, city, and town in which a general aviation airport is located, that is operated for the benefit of the public, through its comprehensive plan and development regulations, to discourage the siting of incompatible uses adjacent to such general aviation airport. Thus, local plans and land use regulations have been developed by adjacent jurisdictions to discourage uses incompatible with Airport operations.

ii. The interests of the community in or near which the project may be located have been given fair consideration (49 USC §47106(b)(2)).

The determination prescribed by this statutory provision is a precondition to agency approval of airport development project grant funding applications. The Draft EA was released for agency and public review on October 21st, 2024, and comments were accepted through December 13th, 2024. The FAA initially planned to circulate the draft EA for a 30-day public comment period upon release on October 21, 2024, but extended the comment period to 45-days prior to the release of the draft EA at the request of the Port based on the complexity of the analysis. On November 8, 2024, the FAA then extended the comment period to Friday, December 13th after taking into consideration community interest and the placement of Thanksgiving within the comment period. Notice of this extension was provided at the public meetings, posted on the project website, and provided to the people who requested the extension. To facilitate comments, four public meetings were held in the Cities of Federal Way, Des Moines, SeaTac, and Burien, Washington. Comments could be submitted in writing (either at a public meeting or by mail), orally to a stenographer at the public meetings, and/or electronically by email or through the project website. The Airport Sponsor received a total of 595 comment submissions on the Draft EA. The FAA and the Port considered and addressed each individual comment provided.

iii. The airport sponsor has taken, or will take, actions to restrict land use in the airport vicinity, including adoption of zoning laws, to ensure the uses are compatible with airport operations (49 USC §47107(a)(10)).

The determination prescribed by this statutory provision is a precondition to agency approval of airport development project grant funding applications. As a recipient of AIP funding, the Airport Sponsor has signed grant assurances that require them to take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to, or in the immediate vicinity of, the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. The most current land uses and zoning designations of the surrounding jurisdictions were

obtained for analysis. The land use analysis considered existing and future land use plans within and surrounding the Airport and evaluated the Proposed Action to determine whether it would be compatible with land use guidelines as well as local noise ordinances within the County.

iv. Determination that the airport development is reasonably necessary for the use in air commerce or in the interests of national defense pursuant to (49 USC § 44502(b)).

The FAA has determined that implementation of the Proposed Action would maintain the safety, utility, and efficiency of SEA. Implementation of the Proposed Action, as described below, would enhance safety at the Airport by meeting FAA Airport Design Standards consistent with the FAA Advisory Circular 150/5300-13B, Change 1, Airport Design, and the FAA's regulations described in, 14 CFR Part 77, Safe, Efficient Use and Preservation of the Navigable Airspace.

XII. Decision and Order

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed Federal action, namely the Proposed Action, is consistent with existing national environmental policies and objectives as set forth in Section 101 (a) of NEPA and other applicable environmental requirements and is not a major federal action significantly affecting the quality of the human environment or otherwise, including any condition requiring consultation pursuant to Section 102(2)(c) of NEPA. As a result, FAA will not prepare an Environmental Impact Statement.

This decision does not constitute a commitment of funds under the Airport Improvement Program (AIP); however, it does fulfill the environmental prerequisites to approve applications for grants of AIP funds for the Proposed Action in the future. (49 USC § 47101)

Accordingly, under the authority delegated to me by the Administrator of the FAA, I approve and direct that agency action be taken to carry out implementation of the Proposed Action.

ALETA BEST

Digitally signed by ALETA BEST
Date: 2025.09.24 07:41:15 -08'00'

Aleta Best
Acting Regional Administrator
Northwest Mountain Region (ANM)

Right of Appeal

This FONSI/ROD constitutes a final order of the FAA Administrator and is subject to the exclusive judicial review under 49 USC § 46110 by the US Circuit Court of Appeals for the District of Columbia or the US Circuit Court of Appeals for the circuit in which the person contesting the decision resides or has its principal place of business. Any party having substantial interest in this order may apply for review of the decision by filing a petition for review in the appropriate US Court of Appeals no later than 60 days after the order is issued in accordance with the provisions of 49 USC § 46110.

AR000024

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing document on this date with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system.

Service on Case Participants Who Are Registered for Electronic Filing:

I certify that I served the foregoing document to all registered case participants on this date via filing and notice generated through the Appellate Electronic Filing system.

PETITIONERS' EXCERPTS OF RECORD VOLUME 1 OF 3

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners, Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

Nos. 25-7373 & 25-7439
(Consolidated)

In the
UNITED STATES COURT OF APPEALS
for the Ninth Circuit

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

Consolidated with No. 25-7439
CITY OF BURIEN, et al.
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

PETITIONERS' EXCERPTS OF RECORD VOLUME 2 OF 3
On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com
Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

1 Introduction and Purpose & Need

1.1 Introduction

This Environmental Assessment (EA) for the Seattle-Tacoma International Airport (SEA) Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTPs) is being prepared in accordance with the requirements set forth by the National Environmental Policy Act (NEPA), as amended (42 USC § 4331 et seq.), and Federal Aviation Administration (FAA) Orders 1050.1F, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.[1] The purpose of this EA is to determine if the development and operation of the Proposed Action has the potential to significantly affect the human environment. Environmental review and approval are required under NEPA because the Proposed Action would require multiple federal actions (see Section 1.4, Requested Federal Actions). **Table 1-1** provides an outline and description of the chapters included in this EA.

The FAA invited the U.S. Army Corps of Engineers (USACE) to participate as a cooperating agency as described under 42 USC § 4336a(a)(3) and USACE accepted.

TABLE 1-1: OUTLINE OF THE EA

Chapter	Description
Chapter 1, Purpose and Need	Describes the background for the project, as well as the purpose and needs for the project
Chapter 2, Alternatives	Describes the process for identifying and evaluating alternatives for further consideration in the environmental review process
Chapter 3, Affected Environment	Describes the baseline conditions for each of the environmental resource categories
Chapter 4, Environmental Consequences	Describes the potential reasonably foreseeable environmental effects, the significance of those effects, and proposed mitigation (where necessary), of the different alternatives for each environmental resource category
Appendices	Provides more detail on individual topics and outreach conducted

1.2 Background

1.2.1 Planning Process

The SAMP[2] identified a Long-Term Vision to accommodate future passenger levels and address identified needs for SEA over the 20-year planning horizon (through 2034). One of the overarching needs from the SAMP was to improve the experience for passengers at SEA. The current passenger processing functions, such as on-site parking, check-in hall, security screening, holdrooms, and the number of gates, were limited or undersized for the number of passengers SEA served in 2018 and

[1] FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, was published on July 3, 2025. Projects that commence after July 3, 2025, are required to comply with FAA Order 1050.1G, while those projects already underway by that date may follow FAA Order 1050.1F. This EA relies upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. _ (2025).

[2] The SAMP was prepared over a three-year period (2015 to 2018).

continue to be undersized. The results of these limitations are crowded spaces, long lines, and delayed flights. These problems are expected to worsen as passenger demand increases.

The SAMP ultimately concluded that even with the implementation of the full Long-term Vision, unconstrained 20-year demand would result in airfield congestion and high levels of delay. This congestion and delay would occur primarily as a result of limitations in the airfield / airspace system. The Port of Seattle (Port) and FAA determined that addressing these long-term airfield / airspace limitations is outside of the scope of SAMP and that a more comprehensive airfield and airspace planning study is needed to understand if additional actions would be required before the Long-term Vision could be fully implemented. Because additional planning is needed, the FAA determined that the Long-term Vision was not yet ripe for environmental review.

The Port developed the NTPs, which is a plan to address the near-term needs, whether the Port pursues the long-term projects or addresses the long-term airfield / airspace limitations. The NTPs are the subject of this environmental review and include 31 projects that would improve the efficiency and safety of SEA, access to SEA, and support facilities for the airlines and SEA. Because the NTPs focus on a more immediate timeframe and address needs that are distinct from what may come from future planning, the NTPs are independent from the Long-term Vision. The FAA determined that the NTPs are ripe for environmental review.

The sustainability component of the SAMP focused on the Port's long-standing history of implementing sustainability initiatives to achieve its environmental goals and objectives. Through the SAMP process, the Port focused on what facilities are needed, where these facilities would be located, and how these facilities would be operated from a sustainability perspective.[3]

1.2.2 EA Timeline

The FAA and Port initiated the EA for the SAMP NTPs on July 30, 2018 with a 60-day public and agency scoping period. The scoping period closed on September 28, 2018 and the FAA and Port reviewed comments received from the public and agencies. Based on scoping comments, the FAA and Port made the decision to complete the NEPA and State Environmental Policy Act (SEPA) analysis separately and sequentially. In March of 2020, the COVID public health emergency resulted in dramatic reductions in passengers and aircraft operations and resulted in a partial deferral of spending by the Port. Due to the reduction in activity between 2020 and 2022 and the partial deferral of spending, the Port reevaluated the opening year for the NTPs. Based on the projections of activity in the 2023 Updated Forecast and the time it would take to construct the NTPs, the Port determined the opening year for the NTPs would be 2032. Updated impact analyses were prepared in 2023 through 2024 based on the revised timeframe.

At the end of this environmental review process, the FAA will either issue a Finding of No Significant Impact / Record of Decision (FONSI / ROD) or determine that the Proposed Action has the potential for one or more significant impacts to the human environment, thereby requiring the preparation of an Environmental Impact Statement (EIS).

[3] The SAMP Technical Memorandum No. 9 Sustainability Planning and Management Strategy provides the specific ways the Port would incorporate sustainability into the development process and can be found here: https://www.airportprojects.net/sampenvironmentalreview/tm-no-9-sustainability-plan-management/.

1.3 Proposed Action

In this EA, the NTPs are collectively referred to as the Proposed Action, which are described in **Table 1-2** and shown on **Exhibit 1-1**. Based on the current schedule for environmental review, construction could begin late 2025. If the Port decides to proceed with the project following the environmental reviews, the Proposed Action could be substantially complete and operational by 2032.

Section 163 of the FAA Reauthorization Act of 2018, H. R. 302, (Public Law (P.L.) 115-254) and Section 743 of the FAA Reauthorization Act of 2024, H.R. 3935 (P.L. 118-63) limited FAA's approval authority to portions of Airport Layout Plans (ALPs) that meet certain statutorily defined criteria and prohibited the FAA from directly or indirectly regulating airport land use unless certain exceptions exist. While the Proposed Action details the Port's intended development at SEA, only some of these development components now are subject to federal approval and / or funding. However, the entire Proposed Action is analyzed in this EA.

The airfield projects (A01-A10) would require the FAA to relocate FAA-owned equipment (including navigational and visual aids (NAVAIDs)) and associated infrastructure. These relocations would also require modifications to existing procedures. The extent of these relocations and modifications are not known at this time and would be determined during the design of the Proposed Action. The analysis in this EA includes details that are currently known.

TABLE 1-2: PROPOSED ACTION PROJECTS

Project Element	Description
Airfield Projects	**Airfield Projects Description**
A01 – Taxiway A/B Extension	Extension of parallel Taxiways A and B by approximately 1,800 feet to provide access to the south end of Runway 16L/34R. Includes: • Construction of parallel taxiway connectors from Taxiway B to Runway 16L/34R. • Relocation of Taxiway S 310 feet south. • Relocation of the Runway 34R glideslope antenna and shelter to the southeast. • Adjustment of the Runway 34R glideslope angle and precision approach path indicator (PAPI) to match the glideslope. • Amendments to flight procedures to accommodate change in glideslope angle. • Relocation of a vehicle service road bridge over S. 188th Street Taxiways would have in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, elevated runway guard lights, and signage.
A02 – Runway 16R/34L Blast Pads	Expansion of Runway 16R/34L blast pads from 200 feet by 200 feet to 220 feet by 400 feet to meet current FAA standards and relocation of NAVAIDs.
A03 – Taxiway C/D Reconfiguration and Runway Incursion Mitigation (RIM)	Modification of existing taxiway geometry of Taxiways C and D to correct non-standard intersection angles and reconfigure non-standard intersections. Includes the extension of Taxiways C and D by approximately 500 feet to intersect with Taxilane A and removal of pavement north of Taxiway C to mitigate the existing RIM location.
A04 - Taxiway B 500-foot Separation	Relocation of Taxiways A and B 100 feet east between Taxiways C and L to provide the required 500 feet runway/taxiway separation. Includes extending Taxiways C, D, E, H, and K to the relocated Taxiway B and relocating NAVAIDs. Taxiways would have in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, elevated runway guard lights, and signage.
A05 – North Hold Pad	Construction of a new approximately 90,000 square foot hold pad for four aircraft to reduce congestion on the taxiways and at the terminal.

TABLE 1-2: PROPOSED ACTION PROJECTS (CONTINUED)

Project Element	Description
Airfield Projects	**Airfield Projects Description**
A06 – Runway 34L High-Speed Exit	Construction of a new high-speed exit for Runway 34L arrivals between Taxiways J and E to allow for more efficient use of the runway by arriving aircraft. The high-speed exit would be equipped with in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, and taxiway signage. Includes the relocation of the multilateration remote unit.
A07 – Taxiway D Extension	Extension of Taxiway D by approximately 500 feet from Runway 16C/34C west to Taxiway T. Includes in-pavement centerline lights, elevated taxiway edge lights, hold position marking with in-pavement lights, elevated runway guard lights, and signage.
A08 – North Cargo Hardstand	Construction of a new approximately 360,000 square foot (1,200 feet by 300 feet) cargo aircraft hardstand in the North Cargo area east of Taxiway A. The hardstand would accommodate five aircraft for loading and unloading cargo freight and parking cargo aircraft. Construction would require the relocation of the existing United maintenance hangar and Swissport cargo facility (S08), relocation of the Port's aviation maintenance facility (S07), and relocation of ground service equipment maintenance (S09).
A09 – Central Hardstand	Construction of a new approximately 292,000 square foot hardstand for seven aircraft north of Concourse D and east of the North Satellite to accommodate increased demand for passenger hardstand operations and overnight parking of passenger aircraft. Buses would bring passengers to / from aircraft on the hardstand. Construction of A09 requires relocating portions of the North Airport Expressway (NAE) (L01).
A10 – Taxiway Fillets	Construction of new full strength pavement panels and shoulders and the installation of edge lighting and signage to bring taxiway fillets up to current FAA standards.
Terminal Projects	**Terminal Projects Description**
T01 – North Gates	Construction of a new multi-level terminal concourse and aircraft apron to accommodate up to 19 gates. The new terminal concourse would have a footprint of approximately 203,000 square feet and contain three levels (approximately 609,000 square feet total). The new terminal concourse would include: • Ramp level for baggage handling and aircraft support functions. • Concourse level with passenger holdrooms, concessions, restrooms, and other passenger and airline support functions. • Mezzanine level with office space. • Above-ground elevated pedestrian walkway to the passenger terminal. The new facility would be located north of the North Satellite Concourse and would displace the Aircraft Rescue and Firefighting (ARFF) station (S02), Cargo 6 warehouse (C01), deicing tanks (S06), NAE (L01) and fuel rack (S04).
T02 – Second Terminal and Parking	Construction of a new multi-level passenger terminal across the NAE from the proposed terminal concourse (T01). The new terminal would be approximately 575,000 square feet in size, with a footprint of approximately 166,000 square feet. The new terminal would include: • Basement level for baggage handling and screening. • Baggage claim level for arriving passengers. • Interstitial (or open) level connected to a new garage that provides commercial curbside space. • Departures level with passenger check-in and security screening facilities. Includes a new multi-level parking garage to provide approximately 1,350 parking spaces. The new facilities would displace the Doug Fox Parking Lot.

TABLE 1-2: PROPOSED ACTION PROJECTS (CONTINUED)

Project Element	Description
Cargo Projects	**Cargo Projects Description**
C01 – Cargo 4 South Redevelopment	Construction of an approximately 80,000 square foot building (warehouse and office space, truck terminals, and parking) on the Cargo 4 South site located in the existing central cargo area of the Airport to replace Cargo 6 warehouse demolished for T01.
C02 – Offsite Cargo Phase 1	Construction of a new approximately 330,000 square foot cargo warehouse building (warehouse and office space, truck terminals, and parking) on the Port's L-shaped parcel located north of State Route (SR) 518.
C03 – Offsite Cargo Phase 2	Construction of a new approximately 90,000 square foot cargo warehouse building (warehouse and office space, truck terminals, and parking) on the Port's L-shaped parcel located north of SR 518.
Landside Projects	**Landside Projects Description**
L01 – North Airport Expressway (NAE) Relocation (southbound lanes)	Construction of approximately 7,300-linear-feet of new NAE to access the Second Terminal and alleviate congestion on existing roadways. The new roadway would replace a section of the existing roadways eliminated for the construction of A09 and T01. The relocated portion of the NAE would also be widened from three lanes to four lanes. The cell phone lot will be relocated to the main parking garage to accommodate the construction of L01.
L02 – Elevated Busway and Stations	Construction of approximately 6,000-linear-feet of elevated busway and three stations to connect the Main Terminal, new Second Terminal, and Rental Car Facility. The busway and stations would be located along the eastern edge of Airport property and would tie into existing bus routes. Displaces existing GT holding lot (L05).
L03 – Second Terminal Roads and Curbside	Construction of a loop ramp from the southbound lanes of the NAE to provide access to the new passenger terminal. The ramp would connect to the existing S. 160th Street Loop, eastbound SR 518 on-ramp at S. 160th Street, or the existing northbound lanes of the NAE. Includes construction of split-level curbsides for arriving vehicles, departing vehicles, and commercial vehicles (shuttles, taxis, and ride-share companies).
L04 – Northeast Ground Transportation Center (NE GTC)	Construction of a NE GTC on the north side of the existing parking garage. The NE GTC facility would be approximately 255,000 square feet and would include: • Expansion of the existing charter and cruise bus lot on the ground floor level. • Shuttle bus platform on level two serving as the southern terminus of the elevated busway (approximately 87,000 square feet). • Passenger circulation and check-in facilities on level three providing terminal-quality space for passengers arriving / departing on the elevated busway and Link Light Rail at the Airport Station to transition to / from the Main Terminal (approximately 64,000 square feet). • Office space on levels four and five (approximately 52,000 square feet per level).
L05 – North Ground Transportation (GT) Holding Lot	Relocation of the GT holding lot on Port property north of SR 518 and south of S. 144th Street to replace the parking lot displaced by L02. This lot would be used for ground transportation holding, as drivers await trip requests or passenger arrival.
L07 – Employee Parking Structure	Construction of a new eight-story (i.e., one below grade and seven above-grade) parking structure that would provide approximately 3,500 parking stalls on Port property north of SR 518 and south of S. 144th Street to accommodate employee parking demand. The structure would have a footprint of approximately 3.3 acres.

TABLE 1-2: PROPOSED ACTION PROJECTS (CONTINUED)

Project Element	Description
Airport / Airline Support Projects	**Airport / Airline Support Projects Description**
S01 – Fuel Farm Expansion	Expansion of the existing fuel farm onto the former south employee parking lot. This would include: • Four new settling tanks, adding approximately 10-million-gallons storage capacity. • Blending tank (approximately 500,000-gallon) and approximately 100,000-gallon Sustainable Aviation Fuels (SAF) receipt tank. • Additional piping. • Expanded spill containment dike. • New truck fuel rack to support the delivery of SAF for blending.
S02 – Primary ARFF Facility	Relocation of the Primary ARFF station for construction of T01. The new ARFF would be approximately 50,000 square feet and would be located on the south airfield between Runway 16R/34L and Runway 16C/34C.
S03 – Secondary ARFF Facility	Construction of an approximately 10,000 square foot Secondary ARFF to provide ambulatory response to the terminals and concourses, fuel spill and fire response to the concourse ramp areas, and backup emergency response to the airfield. The Secondary ARFF facility would be integrated within the new Concourse (T01) at the southeast end of the concourse and would have both airside and landside access.
S04 – Fuel Rack Relocation	Relocation of the fuel rack from the Cargo 6 area to the Cargo 3 area for construction of T01. The fuel rack is where fuel trucks refill.
S05 – Triculator	Relocation of the triculator building from east of the existing ARFF station to the North Cargo area to clear the site for A09. The triculator transfers aircraft waste to the sewer system.
S06 –Deicing Tanks	Relocation of deicing fluid tanks currently located at Cargo 6 and Cargo 7 to a northern and southern locations to clear the site for the new concourse. Each site would have a containment system and two tanks, one for Type I deicing fluid (for shorter-term protection) and the second for Type IV deicing fluid (for longer-term protection). Each set of tanks would also have a blending station.
S07 – Westside Maintenance Campus	Relocation of the Port's aviation maintenance facility (AMF) for construction of A08 to vacant land on the west side of the Airport in the Westside Maintenance Campus, co-locating it with other related functions. The AMF facilities would include a vehicle fuel rack, airfield deicer storage, snow equipment storage, multi-bay buildings and associated maintenance facilities. The existing S. 168th Street access would be reconstructed and a new access road would be constructed from S. 157th Place to the new facility.
S08 – North Airline Support	Construction of an approximately 15,000 square foot airline support building in the northeast corner of the North Cargo area to accommodate airline support functions displaced by construction of T01 and A08.
S09 – West Airline Support	An approximately 25,700 square foot expansion to the west of the existing AMB / AFCO III building used for cargo operations. The expanded building would accommodate displaced maintenance functions for construction of T01 and A08.
S10 – Centralized Receiving and Distribution Center (CRDC)	Construction of a new approximately 55,000 square foot CRDC on Port property north of SR 518 and south of S. 144th Street to improve security and efficiency in moving supplies to SEA dining and retail concessionaires in the passenger terminals. The new CRDC would include a warehouse, office space, truck terminals, and parking for visitors and employees.

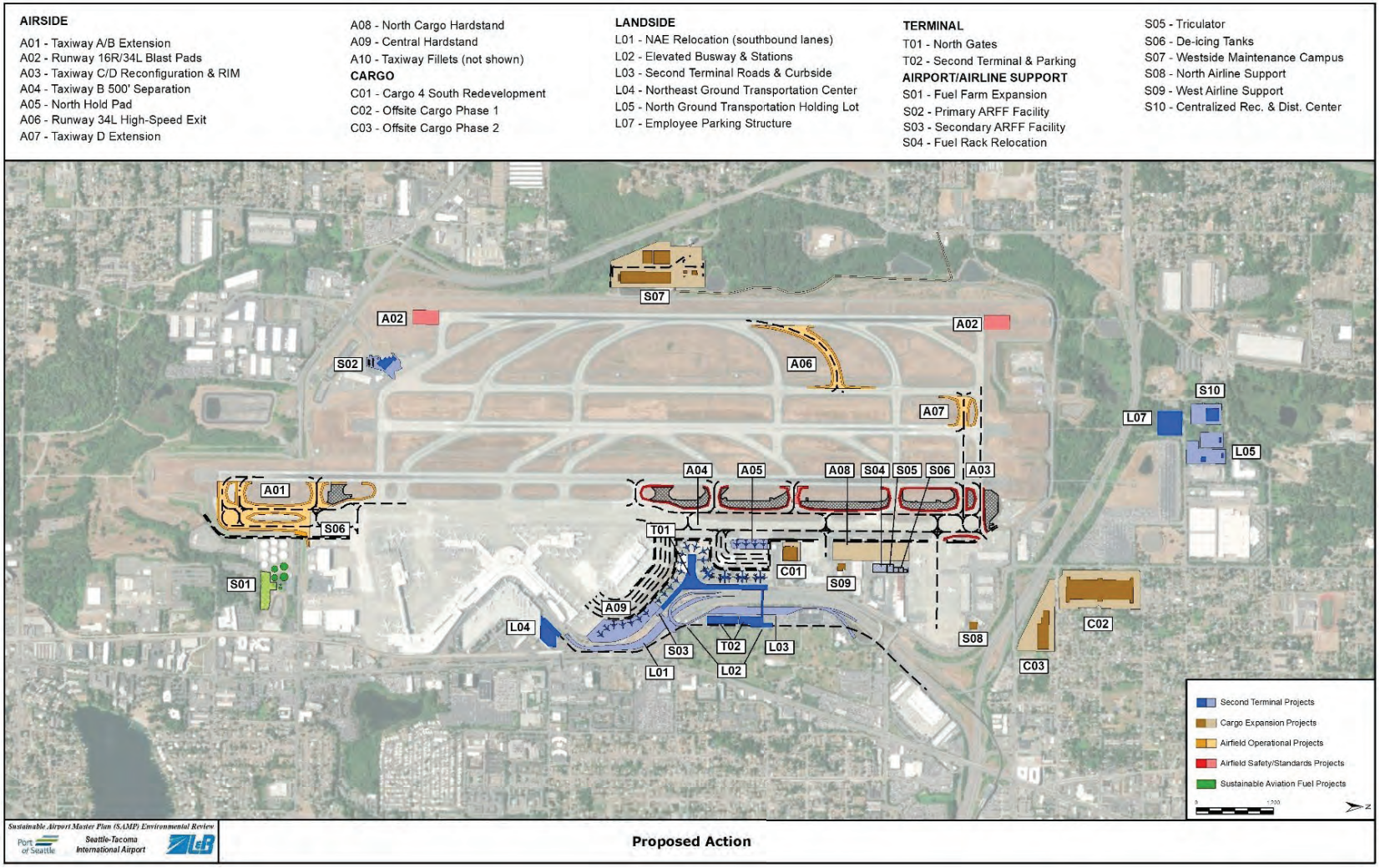
TABLE 1-2: PROPOSED ACTION PROJECTS (CONTINUED)

Project Element	Description
Buildings to be Relocated	**Project Requiring Relocation**
Fuel Rack	T01 – North Gates
Portion of NAE	L01 – NAE Relocation (southbound lanes)
Triculator	T01 – North Gates
Buildings to be Demolished	**Project Requiring Demolition**
Primary ARFF Facility	T01 – North Gates
Swissport Cargo Facility (T01)	T01 – North Gates
United Airlines Maintenance / Cargo 4S	C01 – Cargo 4 South Redevelopment
Gate Gourmet Flight Kitchen	T02 – Second Terminal and Parking
Deicing fluid tanks	S06 – Deicing Tanks
Port Maintenance Building	A08 – North Cargo Hardstand
United Airlines Aircraft Maintenance Facility	A08 – North Cargo Hardstand
PACCAR	S02 – Primary ARFF
Doug Fox Payment Building & Office	T02 – Second Terminal and Parking
Guard Shack	A09 – Central Hardstand
Port Westside Field Offices	S07 – Westside Maintenance Campus
Overall Program Support Projects	**Overall Program Support Projects Descriptions**
Stormwater / industrial wastewater infrastructure	Expansion of existing stormwater / industrial wastewater infrastructure.
Stormwater management facilities	Construction of new stormwater management facilities.
Storm drainage vaults	Conversion of two existing storm drainage vaults (3 and 3A) to industrial wastewater system vaults.
Utilities	Utility connections (sewer, water, natural gas, fuel, and information / communication technology).
Central mechanical plant	Central mechanical plant upgrades.
Construction staging	Construction staging on Port property outside of sensitive areas.

Note: As a result of comments received during scoping, the Port integrated Project L06 (a proposed surface lot for employee parking) into Project L07. Therefore, L06 is not being carried forward.

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EXHIBIT 1-1: PROPOSED ACTION



Note: NAE = North Airport Expressway; GT = ground transportation; ARFF = aircraft rescue and firefighting

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1.4 Requested Federal Aviation Administration Actions

The following are the actions or approvals the FAA must make before the Port can implement the Proposed Action, described in Section 1.3.

- Unconditional approval of the ALP to depict those portions of the Proposed Action subject to FAA review and approval pursuant to 49 U.S.C. § 47107(a)(16)(B).
- Approval and construction, installation, and relocation of FAA-owned equipment (including NAVAIDs) and associated infrastructure as well as any resulting flight procedures updates from the relocation of navigational aids.
- Release of federal obligations to use property for non-aeronautical purposes, including any obligations under 49 U.S.C. § 47107, in accordance with FAA Order 5190.6B.
- Approval of changes to the airport certification manual pursuant to 14 CFR Part 139.
- Determination of project eligibility for Airport Improvement Program (AIP) funding in accordance with 49 U.S.C. §§ 47101-47144.
- Determination of project eligibility to impose Passenger Facility Charges in accordance with 49 U.S.C. § 40117.

1.5 Aviation Activity

Forecasts of aviation activity are projections of aircraft operations and passengers for future conditions. They are useful for determining future facility needs, as well as for determining future environmental impacts. The forecasts prepared as part of the SAMP were completed in 2015 and projected activity through 2034. At the end of the scoping process, the Port initiated and prepared an updated aviation activity forecast in 2019. This forecast was approved by the FAA in January 2020. In March of 2020, the COVID public health emergency resulted in dramatic reductions in passengers and aircraft operations. Due to the reduction in activity between 2020 and 2022, the Port reevaluated the projected passenger and aircraft operations demand for SEA, as well as the opening year for the NTPs. Ultimately in 2022, the Port in collaboration with the FAA, decided to prepare an updated aviation activity forecast (2023 Updated Forecast) to capture the impact of the COVID-19 public health emergency on future passenger and aircraft operations at SEA. The forecast was approved by the FAA in April 2024. (**Appendix A, Forecast and Airport Operational Assumptions)**.

Because demand would be constrained with or without the NTPs, the Port also prepared Constrained Operating Growth Scenarios (COGS) using the 2019 forecast as the base forecast that was then modified to reflect the relevant constraints and updated the COGS using the 2023 Updated Forecast. These COGS represent the best projection of how growth would occur over time with and without the NTPs. Therefore, the passenger and aircraft operations from the COGS were used for this EA. The FAA approved the updated COGS (provided in **Appendix A**) for use in this NEPA EA.

Implementation of the NTPs would neither induce regional macro-economic growth nor induce demand for air services to higher levels than expected in the unconstrained forecast. However, the NTPs would increase SEA's ability to accommodate increased aircraft operations and passenger activity at an acceptable level of delay, by adding aircraft gates and passenger processing facilities. As a result, it is assumed that after implementation, the number of aircraft operations and passengers would increase toward the projected unconstrained levels in the 2023 Updated Forecast. This higher growth rate, which is effectively induced demand, is expected to occur for approximately 24 months as airlines adjust their schedules to the additional gate availability. However, it is not anticipated that SEA would be able to accommodate the projected unconstrained aircraft operations and passengers from the 2023 Updated

Forecast, even with the implementation of the NTPs. Therefore, it is assumed that SEA would again experience constrained growth rates after buildout of the NTPs, as airfield and airspace capacity then become the primary constraining factors.

1.6 Purpose & Need

The purpose and need is essential in establishing a basis for the development of reasonable alternatives. **Appendix B, Purpose & Need and Alternatives Supporting Information** provides additional information on the needs.

1.6.1 Purpose and Need Statement

The purpose and need for the Proposed Action is to accommodate 56 MAP (million annual passengers) at an optimal level of service and projected cargo levels; provide airfield infrastructure that meets current FAA airport design standards; enhance the efficiency of the overall taxiway layout; and meet projected fuel storage demand including SAF initiatives. While the NTPs were designed to accommodate 56 MAP at an optimal level of service (LOS) [4], the COGS shows a higher passenger demand. The Port acknowledges passenger levels above 56 MAP would be served at a lower LOS.

1.6.2 Needs

The Proposed Action addresses five independent needs that affect the future ability of SEA to maintain its essential function as the primary commercial Airport in the Pacific Northwest (see **Table 1-3**). The five needs are:

1. Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS.
2. Insufficient facilities to accommodate projected cargo levels.
3. Portions of the airfield no longer meet current FAA airport design standards.
4. Inefficient / inadequate taxiway layout.
5. Lack of fuel storage to meet projected demand and the Port's SAF initiative.

TABLE 1-3: NEEDS, DEFICIENCIES, AND RESOLUTIONS

Need	Problem	Resolution Needed
Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS	Passenger check-in areas do not provide the necessary check-in kiosks nor sufficient space for proper circulation around the kiosks.	Need an additional 54 check-in positions and 28,500 square feet of space (total of 66,200 square feet) to accommodate 56 MAP at an optimal LOS.
Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS	Insufficient security screening areas to handle peak passenger volumes in 2022.	Need an additional six screening lanes and 35,100 square feet of space (total of 80,500 square feet) to accommodate 56 MAP at an optimal LOS.

[4] 56 MAP was identified as a benchmark for what the Airport could serve at an optimal level of service within existing airspace, airfield, and cost constraints. See explanation of "optimal (optimum) level of service" in Advanced Planning Terminal Needs Assessment located in Appendix B.

TABLE 1-3: NEEDS, DEFICIENCIES, AND RESOLUTIONS (CONTINUED)

Needs	Problem	Resolution Needed
Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS	Terminal ramp is limited and constrained by adjacent facilities, taxilanes, and taxiways. Additionally, adjacent aircraft parking positions can be affected by the type and size of aircraft being parked at a gate. The terminal ramp can accommodate 88 aircraft.	• Need 19 additional aircraft parking positions for 56 MAP. • Need 56,000-69,000 square feet of holdroom space and 43,000-86,000 square feet of circulation space for 19 narrowbody equivalent gates. • Need 35 remote parking positions to accommodate remain overnight (RON) aircraft at 56 MAP.
Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS	Existing parking constraints for employees and passengers.	• Need 12,440 public parking stalls to accommodate 56 MAP. • Need at least an additional 1,380 employee parking spaces to accommodate future employee parking demand (180 additional terminal garage parking and 1,200 additional remote parking spaces).
Insufficient passenger processing facilities and gates to accommodate 56 MAP at an optimal LOS	Arrival and departure curbfronts both experience an overall LOS of F during the peak hour.[5]	Need at least an additional 100-linear feet of departure curb, 620-linear feet of arrival curb, and one additional lane on the arrival curb to maintain LOS C to accommodate 56 MAP.
Insufficient facilities to accommodate projected cargo levels	Cargo facilities are approaching capacity limits.[6]	Need up to four additional parking positions[7] and an additional 296,100 square feet of cargo warehousing to accommodate the 2032 level of cargo demand.[8]
Portions of the airfield no longer meet current FAA airport design standards	Blast pads on the ends of Runway 16R/34L are 200 feet by 200 feet.	Need standard blast pads for Runway 16R/34L, which is 220 feet by 400 feet.[9]
Portions of the airfield no longer meet current FAA airport design standards	Intersection of Taxiway A with Taxiways C and D near the Runway 16L threshold.	Need to meet design standards for taxiway intersections by limiting a pilot to no more than three choices.

[5] Port of Seattle, Landside Level of Service Analysis, Arrival and Departure Curbside and Roadway LOS (2019).
[6] As demonstrated by the warehouse utilization and facility requirements calculated in the Air Cargo Growth Potential and Facility Requirements Assessment – Final Report.
[7] As reported in Appendix A – Aviation Activity Forecast Update, September 2023, Table 6, cargo aircraft operations are forecast to increase by approximately 24% from 2022 (14,851 operations) to 2032 (18,557 operations). A corresponding 24% increased need for cargo parking positions from 18 positions in 2022 results in a need for up to 22 positions in 2032.
[8] Cargo warehousing space requirements were calculated using Operating Concept #1 as described in SAMP Technical Memorandum No. 5, Facility Requirements, page 5-7. Available for review at: https://www.airportprojects.net/sampenvironmentalreview/tm-no-5-facility-requirements/.
[9] FAA AC 150/5300-13B, Airport Design, Appendix G, Table G-11. Runway Design Standards Matrix, C/D/E – V, 2022.

TABLE 1-3: NEEDS, DEFICIENCIES, AND RESOLUTIONS (CONTINUED)

Needs	Problem	Resolution Needed
Portions of the airfield no longer meet current FAA airport design standards	Taxiway B has 400 feet of separation from the Runway 16L/34R and operates under a FAA approved Modification of Standards (MOS). Based on the terms of this MOS, any future improvements along Taxiway B must be built to FAA standards.	Need to meet the required separation between the Runway 16L/34R centerline and Taxiway B centerline of 500 feet for any future improvements.[10]
Inefficient/inadequate taxiway layout	A single taxiway (Taxiway B) serves the south end of Runway 16L/34R, which results in a long line of aircraft queuing on Taxiway B during peak departure periods in north flow (departures on Runway 34R). This taxiway layout is inefficient and a contributor to airfield delays.	Need to improve taxiway layout to enhance airfield efficiency and reduce delay.
Inefficient/inadequate taxiway layout	During peak operating periods, the taxiways west of Runway 16C/34C become congested due to a lack of taxiways, holding areas, and taxiways crossing Runway 16C/34C, resulting in delays to taxiing aircraft.	Need to improve taxiway layout to enhance airfield efficiency and reduce delay.
Lack of fuel storage to meet projected demand and the Port's SAF initiative	SEA's fuel storage system has a capacity to hold approximately 17-million-gallons of Jet A fuel. Based on average day peak month operations, the fuel farm has approximately seven days of fuel reserves.[11]	• Need 22 to 31-million-gallons of fuel capacity to provide approximately 7 to 10 days of fuel reserve, respectively • Need to meet Port goal to power every flight fueled with at least 10 percent SAF.

1.6.3 Purposes

Based on the various deficiencies (needs) discussed previously, the purposes of the Proposed Action are to provide:

- Additional passenger processing facilities and gates to accommodate projected 56 MAP at an optimal LOS.
- Additional cargo facilities to accommodate projected cargo demand.
- Airfield infrastructure to meet current FAA airport design standards.
- Improvements to enhance the efficiency of the overall taxiway layout.
- Additional fuel storage facilities to meet projected demand and the Port's SAF initiative.

[10] FAA AC 150/5300-13B, Airport Design, Appendix G, Table G-12. Runway Design Standards Matrix, C/D/E – VI, 2022.
[11] SAMP Technical Memorandum No. 5, Facility Requirements, page 6-2. Available for review at: https://www.airportprojects.net/sampenvironmentalreview/tm-no-5-facility-requirements/.

3 Affected Environment

The affected environment chapter provides a description of the conditions in 2022 (referred to as "Existing Condition") in and around the vicinity of SEA that may be directly or indirectly affected by the Proposed Action or alternatives. The year 2022 was chosen because it was the last full year for which a complete inventory of annual statistical data was available for SEA after the construction schedule was revised and the forecast was updated.

3.1 Airport Setting and Location

SEA is located primarily within the City of SeaTac in southern King County, Washington, 12 miles south of downtown Seattle, and 20 miles north of the City of Tacoma (**Exhibit 3-1**). SEA is located on approximately 2,800 acres of land generally bound by SR 99 to the east, SR 509 to the west, S. 142nd Place to the north, and S. 200th Street to the south. Additional land owned by the Port and used for runway protection and noise compatibility extends northward to S. 136th Street and southward to S. 216th Street.

Cities nearest to SEA include Burien, Des Moines, Normandy Park, SeaTac, and Tukwila, as well as portions of unincorporated King County. Other nearby cities include Federal Way, Kent, and Seattle. The predominant land use nearest to SEA is residential, with local commercial and some industrial areas. Land uses directly adjacent to Airport property include park land, residential, industrial, and commercial. **Exhibit 3-1** shows SEA and the general pattern of nearby development.

3.2 Identification of the Study Area

The General Study Area (GSA) (see **Exhibit 3-2**) represents the area where reasonably foreseeable direct or indirect impacts may occur as a result of implementing the Proposed Action or alternatives. The GSA includes an area encompassing 3,692 acres (5.8 square miles). The GSA is loosely bounded by S. 140th Street to the north, 33rd Avenue S. to the east, S. 20th Street to the south, and Des Moines Way to the west. The study area for certain resources varies from the GSA. Where that occurs, the applicable study area is explained in the resource section.

Public Parks and Recreation Areas

Under Section 4(f), public parks and recreation areas include properties that are publicly-owned (by any local, state, or federal agency), open and available to the public, and used primarily for the purpose of park or recreational activities. Public parks and recreation areas located within the GSA are listed in **Table 3-11** and shown on **Exhibit 3-4**.

TABLE 3-11: PARKS AND RECREATION AREA LOCATED WITHIN THE GSA

Map ID	Name	Owner
P-1	Des Moines Memorial Park	City of Burien
P-2	Miller Creek Trail	City of Burien
P-3	Moshier Memorial Park	City of Burien
P-4	Walker Creek Wetland	City of Burien
P-5	Angle Lake Park	City of SeaTac
P-6	Des Moines Creek Park - SeaTac	City of SeaTac
P-7	North SeaTac Park[1]	Port of Seattle
P-8	Riverton Heights Park	City of SeaTac
P-9	S. 156th Way Trail	City of SeaTac
P-10	Leased Port of Seattle Property (Rugby)	Port of Seattle
P-11	S. 200th Street Shared Use Path	City of SeaTac
P-12	Westside Trail	City of SeaTac
P-13	Lake to Sound Trail	King County Parks and Recreation
P-14	Leased Port of Seattle Property (Sunset Playfield)	King County Parks and Recreation
P-15	Leased Port of Seattle Property (Ball Fields)	Port of Seattle

[1] North SeaTac Park extends onto Port-owned property under an existing lease agreement that provides for its use as a park until January 21, 2045.
Source: King County GIS data, City of Burien, Port of Seattle.

3.3.6 Farmlands

Farmlands are defined as those agricultural areas considered important and protected by federal, state, and local regulations. Important farmlands include all pasturelands, croplands, and forests considered to be prime, unique, or of statewide or local importance. The Proposed Action and alternatives would occur entirely on Port-owned land that is currently zoned for airport purposes. No farmlands are present within the GSA and therefore no further discussion of farmlands will be included.

Water District #75), and the far west portion of the airport (King County Water District #49). **Table 3-19** shows the primary water consumption at SEA from 2016 to 2022.

TABLE 3-19: WATER CONSUMPTION

Year	Water Consumption (CCF[1])	Water Consumption (Gallons)
2016	325,860	243,760,225
2017	328,440	245,690,199
2018	361,551	270,458,106
2019	367,451	274,871,299
2022	516,450[2]	386,304,600

[1] CCF = centrum cubic feet (or 100 cubic feet).
[2.] The increase in consumption in 2022 was due to a water leak that has been corrected.
Source: Data provided by the Port from Seattle Public Utility Account numbers 0982930000, 4789950000, and 5789950000.

Other Natural Resources

Other natural resources used at SEA include dirt for fill material, concrete, asphalt, water, wood, and gravel. These resources are available in the Puget Sound region, and there are multiple providers of such resources in the vicinity of SEA.[29] According to natural resource mapping of the area, no scarce or unusual resources are present within the GSA.[30]

3.3.11 Noise and Noise-Compatible Land Use

Sound is a physical phenomenon consisting of pressure fluctuations that travel through a medium, such as air, and are sensed by the human ear. Noise is considered an unwanted sound that can disturb routine activities (e.g., sleep, conversation, student learning) and can cause annoyance. Aviation noise primarily results from the operation of fixed and rotary-wing aircraft, such as departures, arrivals, overflights, taxiing, and engine run-ups. Refer to **Appendix J, Noise and Noise-Compatible Land Use** for more detailed information on noise and the noise analysis.

3.3.11.1 Regulatory Setting

TABLE 3-20: STATUTES AND REGULATIONS RELATED TO NOISE AND NOISE-COMPATIBLE LAND USE

Statute	US Code Implementing Regulation	Oversight Agency	Summary
Airport and Airway Improvement Act of 1982	49 U.S.C. § 47101 et seq.	FAA	Authorizes funding for noise mitigation and noise compatibility planning and projects, and establishes certain requirements related to noise-compatible land use for federally-funded airport development projects.
Aviation Safety and Noise Abatement Act of 1979	49 U.S.C. § 47501 et seq. 14 CFR part 150	FAA	Directs the FAA to establish, by regulation, a single system for measuring noise and determining the exposure of people to noise; and time of occurrence; and to identify land uses normally compatible with various noise exposures.

[29] WACA (Washington Aggregates and Concrete Association) Member Directory. www.washingtonconcrete.org/member-list-public, accessed August 9, 2023.
[30] WDNR. Coal, metallic, and mineral resources map of Washington. https://www.dnr.wa.gov/programs-and-services/geology/energy-mining-and-minerals/coal-metallic-and-mineral-resources#major-metallic-minerals-in-washington, accessed August 9, 2023.

Potential impacts from airport noise, relative to the land uses surrounding an airport, are determined by modeling and mapping the Day-Night Noise Level (DNL). DNL is a cumulative sound level that provides a measure of the total sound energy during a specified time period. DNL logarithmically averages the sound levels at a location over a 24-hour period, with a 10-decibel (dB) weighted penalty added to noise events occurring during nighttime hours between 10:00 p.m. and 6:59 a.m. The 10-dB penalty represents the added intrusiveness of noise that occurs during sleeping hours, when ambient sound levels are typically lower than during daytime hours.

FAA Order 1050.1F requires the use of the latest version of FAA's AEDT[31]. FAA Order 1050.1F also identifies 65 DNL as the required metric to determine if there is a significant impact. The FAA uses the 14 CFR Part 150, *Airport Noise Compatibility Planning*, land use compatibility guidelines, and standards set out in Appendix A to Part 150. Below 65 DNL, all land uses are determined to be compatible with airport noise.

3.3.11.2 Existing Conditions

Aircraft Noise Modeling Methodology and Input

To calculate DNL noise exposure levels for SEA, several categories of information were collected for input into AEDT. These inputs included the number of operations by aircraft type, the number of operations by time of day, runway layout, runway end use, flight track location, flight track use, engine run-up (testing) locations, engine run-up activity, and departure trip length. The noise analysis conducted considered the area where the predominant arrival and departure flight tracks occur, as well as less routinely flown flight tracks.

Existing Condition Noise Contour

Exhibit 3-9 graphically depicts the average-annual noise contour for the Existing (2022) Condition. The 65 DNL noise contour of the Existing (2022) Condition encompasses 8.8 total square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County. The 65 DNL contour extends approximately 3.4 miles to the north and 2.8 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses.

Noise-Compatible Land Use

Based on FAA's Land Use Compatibility Guidelines, 65 DNL is the exterior noise level where noise sensitive land uses (residences, places of worship, schools, libraries, and nursing homes) are not compatible with aircraft noise. All land uses with noise levels below 65 DNL are considered compatible with airport noise.

Summaries of the residential population and housing units exposed to noise levels exceeding 65 DNL for the Existing (2022) Condition noise contour are provided in **Table 3-21**. A total of 6,216 housing units are located within the 65+ DNL noise contour. A list of noise sensitive facilities within the 65+ DNL Noise Contour for the Existing (2022) Condition are listed in **Table 3-22**. There are nine schools (five have been sound insulated and one additional school is in the process of being sound insulated), 19 places of worship, three nursing homes, and two libraries within the 65+ DNL noise contour.

[31] FAA, 2023, AEDT, Version 3f (latest version when modeling was completed). https://aedt.faa.gov/3f_information.aspx.

4 Environmental Consequences

The potential environmental effects resulting from implementation of Alternative 1: No Action (No Action), Alternative 2: Proposed Action (Proposed Action) or Alternative 3: Hybrid Terminal Option (Hybrid Terminal Option) at SEA are presented in this chapter in accordance with FAA Order 1050.1F. The analysis presented in this chapter includes considerations of reasonably foreseeable direct and indirect impacts and their significance, as well as possible conflicts with the objectives of federal, regional, state, tribal, and local land use plans, policies, and controls for the GSA. This chapter also presents a discussion of mitigation required, as well as minimization measures the Port would implement to reduce potential impacts.

4.1 Analysis Years

For the assessment of potential operational impacts, the Action Alternatives (Proposed Action and Hybrid Terminal Option) were compared to the No Action for 2032 conditions. The year 2032 was selected as the evaluation period for this EA because it represents the year when most, if not all, of the elements of the Proposed Action would be substantially complete and operational if construction begins in late 2025. FAA Order 1050.1F also suggests conducting analysis of noise impacts for an out-year to understand the potential impacts associated with growth in activity after implementation. For this EA, the FAA has selected 2037 as the out-year, which is used for the evaluation of the out-year impacts for Air Quality, GHG, Noise, and Surface Transportation. Finally, the interim years of 2025 through 2032 were assessed for potential construction related impacts.

Table 4-1 lists the aircraft operations and passengers assumed under each alternative for 2032 and 2037. These aircraft operations and passenger levels were used for the assessment of environmental impacts that are driven by the numbers of future aircraft operations and passengers (such as air quality, GHG, energy supply, noise, solid waste, and surface transportation). For more information on forecasted aircraft operations and passengers see **Appendix A**.[45]

TABLE 4-1: FORECASTED AIRCRAFT OPERATIONS AND PASSENGERS BY ALTERNATIVE

Alternative	Aircraft Operations (2032)	Passengers (2032)	Aircraft Operations (2037)	Passengers (2037)
1: No Action	466,900	57,171,652	474,874	59,483,817
2: Proposed Action	475,655	58,294,388	509,892	64,093,412
3: Hybrid Terminal Option	475,655	58,294,388	509,892	64,093,412

Source: Forecast Update and Constrained Operating Growth Scenario Analysis, Port of Seattle, 2023.

4.2 Environmental Resources Not Affected

As discussed in Chapter 3, Farmlands and Wild and Scenic Rivers are not present within the GSA and therefore would not be impacted by any of the alternatives. These two categories will not be discussed further.

[45] 56 MAP was identified as the benchmark for what the Airport could serve at an optimal level of service within existing airspace, airfield, and cost constraints, however higher forecasted passenger levels were used to evaluate impacts from operations, given the projected growth under constrained operating conditions. See further explanation in Appendix A.

Mitigation and Minimization Measures

Mitigation

Because no significant impacts related to air quality were identified, no mitigation would be necessary.

Minimization Measures

Minimization measures and best management practices (BMPs) would be used to minimize air quality impacts during construction. The Port would adhere to FAA AC 150/5370-10H, *Standard Specifications for Construction of Airports*.

4.3.2 Biological Resources

This section presents the analysis of potential reasonably foreseeable impacts to biological resources for the Proposed Action and alternatives. More information regarding the species identified and analysis of impacts can be found in **Appendix D**.

4.3.2.1 Significant Impact Threshold

Significant impacts to biological resources include actions where the USFWS or the NMFS determine that the action would likely:

- Jeopardize the continued existence of a federally-listed threatened or endangered species or
- Result in the destruction or adverse modification of federally designated critical habitat.

The FAA has not established a significance threshold for non-listed species, but they have identified factors to consider when evaluating potential environmental impacts to biological resources. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts. These factors to consider when evaluating impacts to biological resources include:

- Long-term or permanent loss of unlisted plant or wildlife species;
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality, or ability to sustain the minimum population levels required for population maintenance.

Trees and vegetation in the GSA are not federally regulated resources. Special status wildlife and plant species are discussed in **Appendix D**.

4.3.2.2 Fish and Wildlife

Alternative 1: No Action

The No Action Alternative does not include any changes to the biological environment. However, the No Action Alternative would have treated stormwater runoff so it may affect not likely to adversely affect ESA-listed species or their habitat.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

A Biological Evaluation (BE) was prepared to evaluate the Proposed Action's potential effects on ESA-listed species and critical habitats that potentially occur in the ESA Study Area.

The FAA determined the Action Alternatives would not result in direct effects on ESA-listed species or critical habitat. Indirect effects could result from delayed consequences associated with operational

treated stormwater runoff and industrial wastewater discharges generated by the Action Alternatives but would likely not adversely affect ESA-listed species. **Table 4-11** summarizes the species evaluated in the BE and effects determinations for each species and critical habitat.

TABLE 4-11: EFFECTS DETERMINATIONS FOR ESA-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Species / Habitat	Effects Determination
Bocaccio rockfish (Sebastes paucispinus, Puget Sound / Georgia Basin DPS) and critical habitat	May affect, not likely to adversely affect*
Bull trout (Salvelinus confluentus, Coastal-Puget Sound DPS) and critical habitat	May affect, not likely to adversely affect
Central America / Western North Pacific Humpback Whale (Megaptera novaeangliae)	No effect
Chinook salmon (Oncorhynchus tshawytscha, Puget Sound ESU) and critical habitat	May affect, not likely to adversely affect*
Killer whale (Orcinus orca, Southern Resident DPS) and critical habitat	May affect, not likely to adversely affect*
Marbled murrelet (Brachyramphus mamoratus)	No effect
Monarch butterfly (Danaus Plexippus)	No effect
North American wolverine (Gulo gulo luscus)	No effect
Northwestern pond turtle (Actinemys marmorata)	No effect
Southern green sturgeon (Acipenser medirostris)	No effect
Southern Pacific eulachon (Thaleichthys pacificus)	No effect
Steelhead (O. mykiss, Puget Sound ESU)	May affect, not likely to adversely affect*
Steelhead critical habitat	No effect
Suckley's Cuckoo Bumble Bee (Bombus suckleyi)	No effect
Yellow-billed cuckoo (Coccyzus americanus)	No effect
Yelloweye rockfish (S. ruberrimus, Puget Sound / Georgia Basin DPS) and critical habitat	May affect, not likely to adversely affect*

* In its July 28, 2025 Biological Opinion, NMFS concluded that the effects for these species were "Likely to adversely affect (LAA)." In addition, NMFS concluded the Action Alternatives would also LAA the Sunflower Sea Star (proposed for listing 88 FR 16212).

DPS = Distinct population segment; ESU = Evolutionarily significant unit
Source: US Department of Transportation, Federal Aviation Administration, Northwest Mountain Region – Seattle Airports District Office, 2025. Seattle-Tacoma International Airport Sustainable Airport Master Plan Near-Term Projects: Final Biological Evaluation. Prepared, by Kandice Krull, Environmental Protection Specialist.

The Action Alternatives were also evaluated for potential effects on essential fish habitat (EFH). It was determined that the Action Alternatives may affect, but are not likely to adversely affect, EFH for groundfish, coastal pelagic, and Pacific salmon species in Puget Sound and EFH for Pacific salmon species in the Duwamish River and tributaries that drain to Puget Sound from the Airport. Any effect to EFH would result from delayed consequences associated with operational treated stormwater runoff and industrial wastewater discharges that are generated by the Action Alternatives.

FAA sent the request to the NMFS to initiate informal Section 7 and EFH consultation on October 2, 2024 and again on June 30, 2025. NMFS responded by issuing a Biological Opinion on July 28, 2025. FAA sent a request to the USFWS on October 2, 2024 to initiate informal Section 7 consultation and again on June 30, 2025. See **Appendix D** for the BE and consultation with the NMFS and USFWS.

TABLE 4-28: COMPARISON OF PROJECTED ANNUAL NATURAL GAS DEMAND FROM THE ACTION ALTERNATIVES (2032 AND 2037)

Alternative	Additional Natural Gas Use (therms)
No Action (2032 and 2037)	3,769,066
Action Alternatives (2032 and 2037)	5,133,321
Increase	1,364,255

1 therm = a unit of heat equivalent to 100,000 British Thermal Units
Sources: SAMP Technical Memo No. 9, Table 4-4; Landrum & Brown analysis, 2023.

Fuel Consumption - Jet A / Diesel / Gas

Table 4-29 shows the projected Jet A, diesel, and gasoline fuel consumption for the Action Alternatives in 2032 and 2037. Action Alternatives would address the storage concerns described above and improve resiliency for emergencies as well as day-to-day operations by increasing the storage capacity of SEA's fuel farm. The proposed Fuel Farm Expansion (Project S01) would also provide storage and blending infrastructure to support the Port's SAF goal to power every flight fueled at SEA with at least a ten percent blend of SAF. The increased use of SAF would reduce the demand for Jet A fuel. Anticipated increases in diesel and gasoline usage because of construction and operation of the Action Alternatives would not result in a significant impact because diesel and gasoline are not in short supply in the region.

TABLE 4-29: PROJECTED FUEL CONSUMPTION FROM THE ACTION ALTERNATIVES (2032 AND 2037) IN GALLONS

Fuel Type	No Action	Action Alternatives	Increase
2032 Jet A	692,985,758	705,980,168	12,994,410
2032 Diesel	560,280	570,786	10,506
2032 Gasoline	609,743	621,177	11,434
2037 Jet A	704,820,987	756,795,661	51,974,674
2037 Diesel	569,849	611,870	42,022
2037 Gasoline	620,157	665,888	45,731

Notes: Projections are based on the ratio of usage per operation, based on 2022 actual data.
Sources: Port of Seattle data; Landrum & Brown analysis 2023.

Mitigation and Minimization Measures

Mitigation

Because no significant impacts related to energy supply were identified, no mitigation is necessary.

Minimization Measures

Minimization measures (efficiencies or upgrades in mechanical systems, upgrades in lighting, and alternative fuel sources) and BMPs would be used to minimize energy use during and after construction of the Proposed Action or the Hybrid Terminal Option.

4.3.9.3 Natural Resources

Alternative 1: No Action

Water

Because the total number of passengers utilizing SEA is expected to continue to increase even under the No Action scenario, there would be additional demand on water supply associated with this alternative (see **Table 4-30**). There is ample supply of water to handle this increase in demand.

Other Natural Resources

The No Action Alternative is not anticipated to result in impacts to other natural resources.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

Water

The Action Alternatives would result in an increase in demand for water. **Table 4-30** shows estimated future water usage based on the projected number of future passengers, and the average gallons used per passenger.

TABLE 4-30: PROJECTED WATER USAGE IN GALLONS (2032 AND 2037)

Alternative	Water Consumption (gallons)
2032 No Action	307,011,771
2032 Action Alternatives	313,040,864
2037 No Action	319,428,097
2037 Action Alternatives	344,181,622

Sources: Port of Seattle data; Landrum & Brown analysis 2023.

Because there is ample supply of water to handle this increase in demand, no significant impact related to water usage would occur.

Other Natural Resources

The construction of the Action Alternatives would require the use of other natural resources such as sand, gravel, concrete, asphalt, and water, in addition to construction materials such as steel, wood, and glass. Metal wiring and plastic insulation would be used for new lighting. These construction materials are not in short supply in the Seattle-Tacoma area and construction of the Action Alternatives is unlikely to exceed the available supply of these materials. Therefore, no significant impact related to other natural resource usage would occur.

Mitigation and Minimization Measures

Mitigation

Because no significant impacts related to natural resources were identified, no mitigation is necessary.

Minimization Measures

Minimization measures (use of recyclable materials, minimize and recycle construction waste) and BMPs related to water usage and use of other natural resources would be used to minimize impacts during construction.

4.3.10 Noise and Noise-Compatible Land Use

This section presents the results of analysis of reasonably foreseeable impacts from aircraft and construction noise from the Proposed Action and alternatives. The impact of aircraft-related noise levels upon the surrounding area is presented as the number and type of noise sensitive land uses located within the noise contours for each alternative for both 2032 and 2037 conditions. Noise contours for the levels of DNL 65, 70, and 75 dB were calculated and represent average-annual day conditions. Construction noise considers the distance of any noise sensitive land uses from construction sites.

There are minor differences in the taxiway layout and location of where aircraft would park for passenger loading / unloading among the different alternatives. However, the primary factor that resulted in changes in noise exposure was the number of aircraft operations, the fleet mix, and the day-night split assumed for the average-annual day in each alternative condition. **Table 4-31** presents the average-annual day operations for each of the alternatives assessed in this section. **Appendix J** contains the protocol for the noise analysis and detailed information about the noise analysis including modeling inputs. **Appendix A** contains additional information on the forecast and operational assumptions.

TABLE 4-31: ANNUAL-AVERAGE DAY OPERATIONS

Alternative	Arrivals Day	Arrivals Night	Departures Day	Departures Night	Total Operations
2032 No Action	531.98	108.88	542.11	96.21	1,279.18
2032 Action Alternatives	544.56	108.31	550.04	100.25	1,303.16
2037 No Action	552.22	99.62	548.85	100.34	1,300.96
2037 Action Alternatives	587.38	112.49	588.93	108.16	1,396.96

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.
Source: Aviation Forecast Update, prepared by Port of Seattle / Leigh-Fisher, 2023, Sustainable Airport Master Plan – Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, July 2023.

4.3.10.1 Significant Impact Threshold

According to FAA Order 1050.1F, a noise impact is significant if the alternative would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the No Action for the same timeframe.

4.3.10.2 Aircraft Noise Modeling Results – 2032 Conditions

Alternative 1: No Action

The 65+ DNL of the Future (2032) No Action noise exposure contour encompasses approximately 10.10 square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County. The 65+ DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses. There would be a total of 9,518 housing units, of which 4,534 are sound insulated, with an estimated population of 21,975 people within the 65+DNL. There would be 12 schools (five have been sound insulated and one additional school is in the process of being sound insulated), 22 places of worship, five nursing homes, and two libraries within the 65+ DNL noise contour.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

The 65+ DNL of the Future (2032) Action Alternatives noise exposure contour encompasses approximately 10.25 square miles, which is 0.15 square miles larger than the Future (2032) No Action noise exposure contour. The 65+ DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses. There would be a total of 9,855 housing units, of which 4,694 are sound insulated, with an estimated population of 22,799 people within the 65+DNL. There would be 12 public schools (five have been sound insulated and one additional school is in the process of being sound insulated), 22 places of worship, five nursing homes, and two libraries within the 65+ DNL noise contour, which is the same as the Future (2032) No Action Alternative.

Exhibit 4-2 shows the comparison of the Future (2032) No Action noise exposure contours and the Future (2032) Action Alternatives noise exposure contours. The comparison shows the small increase in the contour to the north and the south compared to the Future (2032) No Action. This directly corresponds to the predicted increase in operations between the two alternatives. The Future (2032) Action Alternatives would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, (range of increase was between 0.03 – 0.16 DNL within the 63.5 – 65 DNL) when compared to the Future (2032) No Action. Therefore, no significant noise impact would occur as a result of implementing the Future (2032) Action Alternatives.

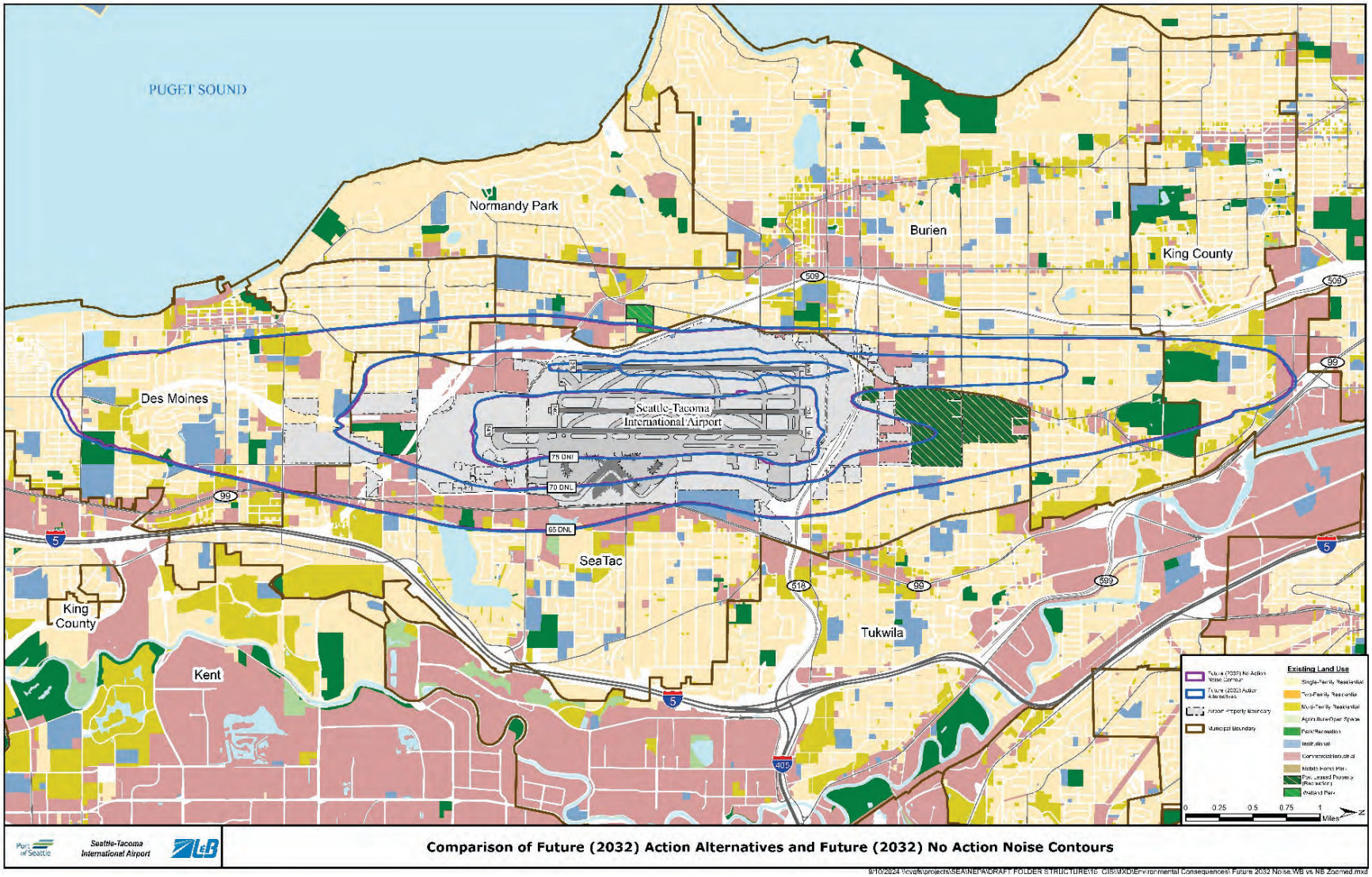
Table 4-32 summarizes the comparison of housing units and estimated population for 2032 in the alternatives. The Future (2032) Action Alternatives would increase the total number of housing units by 337 and population by 824 within the 65+ DNL as compared to the Future (2032) No Action. The increase in residences and population is attributed to the predicted increase in the size of the Future (2032) Action Alternatives noise exposure contour as compared to the Future (2032) No Action noise exposure contour.

TABLE 4-32: NOISE SENSITIVE FACILITIES COMPARISON (2032)

Mitigation Status / Land Use	No Action DNL 65+ dB	Action Alternatives DNL 65+ dB	Difference
Sound Insulation Completed			
Single-Family	4,146	4,258	+112
Multi-Family	388	436	+48
Mobile Home	0	0	0
Subtotal	*4,534*	*4,694*	*+160*
Not Sound Insulated			
Single-Family	1,046	1,089	+43
Multi-Family	3,782	3,895	+113
Mobile Home	156	177	+21
Subtotal	*4,984*	*5,161*	*+177*
Total Housing Units	**9,518**	**9,855**	**+337**
Total Estimated Population	**21,975**	**22,799**	**+824**

Source: Landrum & Brown analysis, 2024. See also Appendix J.

EXHIBIT 4-2: COMPARISON OF FUTURE (2032) ACTION ALTERNATIVES AND FUTURE (2032) NO ACTION NOISE CONTOURS



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024

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4.3.10.3 Aircraft Noise Modeling Results – 2037 Conditions

Alternative 1: No Action

The 65+ DNL of the Future (2037) No Action noise exposure contour encompasses 9.16 square miles within the cities of Burien, Des Moines, and SeaTac, and unincorporated King County. This area is smaller than the 65+ DNL of the Future (2032) No Action due to the increase in the number of Boeing 737-7/8/9 MAX aircraft forecasted to be operating in the fleet. The MAX aircraft have a substantially smaller noise footprint than the aircraft they are replacing (Boeing 737-700/800/900 aircraft).

The 65+ DNL contour extends approximately 3.6 miles to the north and 3.0 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses. There would be a total of 7,166 housing units, of which 3,871 are sound insulated, with an estimated population of 16,297 people within the 65+DNL. There would be 10 schools (five have been sound insulated and one additional school is in the process of being sound insulated), 21 places of worship, four nursing homes, and two libraries within the 65+ DNL noise contour.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

The 65+ DNL of the Future (2037) Action Alternatives noise exposure contour encompasses 9.82 square miles, which is 0.66 square miles larger than the Future (2037) No Action noise exposure contour. This area is smaller than the 65+ DNL of the Future (2032) Action Alternatives due to the increase in the number of Boeing 737-7/8/9 MAX aircraft forecasted to be operating in the fleet. The 65+ DNL contour extends approximately 3.7 miles to the north and 3.2 miles south of SEA. The area within the contour to the north and south is made up of a mix of residential, commercial, and industrial land uses. There would be a total of 9,017 housing units, of which 4,325 are sound insulated, with an estimated population of 20,736 people within the 65+DNL. There would be 11 public schools (five have been sound insulated and one additional school is in the process of being sound insulated), 21 places of worship, four nursing homes, and two libraries within the 65+ DNL noise contour, which is one more school than the Future (2037) No Action, the Community Chapel Christian School.

Exhibit 4-3 shows the comparison of the Future (2037) No Action Alternative noise exposure contours and the Future (2037) Action Alternatives noise exposure contours. The comparison shows the increase in the contour to the north and the south compared to the Future (2037) No Action. This primarily corresponds to the increase in operations.

The Future (2037) Action Alternatives would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase (range of increase was between 0.26 – 0.46 DNL within the 63.5 – 65 DNL), when compared to the Future (2037) No Action. Therefore, no significant noise impact would occur as a result of implementing the Future (2037) Action Alternatives.

Table 4-33 summarizes the comparison of housing units and estimated population for 2037. The Future (2037) Action Alternatives would increase the total number of housing units by 1,851 and population by 4,439 within the 65+ DNL as compared to the Future (2037) No Action. The increase in residences and population is attributed to the increase in the size of the Future (2037) Action Alternatives noise exposure contour as compared to the Future (2037) No Action noise exposure contour.

TABLE 4-33: NOISE SENSITIVE FACILITIES COMPARISON (2032 AND 2037)

Mitigation Status / Land Use	2032 No Action DNL 65+ dB	2032 Action Alternatives DNL 65+ dB	Difference	2037 No Action DNL 65+ dB	2037 Action Alternatives DNL 65+ dB	Difference
Sound Insulation Completed						
Single-Family	4,146	4,258	+112	3,546	3,959	+413
Multi-Family	388	436	+48	325	366	+41
Mobile Home	0	0	0	0	0	0
Subtotal	*4,534*	*4,694*	*+160*	3,871	4,325	*+454*
Not Sound Insulated						
Single-Family	1,046	1,089	+43	837	989	+152
Multi-Family	3,782	3,895	+113	2,356	3,572	+1,216
Mobile Home	156	177	+21	102	131	+29
Subtotal	*4,984*	*5,161*	*+177*	3,295	4,692	*+1,397*
Total Housing Units	**9,518**	**9,855**	**+337**	**7,166**	**9,017**	**+1,851**
Total Estimated Population	**21,975**	**22,799**	**+824**	**16,297**	**20,736**	**+4,439**

Source: Landrum & Brown analysis, 2024. See also Appendix J.

Mitigation and Minimization Measures

Mitigation

Because no significant impacts related to noise or noise-compatible land use would occur, no mitigation is necessary.

Minimization Measures

The Port has initiated a Part 150 Study Update, which is a separate process. This study will evaluate incompatible land uses and their eligibility for inclusion in the Port's noise remedy program.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

The Action Alternatives would not result in significant changes to health and safety risks including air, food, drinking water, recreational waters, soil, or products children may use or to which they would be exposed. The Action Alternatives could result in non-permanent noise impacts during construction of the proposed cargo development (C02 and C03). No schools are located in areas where impacts are identified; however, children living in these residential areas may experience temporary increases in noise during construction. No significant noise impacts were identified, and there are no separate noise impact standards for children. The Action Alternatives would not increase health and safety risks attributable to products or substances that a child is likely to encounter or ingest, such as air, food, water, recreational waters, soil, or products they may be exposed to; consequently, the Action Alternatives would not result in health and safety risks to children when compared to the No Action Alternative.

Mitigation and Minimization Measures

Mitigation

Because no significant impacts to children's environmental health and safety were identified, no mitigation is necessary.

Minimization Measures

Minimization measures (fencing project areas, removal / disposal of contaminated materials / soils in accordance with federal, state, and local requirements) and BMPs would be used to minimize impacts during construction.

4.3.12 Surface Transportation

This section describes the results of the surface transportation study analyzing the potential reasonably foreseeable effects of the Proposed Action and alternatives. More information about the analysis and the results can be found in **Appendix L**.

4.3.12.1 Significant Impact Threshold

The FAA has not established a significance threshold for surface transportation. However, the FAA does consider the degree to which the action would have the potential to disrupt local traffic patterns and substantially reduce the LOS of roads serving an airport and its surrounding communities. FAA Order 1050.1F indicates that this is not a threshold and FAA must evaluate these factors considering context and intensity to determine if there are significant impacts.

4.3.12.2 Surface Transportation Impacts

The surface transportation study evaluated 114 intersections within the STSA for the No Action and 111 intersections for the Action Alternatives to identify roadway intersections that would fail to meet local and agency mobility standards in 2032 and 2037.

Alternative 1: No Action

By 2032, nine of the roadway intersections analyzed would fail to meet mobility standards under the No Action and 17 of the roadway intersections would fail under the 2037 No Action. These degradations would be due to background growth in traffic and / or travel pattern changes unrelated to the Action Alternatives.

Alternative 2: Proposed Action and Alternative 3: Hybrid Terminal Option

The Action Alternatives analysis assumed the SR 509 Phase 2 extension and transportation and infrastructure projects would be constructed by 2032. The intersections were sorted into one of four categories depending on the results of the analysis:

- Category 1: Intersection has a LOS deficiency because of additional trips added by the Action Alternatives. Four intersections in 2032 and eight intersections in 2037 were Category 1 intersections.
- Category 2: Intersection has a LOS deficiency in No Action, but Action Alternatives would increase delay. Eleven intersections in 2032 and 18 intersections in 2037 were Category 2 intersections.
- Category 3: Intersection meets the mobility standard in both No Action and Action Alternatives even after additional delay from Action Alternatives trips. Sixty-three intersections in 2032 and 54 intersections in 2037 were Category 3 intersections.
- Category 4: Intersection delay improves or does not change with the Action Alternatives. Thirty-eight intersections in 2032 and 36 intersections in 2037 were Category 4 intersections.

Table 4-34 and Table 4-35 show the Category 1 and Category 2 intersections for 2032 and 2037.[59] Category 1 intersections were considered significant impacts and require mitigation.

TABLE 4-34: CATEGORY 1 INTERSECTIONS

ID - Intersection	Jurisdiction /Agency	Mobility Standard	2032 NA LOS	2032 PA LOS	Change in Delay (sec)	2037 NA LOS	2037 PA LOS	Change in Delay (sec)
14 - Des Moines Mem. Drive/S 144th Street	SeaTac (Burien)	E	E	F	201.3	E	F	222.1
17 - 24th Ave. S/S 146th St	SeaTac	D	C	E	22.8	D	F	47.3
24 - SR 518 WB Ramps/ Des Moines Mem. Drive	WSDOT	D	C	E	20.7	Cat.2	Cat.2	Cat.2
42 - SR 518 EB Off-Ramp/51st Ave. S.	WSDOT	D	Cat. 3	Cat. 3	Cat. 3	D	E	11.3
48 - 8th Ave. S./S. 156th St	SeaTac	E	Cat. 3	Cat. 3	Cat. 3	E	F	120.1
83 - Military Rd. S. / SB I-5 Ramps/S. 200th Street	WSDOT	D	Cat. 3	Cat. 3	Cat. 3	D	E	9.9
86 - Military Rd. S./NB I-5 Ramps	WSDOT	D	D	E	16.8	Cat.2	Cat.2	Cat.2
96 - 16th Ave. S/S 144th St	SeaTac	D	Cat. 3	Cat. 3	Cat. 3	B	E	30.6
98 - Des Moines Memorial Drive/S 168th Street	Burien	C	Cat. 3	Cat. 3	Cat. 3	C	D	9.9

Notes: NA = No Action, PA = Proposed Action, LOS = Level of Service, Delay (seconds).

[59] Based on coordination with WSDOT, Burien, Des Moines, and Tukwila Category 3 intersections would not require mitigation. Category 3 impacts in the City of SeaTac will be mitigated according to the ILA between the Port and the City of SeaTac.

TABLE 4-35: CATEGORY 2 INTERSECTIONS

ID - Intersection	Jurisdiction / Agency	Mobility Standard	2032 NA LOS	2032 PA LOS	Change in Delay (sec)	2037 NA LOS	2037 PA LOS	Change in Delay (sec)
102 – S. 152nd Street /Des Moines Memorial Drive S.	SeaTac (Burien)	E	Cat. 3	Cat. 3	Cat. 3	D	F	24.0
21 - SR 509 SB Ramps/SW 148th Street	WSDOT	D	Cat. 3	Cat. 3	Cat. 3	E	E	11.8
23 - SR 518 EB Ramps/ Des Moines Mem. Drive	WSDOT	D	F	F	344.1	F	F	719.6
24 - SR 518 WB Ramps/ Des Moines Mem. Drive	WSDOT	D	Cat. 1	Cat. 1	Cat. 1	E	F	150.8
28 - SR 518 EB Ramps/S. 154th Street	WSDOT	D	F	F	6.8	F	F	21.2
33 - SR 518 WB Off-Ramp (Loop) / S. 154th Street	WSDOT	D	F	F	78.9	F	F	115.0
37 - International Blvd./S. 154th Street	WSDOT	E-Mitigated	F	F	2.2	F	F	4.6
49 - 1st Ave. S/SW 160th Street	Burien	D	E	E	0.4	E	E	1.4
54 - Host Rd./SR 518 On-Ramp / S. 160th Street	SeaTac/ Burien	E	Cat. 3	Cat. 3	Cat. 3	F	F	68.3
78 - NB I-5 Ramps/S. 188th Street	WSDOT	D	E	E	1.6	F	F	2.4
86 - Military Rd. S./NB I-5 Ramps	WSDOT	D	Cat. 1	Cat. 1	Cat. 1	E	F	16.6
89 - Pacific Hwy S./S. 216th Street	Des Moines	F (v / c 1.0)	E	E	0.2	E	E	1.6
93 - Pacific Hwy S./SR 516	Des Moines	F (v / c 1.2)	F	F	3.4	F	F	3.8
94 - SB I-5 Ramps/SR 516	WSDOT	D	Cat. 3	Cat. 3	Cat. 3	E	E	6.8
101 - 8th Ave. S./Des Moines Memorial Drive S.	Burien/ SeaTac	D / E	F	F	150.7	F	F	227.4
105 - 32nd Ave. S./S. 160th Street	SeaTac	E	F	F	47.2	F	F	72.4
106 - Military Rd. S./S. 164th Street/42nd Ave. S.	SeaTac	E	Cat. 3	Cat. 3	Cat. 3	F	F	5.5
107 - 34th Ave. S./S. 170th Street	SeaTac	E	Cat. 4	Cat. 4	Cat. 4	F	F	0.7
109 - Military Rd. S./S. 216th Street	SeaTac	E	F	F	7.0	F	F	9.8

Notes: NA = No Action, PA = Proposed Action, LOS = Level of Service, Delay (seconds).
Source: SAMP Environmental Review – Future Conditions Traffic Analysis Summary (Concord, 2024); included in Appendix L.

Mitigation and Minimization Measures

Mitigation

Mitigation was proposed for Category 1, Category 2, and Category 3[60] intersections according to each jurisdiction's requirements. Meetings were held with the local jurisdictions to present the results and proposed mitigation. Based on the meetings and coordination with the local jurisdictions, the proposed mitigation for Category 1 intersections is shown in **Table 4-36**. The proposed mitigation for Category 2 intersections is shown in **Table 4-37**.

TABLE 4-36: PROPOSED MITIGATION FOR CATEGORY 1 INTERSECTIONS

ID	Intersection	Jurisdiction / Agency	Proposed Mitigation	Future LOS with Mitigation (2032 / 2037)
98	Des Moines Memorial Drive at S. 168th Street	City of Burien	Construct new signal, provide dedicated westbound left turn lane, and provide shared WB through and right turn lane. Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation.	A / B
14	Des Moines Mem. Drive at S. 144th Street	City of SeaTac	Widen east leg to provide a WB left turn lane, widen south leg to provide a northbound right turn lane, and modifications to the traffic signal. Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.	D / D
17	24th Ave. S. at S. 146th Street	City of SeaTac	Construct a signal and add leading protected northbound left turn phase.	B / B
48	8th Ave. S. at S. 156th Street	City of SeaTac	Shift southbound lanes west to add dedicated southbound left and right turn lanes, add dedicated northbound left turn lane, and modify signal timing with protected left turns for all approaches. Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.	D / E
96	16th Ave. S. at S. 144th Street	City of SeaTac	Construct an eastbound right turn lane.	C / C
102	S. 152nd Street at Des Moines Memorial Drive S.	City of SeaTac	Construct single leg roundabout to consolidate three intersections (100, 101, and 102). Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation.	A / A

[60] The ILA between the Port and the City of SeaTac requires mitigation for projects outside the AAA, therefore mitigation is proposed for those Category 3 intersections.

TABLE 4-36: PROPOSED MITIGATION FOR CATEGORY 1 INTERSECTIONS (CONTINUED)

ID	Intersection	Jurisdiction / Agency	Proposed Mitigation	Future LOS with Mitigation (2032 / 2037)
24	SR 518 WB Off-ramp at Des Moines Mem. Drive	WSDOT	Construct single lane roundabout where WB approach would be converted to a left turn lane and yield right turn lane. Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.	A / A
42	SR 518 EB Off-ramp & 51st Avenue S.	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
83	Military Rd. S. at Southbound I-5 Ramps at S. 200th Street	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
86	Military Rd. S. at Northbound I-5 Ramps	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A

Note: No Category Type 1 impacts occurred in the City of Des Moines or the City of Tukwila.
Source: SAMP Environmental Review – Future Conditions Traffic Analysis Summary (Concord, 2024); included in Appendix L.

TABLE 4-37: PROPOSED MITIGATION FOR CATEGORY 2 INTERSECTIONS

ID	Intersection	Jurisdiction / Agency	Proposed Mitigation	Future LOS with Mitigation (2032 / 2037)
49	1st Ave S. at SW 160th Street	City of Burien	Pay proportionate share of corridor improvement costs equal to the percentage of total intersection trips generated by NTPs in 2037 (1%). Corridor improvement is included as Project #22 on Burien's TIP.	N/A
89	Pacific Hwy S. at S. 216th Street	City of Des Moines	No Port mitigation is identified. City stated mitigation for intersection #93 covers this intersection as well.	N/A
93	Pacific Hwy S. at SR 516	City of Des Moines	Pay proportionate share for delay added by NTP trips based on the total number of PM peak hour trips added to intersection #93 and the City's traffic impact fee schedule.[61]	N/A
54	Host Rd. at S. 160th Street / SR 518 Eastbound On-ramp	City of SeaTac	Construct a signal.	A / A
101	8th Ave S. at Des Moines Memorial Drive	City of SeaTac	Construct a roundabout that would consolidate three intersections (100, 101, and 102).	A / A
105	34th Ave S. at S. 160th Street	City of SeaTac	Construct a roundabout.	A / A

[61] The City of Des Moines' current traffic impact fee amount is $7,651.41 per PM peak hour trip.

TABLE 4-37: PROPOSED MITIGATION FOR CATEGORY 2 INTERSECTIONS (CONTINUED)

ID	Intersection	Jurisdiction / Agency	Proposed Mitigation	Future LOS with Mitigation (2032 / 2037)
106	Military Rd S. at S. 164th St at 42nd Ave S	City of SeaTac	Pay proportionate share of roundabout construction costs equal to the percentage of total intersection trips generated by NTPs in 2037 (4%). Constructed costs would be based on project costs identified for Project ST 116 in the City of SeaTac's Transportation Master Plan.	N/A
107	34th Ave S. at S. 170th Street	City of SeaTac	Pay proportionate share of corridor improvement costs equal to the percentage of total intersection trips generated by NTPs in 2037 (1%). Constructed costs would be based on project costs identified for Project ST 016 in the City of SeaTac's Six-Year TIP.	N/A
109	Military Rd S. at S. 216th Street	City of SeaTac	Pay proportionate share of channelization improvement costs equal to the percentage of total intersection trips generated by NTPs in 2037 (2%). Constructed costs would be based on project costs identified for Project ST 140 in the City of SeaTac's Six-Year TIP.	N/A
21	SR 509 SB Ramps at SW 148th Street	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
23	SR 518 EB Ramps and Des Moines Memorial Drive	WSDOT	Construct a roundabout. Design of the intersection will accommodate the West Side Trail connection along the east side of Des Moines Memorial Drive S. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.	A / A
28	SR 518 EB Off-Ramp at S. 154th St	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
33	SR 518 WB Ramp at S. 154th St	WSDOT	Construct a signal.	C / C
37	International Blvd at S. 154th Street	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
78	Northbound I-5 Ramps at S. 188th St	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A
94	Southbound I-5 Ramps at SR 516	WSDOT	WSDOT is not requiring mitigation at this intersection.	N/A

Source: SAMP Environmental Review – Future Conditions Traffic Analysis Summary (Concord, 2024); included in Appendix L.

In addition, mitigation for Category 3 intersections in the City of SeaTac will be provided in accordance with the ILA between the City of SeaTac and the Port.

With the proposed mitigation, none of the impacted intersections would experience a significant impact. As previously mentioned, mitigation was coordinated with the jurisdictions and will be completed by 2032.[62] The Port and the local jurisdictions are in the process of formalizing the mitigation commitments in a MOU with each of the jurisdictions. More detail on each intersection, improvements recommended and coordination with the local jurisdictions can be found in **Appendix L**.

Minimization Measures

Minimization measures and BMPs would be used to minimize surface transportation impacts during construction of the Action Alternatives. This includes designated truck routes or flaggers directing traffic.

4.3.13 Visual Effects

This section describes the results of the visual effect impact analysis of the reasonably foreseeable effects of the Proposed Action and alternatives.

4.3.13.1 Significant Impact Threshold

The FAA has not established a significance threshold for visual effects, but they have identified factors to consider when evaluating the potential impacts related to light emissions and visual character. If these factors exist, the FAA must evaluate these factors considering context and intensity to determine if there are significant impacts. Factors to consider for light emissions and visual resources / visual character, include, but are not limited to:

Light Emissions:

The degree to which the action has the potential to:

- Create annoyance or interfere with normal activities from light emissions; or
- Affect the visual character of the area due to the light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources.

Visual Resources / Visual Character:

The potential that the action would:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and / or visual character in the study area; or
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

[62] Reference to the MOU agreements with each jurisdiction.

APPENDIX A

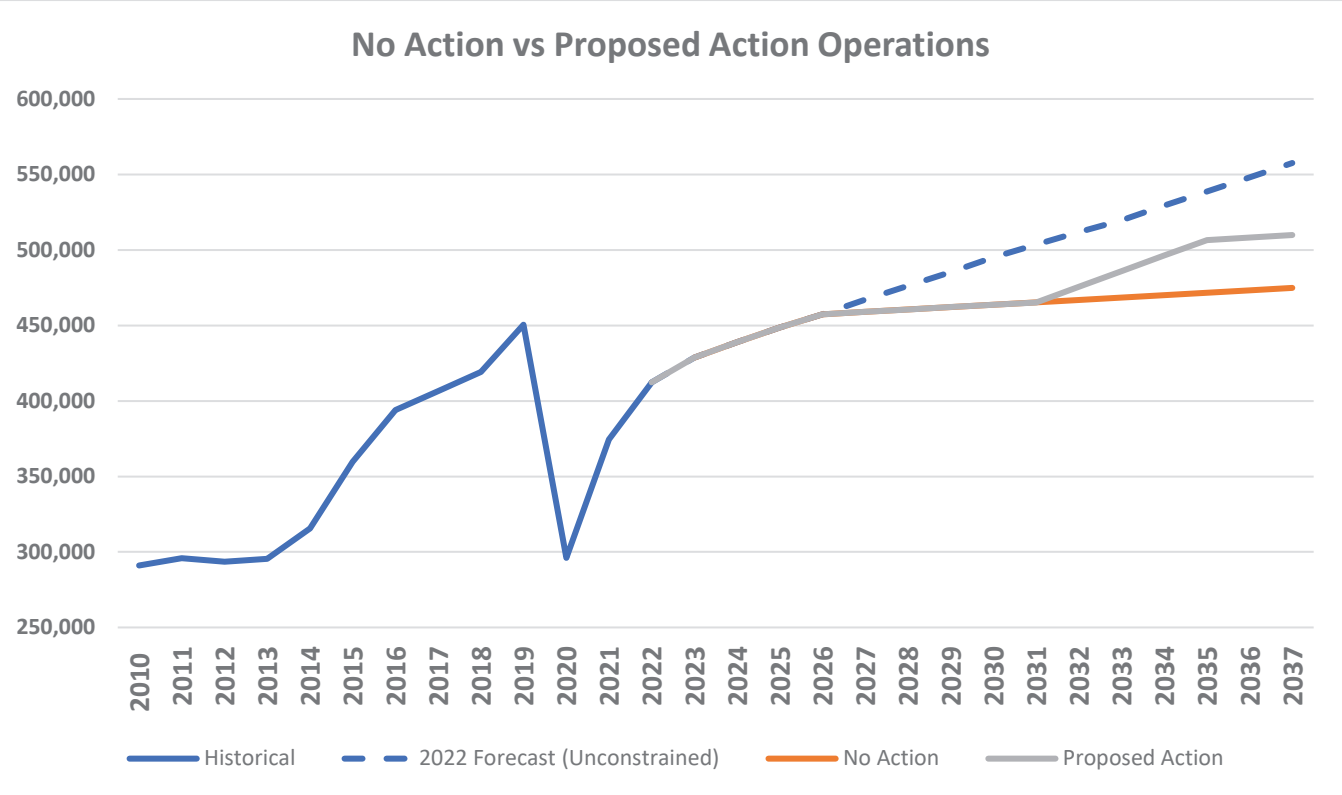
Forecast and Airport Operational Assumptions

2023 Aviation Forecast Update
Constrained Operating Growth Scenarios (COGS)
FAA Approval of 2023 Forecast Update
Environmental Review Airside Modeling Documentation (TAAM)

TABLE 6: PROPOSED ACTION AND NO ACTION AIRCRAFT OPERATIONS AND PASSENGERS

	2032 (Opening Year) Aircraft Operations	2032 (Opening Year) Total Passengers	2037 (5 Years Beyond Opening) Aircraft Operations	2037 (5 Years Beyond Opening) Total Passengers
No Action	466,900	57,171,652	474,874	59,483,817
Proposed Action	475,655	58,294,388	509,892	64,093,412
Difference Between Proposed Action and No	8,755	1,122,736	35,018	4,609,595

Note: SAMP Forecast operations and passengers are 2032 (opening year) and 2037 (5 years beyond opening) for comparison of similar conditions.

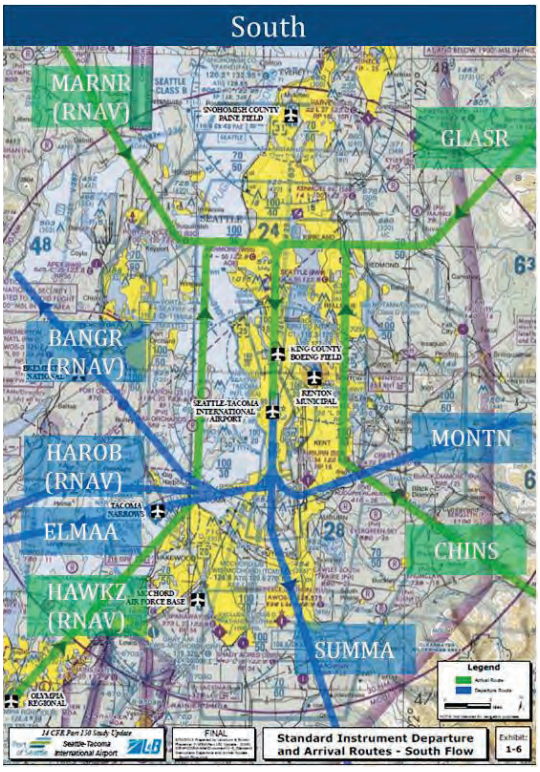


3 KEY INPUT ASSUMPTIONS

3.1 Airspace Structure

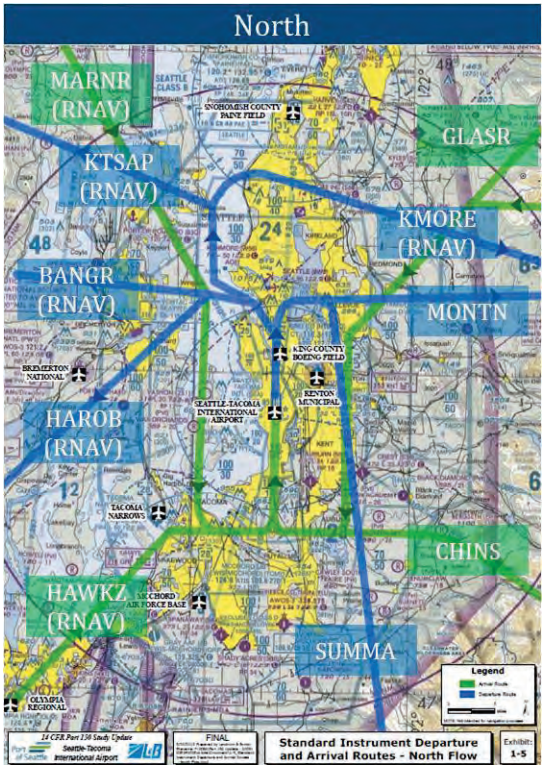
Airspace operations were simulated within the terminal airspace area around SEA. Outside the terminal area, simulated flights traveled directly to their destination airport or from their origin airport. Flights in the schedule were assigned to arrival fixes (Standard Terminal Arrival Routes, or STAR's) and departure fixes (Standard Instrument Departures, or SID's) based primarily on the airport of origin or destination. Four STAR's were used: MARNR for arrivals from the northwest, GLASR for arrivals from the northeast, CHINS for arrivals from the southeast, and HAWKZ for arrivals from the southwest. The SID's used included BANGR for departures to the northwest, MONTN for departures to the northeast, SUMMA for departures to the southeast, and HAROB for departures to the southwest. In South flow, the additional SID ELMAA was used for some departures to the southwest. In North flow, the additional SID's KTSAP and KMORE were used for some departures to the northwest and the northeast, respectively. The airspace routes for South flow and North flow are shown in Figures 5 and 6, respectively.

Figure 5
Simulated South Flow Arrival and Departure Routes
Seattle-Tacoma International Airport



Sources: Part 150 Noise Compatibility Study, Seattle-Tacoma International Airport (October 2013); LeighFisher analysis of published STAR's and SID's (May 2015).

Figure 6
Simulated North Flow Arrival and Departure Routes
Seattle-Tacoma International Airport



Sources: Part 150 Noise Compatibility Study, Seattle-Tacoma International Airport (October 2013); LeighFisher analysis of published STAR's and SID's (May 2015).

Jet noise-abatement procedures confine departures to narrow corridors in both North flow and South flow. The FAA, in cooperation with the SEA Airport and local communities, established the procedures to take advantage of existing geographical and compatible land use conditions wherever possible. Both conventional (land-based) and area navigation (RNAV) SID's require all jet departures to converge on a single departure fix, regardless of the departure runway used. As a result, successive jet departures from parallel runways were dependent because jets must maintain the required separation until they could diverge onto different departure paths. Turboprop aircraft departures were exempt from passing over the single waypoint and could make an immediate, divergent turn.

3.2 Airfield Layout

Subsequent pages depict the airfield layouts simulated in TAAM overlaid on a satellite image of SEA. Figure 7 shows the No Action layout, and Figure 8 shows the Proposed Action layout.

APPENDIX C

Air Quality & Greenhouse Gas Emissions

Air Quality & Greenhouse Gas Technical Report

References

1.5.2 Aircraft Operational Emissions Inventory

The number and type of aircraft operations directly affect emissions. The emission inventory for aircraft operations will be developed using the AEDT model Version 3e. AEDT models aircraft performance in space and time to estimate fuel consumption, air quality emissions, and noise consequences at airports. Aircraft emissions depend partly on the physical characteristics and performance parameters of each unique aircraft type. These include the airframe type, the type and number of engines, takeoff weight, and approach angle.

In addition to the physical characteristics of the aircraft operating at the Airport, emissions further depend on the number of times that each aircraft type operates in the various modes that define a landing and takeoff cycle (LTO). An LTO consists of the approach, taxi in, startup, taxi out, takeoff, and climb out. In AEDT, these modes are reported as time below mixing height and climb below mixing height.

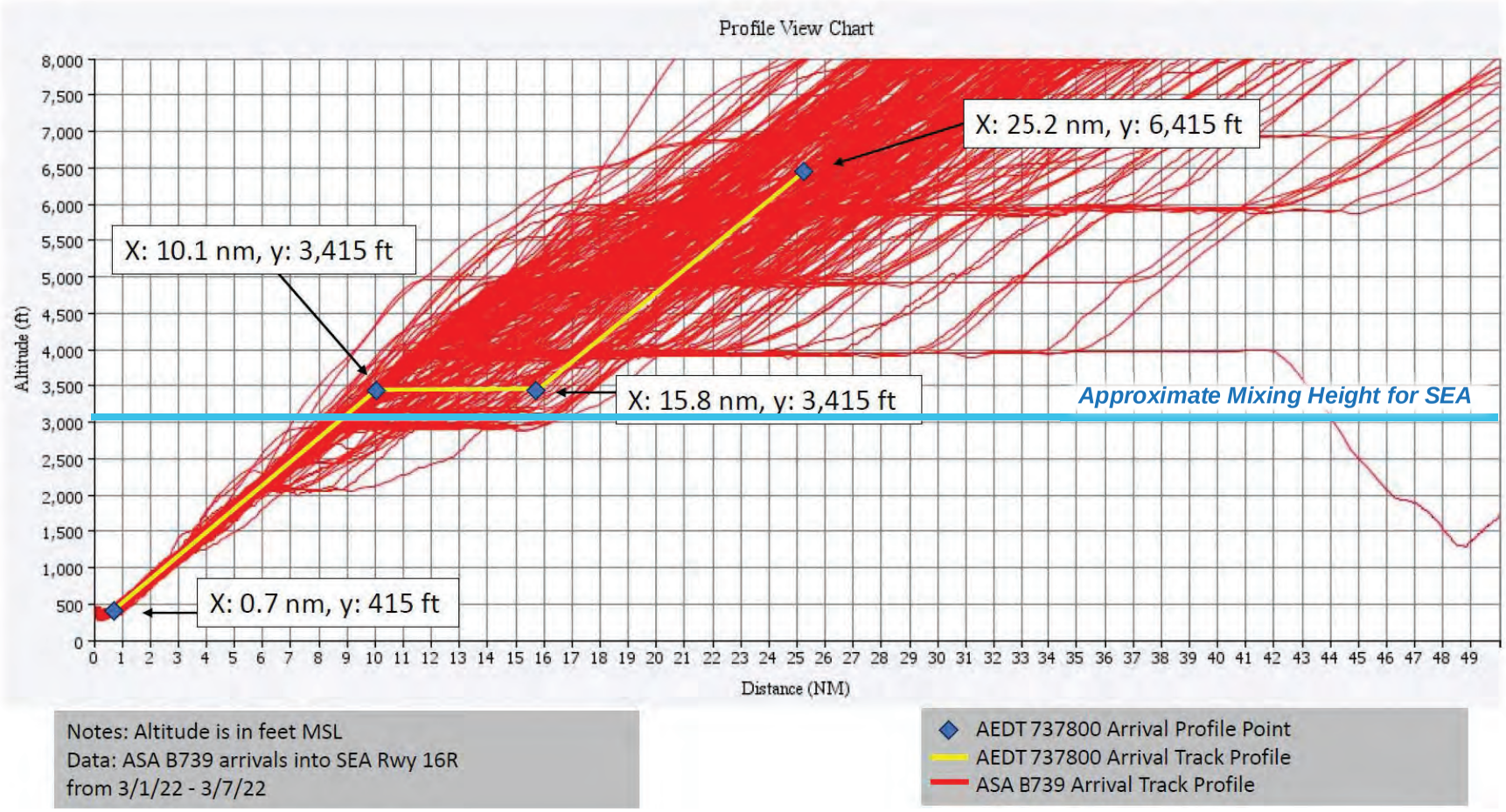
For the NEPA EA, emissions from aircraft will only be calculated when aircraft are operating in these modes within the atmospheric mixing layer, below the mixing height, where the emissions may influence ground-based pollutant concentrations. The mixing height, by definition, is the height below which emissions will be readily mixed to the surface in a time frame of a few minutes to an hour. Thus, the pollutants emitted within this mixing layer are the most important. The mixing height, combined with the angle of approach and the departure angle, determines the total time an aircraft operates in the mixing layer during approach and climb out, and thus potentially impacts human health. The mixing height used in this assessment will be defined as 3,084 feet in altitude above field elevation, which is the recommendation by the FAA based on the USPEA's *Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States*.[6]

Information on the number and type of aircraft operations for the existing conditions will be obtained from the Port of Seattle and by FAA's Air Traffic Activity Data System (ATADS) radar data. The radar data will be used to develop flight tracks in the AEDT. Additional data including aircraft types and engine combinations will then be researched and downloaded from the Port's EnvironmentalVue Flight Track Monitoring System. The assigning of aircraft engines will be based on the specific airframe and the operator. This information will be used to develop a representative aircraft fleet for input into the AEDT model. A review of radar data and the AEDT database confirmed the standard profiles included in AEDT are representative of actual aircraft performance (altitude, speed, thrust) at SEA. See **Exhibit 2** for an example of the comparison of an arrival aircraft altitude with the AEDT arrival standard profile conducted for the purpose of the NEPA EA.

With or without the Proposed Action, aircraft operations are expected to increase each year and by 2037, the number of annual aircraft operations will be higher as compared to the existing condition. Information on the number and type of aircraft operations for the future Proposed Action, No Action, and any identified alternatives will be based on the Port of Seattle's future aircraft activity forecasts and operational analysis. It is anticipated that the Proposed Action alternative will include a higher number of aircraft operations than the No Action alternative in both the 2032 and 2037 timeframes. The resulting emissions from these conditions will be disclosed as part of the analysis. Aircraft operational emissions inventories will be prepared for the existing condition, Proposed Action (2032 and 2037), No Action (2032 and 2037), and any identified alternatives. A qualitative discussion on the FAA's Continuous Lower Energy, Emissions, and Noise (CLEEN) Program and the Port of Seattle's sustainable fuel goals and how they could reduce future emissions will also be included.

[6] USEPA. Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, January 1972. Page 110. Seattle, Washington has a reported diurnal variation of mixing heights between 705 meters (2,313 feet) and 1,175 meters (3,855 feet), with the daily average being 940 meters (3,084 feet).

Exhibit 2 Radar Data and AEDT Arrival Profile Comparison



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APPENDIX J

Noise and Noise-Compatible Land Use

Noise Technical Report

Noise Modeling Protocol

Construction Noise Technical Report

4. Standard Noise Descriptors

Given the multiple dimensions of sound, a variety of descriptors, or metrics, have been developed for describing sound and noise. The Day-Night Average Sound Level (DNL) is widely accepted as the best available metric to describe aircraft noise exposure and is the noise descriptor required by the FAA for use in aircraft noise analyses and noise compatibility planning. Because the DNL metric correlates well with the degree of community annoyance from aircraft noise, DNL has been formally adopted by most federal agencies dealing with noise exposure. In addition to the FAA, these agencies include the Environmental Protection Agency (EPA), Department of Defense, Department of Housing and Urban Development (HUD) and the Veterans Administration. Also, federal interagency committees, such as the Federal Interagency Committee on Urban Noise and the FICON, have not identified new cumulative sound descriptors or metrics of sufficient scientific standing to substitute for DNL. Other cumulative metrics can be used to supplement, but not replace, DNL. FAA Orders 1050.1F and 5050.4B require that environmental studies use the DNL metric to describe cumulative noise exposure and identify aircraft noise/land use compatibility issues.

DNL is a cumulative sound level that provides a measure of the total sound energy during a specified time-period and is typically expressed as an annual average. DNL does not represent the sound level heard at any particular time, but rather represents the total sound exposure. DNL logarithmically averages the sound levels at a location over a 24-hour period, with a 10-decibel (dB) weighted penalty added to all noise events occurring during nighttime hours between 10:00 p.m. and 6:59 a.m. The 10 dB penalty represents the added intrusiveness of noise that occurs during sleeping hours, when ambient sound levels are typically lower than during daytime hours. This weighted penalty treats one nighttime noise event as equivalent to 10 daytime events of the same magnitude.

It is important to note that due to the logarithmic nature of noise, the *loudest* noise levels control the 24-hour average. For example, 30 seconds of sound of 100 dB, followed by 23 hours, 59 minutes, and 30 seconds of silence, would compute to a DNL value of 65 dB. If the 30 seconds of sound occurred at night, it would yield a DNL of 75 dB.

5. Noise Compatibility

5.1 FAA 14 CFR Part 150

The FAA uses the 14 C.F.R. Part 150, Airport Noise Compatibility Planning, land use compatibility guidelines to determine compatibility with most land uses. The FAA has created guidelines regarding the compatibility of land uses with various aircraft noise levels measured using the DNL metric. These guidelines are defined in Appendix A to 14 C.F.R. Part 150. These guidelines are consistent with land use compatibility guidelines developed by other federal agencies such as EPA and HUD.

Based on FAA guidelines, DNL 65 dB is the noise level where noise sensitive land uses (residences, churches, schools, libraries, and nursing homes) are not compatible with aircraft noise. Below 65 DNL, all land uses are determined to be compatible with airport noise. The land use compatibility table found in 14 C.F.R. Part 150 is presented in **Table 5-1.**

TABLE 5-1: YEARLY DAY-NIGHT AVERAGE SOUND LEVEL (DNL) IN DECIBELS (DB) BY LAND USE FROM THE LAND USE COMPATIBILITY GUIDELINES – 14 C.F.R. PART 150

LAND USE	BELOW DNL 65 dB	DNL 65-70 dB	DNL 70-75 dB	DNL 75-80 dB	DNL 80-85 dB	OVER DNL 85 dB
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

(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.

and airspace generally encourages the use of a single direction of "flow." "Head-to-head" operations, where aircraft depart in one direction and arrive in the opposite direction on the same runway are generally only possible when aircraft operations are well separated in both time and space.

6.4 Engine Run-Ups

Engine run-ups are routine engine maintenance or diagnostic tests where the engine is run at various settings to test performance. Depending on the frequency, engine run-ups may influence the size and location of noise contours.

6.5 Flight Tracks

A flight track is the path over the ground as aircraft fly to or from an airport. In order to model the arrival and departure flight corridors for SEA, consolidated flight tracks were developed from 2022 radar data and given a track ID. The radar data provide the location, density, and width of existing flight corridors. The AEDT models aircraft flight corridors with a system of primary flight tracks (or "backbone" tracks) and additional "dispersed" tracks. The backbone track lies at the center of the corridor, flanked by one or more dispersed tracks on each side. The AEDT distributes the operations assigned to a track among the backbone and dispersed tracks using a normal distribution or a user-defined distribution based on the observed flight track density. This dispersion more accurately models each flight corridor by accounting for variability attributed to weather, aircraft type, traffic, pilot technique and other factors.

Departure corridors are defined by a series of individual flight tracks located across the width of the corridor. Generally, aircraft on approach to a runway end are located within a smaller corridor due to the use of navigational instruments.

6.6 Aircraft Trip Length and Operational Profiles

Aircraft weight during departure is a factor in the dispersion of noise because it impacts the rate at which an aircraft is able to climb. Generally, the heavier an aircraft is, the slower the rate of climb and the wider the dispersion of noise along its route of flight. Where specific aircraft weights are unknown, AEDT uses the distance flown to the first stop as a surrogate for the weight, by assuming that the weight has a direct relationship with the fuel load necessary to reach the first destination. AEDT groups trip lengths into nine categories as shown in **Table 6-3.**

TABLE 6-3: AEDT STAGE LENGTH CATEGORIES

Stage Length	Distance
1	0-500 nautical miles
2	500-1000 nautical miles
3	1000-1500 nautical miles
4	1500-2500 nautical miles
5	2500-3500 nautical miles
6	3500-4500 nautical miles
7	4500-5500 nautical miles
8	5500-6500 nautical miles
9	6500-11000 nautical miles
M	Maximum range at maximum take-off weight

Source: Landrum & Brown analysis, 2024

Flight Tracks

Flight track locations for the Future (2032) Proposed Action are expected to be the same as the Existing (2022) Condition, because there are no changes to the runway locations and flight track proposed.[13] Therefore, the flight track location information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2032) Proposed Action.

Aircraft Departure Stage Length and Operational Profiles

Table 7-18 presents the departure stage length distribution for the Future (2032) Proposed Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

TABLE 7-18: DEPARTURE STAGE LENGTH DISTRIBUTION – FUTURE (2032) PROPOSED ACTION

Stage Length	Commercial Jets	Cargo Jets	Regional Jets	Cargo Props	General Aviation	Other	Military	Total
1	3.57%	--	74.09%	100.00%	100.00%	41.92%	100.00%	21.76%
2	44.89%	18.20%	22.43%	--	--	28.98%	--	38.03%
3	17.51%	26.73%	3.48%	--	--	15.37%	--	14.20%
4	25.96%	30.31%	--	--	--	13.74%	--	19.45%
5	--	--	--	--	--	--	--	--
6	3.38%	15.80%	--	--	--	--	--	2.92%
7	4.69%	8.95%	--	--	--	--	--	3.63%
8	--	--	--	--	--	--	--	--
9	--	--	--	--	--	--	--	--

Note: Totals may not sum due to rounding.
Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

7.2.2.2 Future (2032) Proposed Action Noise Contours

Exhibit 7-11: ***Future (2032) Proposed Action Noise Contour*** depicts the 65, 70, and 75 DNL noise contour for the Future (2032) Proposed Action. The area in square miles of each DNL contour band is summarized in **Table 7-19**.

The 65+ DNL contour extends approximately 3.7 miles to the north and 3.3 miles south of SEA. The area within the contour to the north and south is made up of a mix of single-family residential, multi-family residential, commercial, and industrial land uses.

TABLE 7-19: AREA (SQUARE MILES) OF 65, 70, AND 75 DNL NOISE CONTOURS – FUTURE (2032) PROPOSED ACTION

Alternative	DNL 65 - 70 dB	DNL 70 - 75 dB	DNL 75+ dB	DNL 65+ dB
Future (2032) No Action	6.23	2.42	1.45	10.10
Future (2032) Proposed Action	6.33	2.45	1.47	10.25
Change	0.10	0.03	0.02	0.15

Source: Landrum & Brown analysis, 2024.

[13] It is expected that the Runway 34R arrival profile will be slightly higher due to the relocation of the glide slope. This higher Runway 34R arrival profile was not specifically included in this analysis because AEDT does not provide a function to reflect this minor change. Furthermore, by not including the change in Runway 34R arrival profile this analysis represents a conservative evaluation of noise impacts.

TABLE 7-31: ANNUAL AIRCRAFT RUN-UP ACTIVITY – FUTURE (2037) PROPOSED ACTION (CONTINUED)

Airframe	Engine Code	Annual Daytime Operations	Average Duration Daytime (minutes)	Annual Nighttime Operations	Average Duration Nighttime (minutes)	Thrust Settings
Boeing 737-800 Series	3CM032	4.8	18.3	--	--	13,150 lbs.
Boeing 737-800 Series	8CM051	17.6	21.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM065	1.6	6.0	--	--	26,300 lbs.
Boeing 737-800 Series	8CM066	1.6	3.0	2.1	2.0	13,150 lbs.
Boeing 737-800 Series	8CM066	38.5	10.7	--	--	26,300 lbs.
Boeing 737-9	01P20CM140	1.6	9.0	--	--	13,200 lbs.
Boeing 737-9	01P20CM140	33.7	10.4	--	--	26,400 lbs.
Boeing 737-900-ER	01P11CM116	1.6	3.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM116	33.7	15.7	4.2	2.0	26,300 lbs.
Boeing 737-900-ER	01P11CM121	1.6	8.0	--	--	13,150 lbs.
Boeing 737-900-ER	01P11CM121	86.6	25.5	--	--	26,300 lbs.
Boeing 767-200 Series Freighter	1GE012	1.6	6.0	--	--	48,000 lbs.
Boeing 767-300 ER Freighter	1GE030	4.8	21.0	--	--	60,000 lbs.
Embraer ERJ175-LR	01P08GE197	11.2	11.2	--	--	13,800 lbs.
North Flow Secondary Location						
Airbus A330-200 Series	9PW094	1.6	38.0	--	--	71,100 lbs.
Total		593.3	--	12.7	--	--

Notes: Totals may not sum due to rounding.
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Sources: Aviation Forecast Update, prepared by Port of Seattle/LeighFisher, 2023, Sustainable Airport Master Plan Near-Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, September 2023, Landrum & Brown analysis, 2024.

Flight Tracks

Flight track locations for the Future (2037) Proposed Action are expected to be the same as the Existing (2022) conditions because there are no changes to the runway locations and no flight track changes are being proposed.[14] Therefore, the flight track location information discussed for the Existing (2022) Condition in Section 7.1 would remain the same for the Future (2037) Proposed Action.

Aircraft Departure Stage Length and Operational Profiles

Table 7-32 presents the departure stage length distribution for the Future (2037) Proposed Action. The departure segment of the missed approaches is modeled as Stage Length Category 1.

[14] It is expected that the Runway 34R arrival profile will be slightly higher due to the relocation of the glide slope. This higher Runway 34R arrival profile was not specifically included in this analysis because AEDT does not provide a function to reflect this minor change. Furthermore, by not including the change in Runway 34R arrival profile this analysis represents a conservative evaluation of noise impacts.

8. Significant Impact Conclusion

The Future (2032) Proposed Action noise contour would be larger than the Future (2032) No Action by 0.15 square miles due primarily to the 24 additional average annual day operations (see **Exhibit 9-1, *Comparison of Future (2032) Proposed Action/Hybrid Terminal Option and Future (2032) No Action Noise Contours***). Within the area of increased noise exposure associated with the Future (2032) Proposed Alternative there would be 337 additional housing units and 824 additional people within the 65+ DNL. The Future (2032) Proposed Action would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2032) No Action, as shown in **Exhibit 9-2, *Area of 1.5 dB Increase Within the 65+ DNL of the 2032 Proposed Action Noise Contour***. Therefore, no significant noise impact would occur as a result of implementing the Future (2032) Proposed Action. The results would be the same for the Hybrid Terminal Option.

The Future (2037) Proposed Action noise contour would be larger than the Future (2037) No Action by 0.66 square miles due primarily to the 96 additional average annual day operations (see **Exhibit 9-3, *Comparison of Future (2037) Proposed Action/Hybrid Terminal Option and Future (2037) No Action Noise Contours***). Within the area of increased noise exposure associated with the Future (2037) Proposed Alternative there would be 1,851 additional housing units and 4,439 additional population within the 65+ DNL. The Future (2037) Proposed Action would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL (the range of increase was between 0.0 DNL and 0.6 DNL) or that would be exposed at or above the 65 DNL level due to a 1.5 dB or greater increase, when compared to the Future (2037) No Action, as shown in **Exhibit 9-4, *Area of 1.5 dB Increase Within the 65+ DNL of the 2037 Proposed Action Noise Contour***. Therefore, no significant noise impact would occur as a result of implementing the Future (2037) Proposed Action. The results would be the same for the Hybrid Terminal Option.

Table 8 Departure Runway Utilization per Operator Category

Operator Category	16C	16L	16R	34C	34L	34R	Total
Passenger							
Heavy Jet	0.6%	68.6%	0.0%	0.3%	0.0%	30.5%	100.0%
Narrow Body Jet	4.4%	66.4%	0.0%	0.8%	0.0%	28.4%	100.0%
Regional Jet	2.4%	71.0%	0.0%	0.0%	0.0%	26.6%	100.0%
Turboprop	8.9%	63.0%	0.0%	1.8%	0.0%	26.3%	100.0%
Cargo							
Heavy Jet	2.5%	70.4%	0.0%	1.6%	0.0%	25.5%	100.0%
Narrow Body Jet	0.0%	63.0%	0.0%	0.0%	0.0%	37.0%	100.0%
Prop	30.4%	47.7%	0.1%	2.7%	0.0%	19.1%	100.0%
General Aviation							
Jet	63.9%	5.2%	0.0%	30.1%	0.1%	0.7%	100.0%
Turboprop	12.1%	63.4%	0.0%	1.4%	0.0%	23.2%	100.0%
Prop	42.7%	11.5%	8.1%	33.1%	4.6%	0.0%	100.0%
Overall Departure Total	**5.1%**	**65.8%**	**0.0%**	**1.1%**	**0.0%**	**28.0%**	**100.0%**

Note: Totals may not sum due to rounding.
Source: SEA EnvironmentalVue 2022, L&B Analysis, 2023.

1.6 Flight Tracks

There are two components to flight tracks used for noise modeling, flight track definition/location and percentage of use. Flight track definition and percent utilization was based on EnvironmentalVue Flight Track Monitoring System data from the months of January, February, March, April, May, July, September and October of 2022 and previous studies. The North Flow and South Flow Jet flight tracks are presented in Exhibit 2 and Exhibit 3. The North Flow and South Flow Turboprop and Prop flight tracks are presented in **Exhibit 2** and **Exhibit 3**. Flight tracks for missed approaches are provided in **Exhibit 4** and **Exhibit 5**. Flight track utilization percentages are presented in **Appendix A**.

APPENDIX L

Surface Transportation

Existing Conditions Report

Future Conditions Traffic Analysis Report

Local Jurisdiction Coordination Summary

References

APPENDIX L

Surface Transportation

Existing Conditions Report
Attachments

Attachment A: Turning Movement Count Graphics (Available by request)
Attachment B: Synchro Level-of Service (LOS) Reports (Available by request)
Attachment C: SimTraffic Queues and Travel Times (Available by request)
Attachment D: HCS LOS Reports (Available by request)
Attachment E: Approved Methods & Assumptions Documents

SAMP NTP Environmental Review:

Affected Environment: Existing Traffic Analysis Summary

Client:	Port of Seattle
Subject:	Traffic Operational Analysis – Existing Conditions
Submit to:	Steve Rybolt, Nic Longo; Port of Seattle
Submitted by:	Zach Wieben; Concord Engineering
Copied To:	Sarah Potter; Landrum and Brown
Date:	September 9, 2024

1. Introduction

This memorandum summarizes the existing traffic operational analysis for the Seattle-Tacoma International Airport's (Airport) Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTPs) Environmental Review, Affected Environment chapter. The analysis assumptions, study area, transportation inventory and operational analysis results are presented in the sections below.

2. Analysis Assumptions and Study Area

The primary goal in the selection of intersections for the surface transportation study was to capture routes that connect adjacent population centers with airport uses. The establishment of the traffic analysis study area and process considered the following:

- Major signalized intersections and minor intersections along travel routes to and from the airport within the Environmental Assessment (EA) General Study Area (GSA).
- Primary and secondary routes of travel between the Near-Term Projects (NTPs) and origins/destinations outside the GSA.
- Locations and traffic movements of concern from public and agency feedback received during the scoping process.
- The Traffic Impact Analysis (TIA) procedures described in the WSDOT Design Manual Chapter 320 – Traffic Analysis.

The existing conditions analysis includes 108 intersections shown as black dots in Figure 1. A total of 63 signalized, 41 stop-controlled, and 4 uncontrolled intersections were analyzed. Freeway analysis for ramps and segments of SR 518 and I-5 at the request of WSDOT was also performed for the areas shown in purple and dark blue in Figure 1.

Intersections were analyzed for the weekday commuter PM peak hour. Review of average daily traffic (ADT) volumes and intersection turning movement counts documented in comprehensive plans and/or transportation master plans for the surrounding local agencies identified the PM peak period as the time of day with the highest traffic volumes for the roadways surrounding the Airport; therefore, the traffic analysis of existing conditions was conducted for the PM peak hour only. The PM peak hour is defined as the highest four consecutive 15-minute intervals of traffic during the PM commuter peak period (4 p.m. to 6 p.m. of a typical weekday – Tuesday, Wednesday, Thursday). The times of the peak hours varied by intersection, with 40 intersections considered isolated and using individual peaks and the remaining 68 intersections broken down into 17 subsets of intersections with network peaks for each. A summary table of which intersections were grouped for peak hour calculations is summarized in the attachments (Attachment A-1 to A-2). Intersection balancing adjustments were made for intersections included in the

17 subsets and were approved by WSDOT. Key measures of effectiveness used in the analysis include average vehicle delay (in seconds) and level-of-service (LOS). Performance metrics were collected at each of the study intersections.

Data for the existing conditions analysis was primarily collected from turning movement counts collected in Fall 2022 and Spring 2023 as well as WSDOT permanent counter data. Analysis models from the WSDOT led *SR 518 Corridor Planning* Study were utilized as well as base models that were then updated with current channelization, intersection control, and signal timings. Supplemental information such as signal timings and traffic counts were also collected from the Port of Seattle, King County, WSDOT, and the cities of Tukwila and SeaTac. All intersection analysis was conducting using Synchro 11 software. A full list of the study intersections is provided in Table 1.

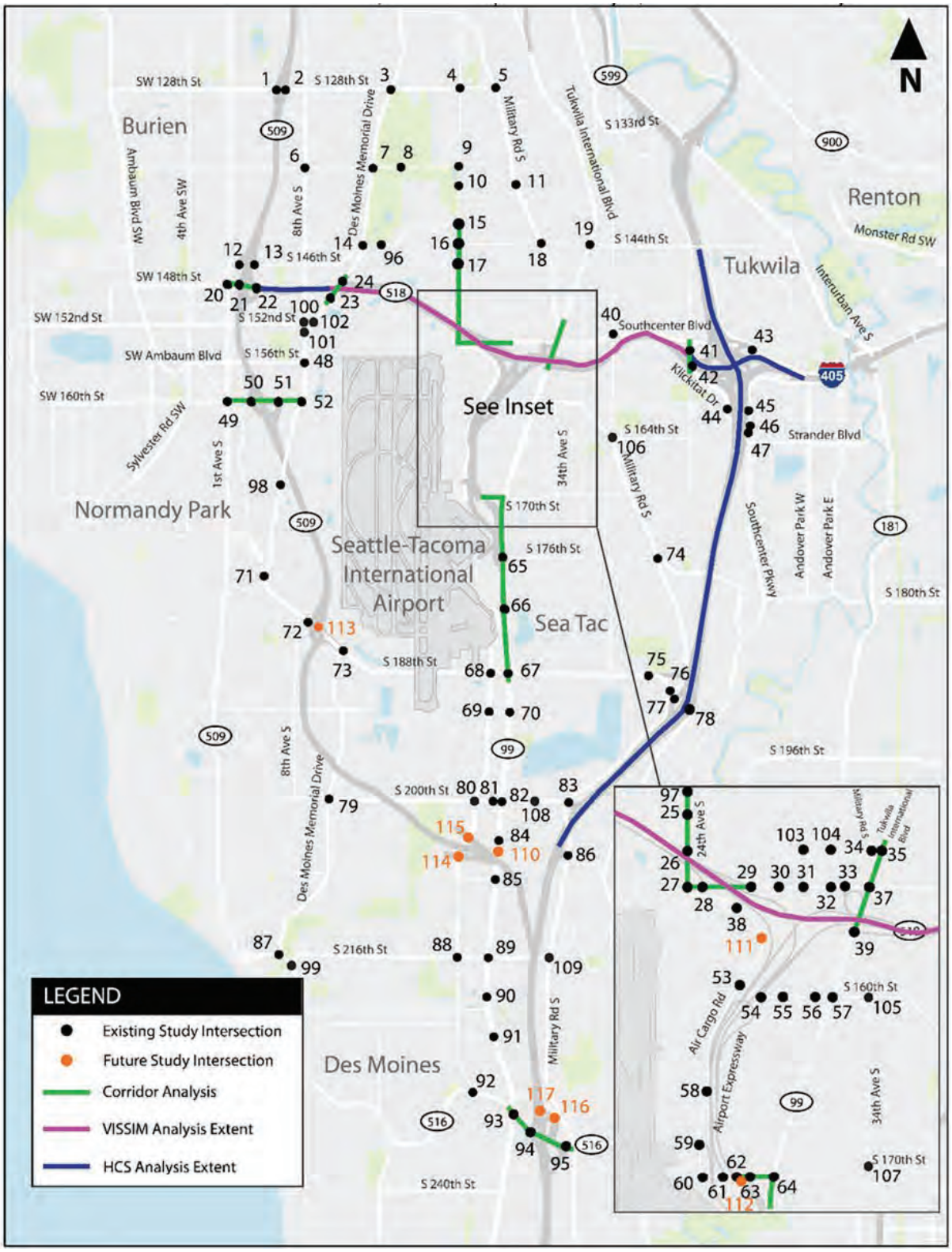


Figure 1. Study Area Intersections and Freeway Segments

3. 2022 Existing Conditions Results

3.1. Intersection Operations

Under 2022 existing conditions, 102 of 108 study intersections in the PM peak hour meet jurisdictional mobility standards. The 6 intersections that do not meet mobility standards in the PM peak within the study are listed below. A short description of the existing LOS deficiency is included:

- #23 – SR 518 EB Ramps/Des Moines Memorial Dr. (LOS F): Eastbound left turns experience approximately 55 seconds of delay and operate with a 0.30 v/c ratio at this intersection under existing conditions. The 95th-percentile queue for the eastbound left turn movement is 29 feet—or approximately one vehicle. Eastbound left turns have separated channelization from eastbound right turns. Therefore, the primary cause for the delay is northbound and southbound through trips on Des Moines Memorial Drive S. HCM 6th Edition results report the movement operates at an acceptable LOS D with about 33 seconds of delay which is better than the 55 seconds of delay reported using HCM 2000 methodology. There were 28 eastbound left turns counted in 2022.
- #33 – SR 518 WB Off-Ramp Loop/S 154th St. (LOS E): The northbound approach is stop controlled and experiences approximately 38 seconds of delay under existing conditions. Northbound volume totals 349 vehicles in the PM peak hour with a single lane provided for all movements. Northbound right turns have an extended taper that accommodate one additional vehicle simultaneously with a northbound left turn vehicle.
- #50 – SR 509 SB Ramps/SW 160th Street (LOS F): Southbound right turns experience approximately 106 seconds of delay at this intersection under existing conditions per HCM 2000 unsignalized intersection methodology. The southbound right turn is a free movement with no stop control and a downstream add lane for the existing slip lane. However, HCM 2000 results indicate the 677 PM peak hour southbound right turns is approximately 14% higher than the capacity for the lane. Weaving movements immediately downstream of the right turn prior to the Ambaum Cut Off/SW 160th St. signal may contribute some delay to the otherwise free movement. SimTraffic analysis summarized in Section 3.2 of this report indicates the Southbound approach at this intersection operates at LOS A with only 7 seconds of delay per vehicle. HCM 6th Edition methodology would assume 0 seconds of delay because there is no stop control for the movement with a downstream add-lane. This indicates the LOS F result may be a limitation in the HCM 2000 methodology.
- #83 - Military Rd. S/SB I-5 Ramps/S 200th St. (LOS E): The signalized intersection operates at LOS E below the WSDOT standard of LOS D for the ramp terminal intersection. The 304 northbound left turns in the PM peak hour operate with an average delay of approximately 151 seconds and are the critical movement for the intersection. All other movements operate with 0-83 seconds of average delay which are less than the 133-second existing cycle length.
- #93 – Pacific Highway S./SR 516/Kent-Des Moines Road S. (LOS F, Critical v/c 1.24). The signalized intersection operates at LOS F with approximately 97 seconds of average delay. The critical southbound-through movement operates with a v/c ratio of 1.24 and an average delay of approximately 183 seconds. The delay for this movement exceeds the cycle length of the intersection (175 seconds) indicating on average a southbound-through vehicle will wait more than one cycle length to be serviced. All other movements have an average delay less than 100 seconds and v/c less than 1.0 except the southbound-left movement (122 seconds, 1.04 v/c). The City of Des Moines allows LOS F operations of the intersection (average delay exceeding 80

seconds) however, it also evaluates critical movements of having a v/c less than 1.2[1] as pass/fail criteria.

- #101 - 8th Ave S./Des Moines Memorial Dr. (LOS F): The stop-controlled intersection operates at LOS F below the LOS D/E standards of Burien and SeaTac whose boundary bisects Des Moines Memorial Drive S. The intersection forms the southern point of a triangle with Des Moines Memorial Drive S., 8th Ave S., and S. 152nd Street where southbound vehicles on Des Moines Memorial Drive S. must stop and yield to southbound vehicles on 8th Ave S.

Table 1 provides a summary of the PM peak hour operational analysis existing conditions results. Level-of-service and turning movement count graphics are provided in Attachment A.

[1] Page 3-4 of *Des Moines 2035, Charting Our Course for a Sustainable Future* (2015)

Table 1. Year 2022 - Existing Conditions Traffic Analysis Results

ID	Intersection	Jurisdiction	Traffic Control	Mobility Standard^	LOS	Vehicle Delay (sec)
1	SR 509 SB Ramps/S 128th St.	WSDOT	Signalized	D	C	20.1
2	SR 509 NB Ramps/S 128th St.	WSDOT	Signalized	D	B	17.4
3	Des Moines Mem. Dr./S 128th St.	Burien/SeaTac	Signalized	E	C	22.6
4	24th Ave. S/S 128th St.	SeaTac	Signalized	D	A	7.6
5	Military Rd. S/S 128th St.	SeaTac/Tukwila	TWSC	E	B	15.0 (WB)
6	8th Ave. S/S 136th St.	Burien	Signalized	C	A	8.2
7	Des Moines Mem. Dr./S 136th St.	SeaTac	Signalized	E	A	9.5
8	18th Ave. S/S 136th St.	SeaTac	OWSC	D	B	11.1 (NB)
9	24th Ave. S/S 136th St.	SeaTac	AWSC	D	A	9.9
10	24th Ave. S/S 138th St.	SeaTac	TWSC	D	B	12.1 (WB)
11	Military Rd. S/S 138th St.	SeaTac/Tukwila	OWSC	E	B	11.4 (EB)
12	SR 509 SB Ramp/S 146th St.	WSDOT	OWSC	D	B	14.2 (SBL)
13	SR 509 NB Ramp/S 146th St.	WSDOT	Uncontrolled	D	A	4.0 (EB)
14	Des Moines Mem. Dr./S 144th St.	Burien/SeaTac	Signalized	E	C	29.1
15	24th Ave. S/S 142nd St.	SeaTac	AWSC	D	B	11.8
16	24th Ave. S/S 144th St.	SeaTac	TWSC	D	B	12.3 (WB)
17	24th Ave. S/S 146th St.	SeaTac	TWSC	D	C	16.7 (WB)
18	Military Rd. S/S 144th St.	SeaTac/Tukwila	AWSC	E	B	12.3
19	International Blvd./S 144th St.	Tukwila	Signalized	E	C	34.3
20	1st Ave. S/SW 148th St.	Burien	Signalized	D	D	50.0
21	SR 509 SB Ramps/SW 148th St.	WSDOT	Signalized	D	D	52.3
22	SR 509 NB Ramps/SW 148th St.	WSDOT	Signalized	D	A	5.0
23	SR 518 EB Ramps/Des Moines Mem. Dr.	WSDOT	OWSC	D	F	54.7 (EBL)
24	SR 518 WB Ramps/Des Moines Mem. Dr.	WSDOT	OWSC	D	C	21.6 (WB)
25	24th Ave. S/S 150th St.	SeaTac	TWSC	D	B	13.8 (WB)
26	24th Ave. S/S 152nd St.	SeaTac	OWSC	D	B	12.2 (WB)
27	24th Ave. S-Air Cargo Rd./S 154th St.	SeaTac	Signalized	D	B	10.1
28	SR 518 EB Off-Ramp/S 154th St.	WSDOT	OWSC	D	C	22.8 (SBL)
29	SR 518 WB On-Ramp/S 154th St.	WSDOT	Uncontrolled	D	A	0 (EB/WB)
30	29th Ave. S/S 154th St.	SeaTac	OWSC	E	B	13.0 (SB)
31	30th Ave. S/S 154th St.	SeaTac	TWSC	E	B	14.3 (SB)
32	32nd Ave. S/S 154th St.	SeaTac	TWSC	E	C	16.2 (SB)
33	SR 518 WB Off-Ramp /S 154th St.	WSDOT	TWSC	D	E	37.5 (NB)
34	Military Rd. S/S 152nd St.	SeaTac/Tukwila	Signalized	E	A	9.0
35	International Blvd./S 152nd St.	SeaTac/Tukwila	Signalized	E	C	24.2
37	International Blvd./S 154th St.	WSDOT	Signalized	E-Mitigated	D	38.7
38	Air Cargo Rd./S 156th St.	Port	OWSC	NA	B	13.8 (NB)
39	International Blvd./SR 518 EB On-Ramp	WSDOT	Signalized	E-Mitigated	B	10.5
40	Southcenter Blvd./42nd Ave. S	Tukwila	Signalized	E	D	35.5
41	SR 518 WB On-ramp/51st Ave. S	WSDOT	Uncontrolled	D	A	9.4 (NB)
42	SR 518 EB Off-Ramp/51st Ave. S	WSDOT	OWSC	D	C	22.5 (EBL)
43	Southcenter Blvd./Macadam Rd.	Tukwila	Signalized	E	B	15.6
44	Klickitat Dr./I-5 SB On-Ramp	WSDOT	Uncontrolled	D	B	10.0 (SBL)
45	Southcenter Blvd./I-5 NB Off-Ramp	WSDOT	Signalized	E	C	24.7
46	Klickitat Dr./Southcenter Blvd.	Tukwila	Signalized	E	D	38.1
47	Southcenter Blvd./NB I-5 Off Ramp	WSDOT	OWSC	D	C	18.4 (EBR)
48	8th Ave. S/S 156th St.	SeaTac	Signalized	E	C	20.6
49	1st Ave. S/SW 160th St.	Burien	Signalized	D	D	49.9
50	SR 509 SB Ramps/SW 160th St.	WSDOT	OWSC	D	F	105.6 (SBR)
51	SR 509 NB Ramps/SW 160th St.	WSDOT	TWSC	D	C	17.8 (NB)
52	Des Moines Memorial Dr./SW 160th St.	SeaTac	Signalized	E	B	10.0
53	Air Cargo Rd./S 160th St.	Port	AWSC	NA	C	18.2
54	Host Rd./SR 518 On-Ramp/S 160th St.	SeaTac/WSDOT	TWSC	E	C	24.5 (NBL)
55	SeaTac Rental Car Facility Dr. W/S 160th St.	SeaTac	Signalized	E	B	14.9
56	SeaTac Rental Car Facility Dr. E/S 160th St.	SeaTac	TWSC	E	B	13.7 (SBL)
57	Pacific Hwy S/S 160th St.	SeaTac	Signalized	E	D	42.3
58	Air Cargo Rd./S 166th St.	Port	OWSC	NA	B	13.5 (EB)
59	Air Cargo Rd./SB Airport Expressway On-Ramp	Port	Signalized	NA	A	1.1
60	Air Cargo Rd./S 170th St.	Port	AWSC	NA	A	7.9
61	SB Airport Expressway Off-Ramp/S 170th St.	SeaTac	Signalized	E	C	24.4
62	Doug Fox Parking Lot/S 170th Street	SeaTac	OWSC	C	B	13.4 (SBL)
63	NB Airport Expressway Off-Ramp/S 170th St.	SeaTac	Signalized	C	A	6.5
64	International Blvd/S 170th St.	SeaTac	Signalized	E-Mitigated	D	54.5

Table 1. Year 2022 - Existing Conditions Traffic Analysis Results

ID	Intersection	Jurisdiction	Traffic Control	Mobility Standard^	LOS	Vehicle Delay (sec)
65	International Blvd/S 176th St.	SeaTac	Signalized	E-Mitigated	C	29.4
66	International Blvd/S 182nd St./Arrivals Dr.	SeaTac	Signalized	E-Mitigated	D	39.8
67	International Blvd/S 188th St.	SeaTac	Signalized	E-Mitigated	E	63.2
68	28th Ave. S/S 188th St.	SeaTac	Signalized	E	D	40.8
69	28th Ave. S/S 192nd St.	SeaTac	Signalized	E	A	5.7
70	International Blvd/S 192nd St.	SeaTac	Signalized	E-Mitigated	B	19.0
71	S Normandy Rd./Ambaum Blvd. S	Burien	Signalized	D	C	27.8
72	SB SR 509 Off Ramp/Des Moines Mem Dr.	WSDOT	OWSC	D	D	27.7 (SBR)
73	Des Moines Memorial Dr./S 188th St.	SeaTac	Signalized	E	C	22.0
74	Military Rd. S/S 176th St.	SeaTac	Signalized	E	C	32.6
75	46th Ave. S/S 188th St.	SeaTac	Signalized	E	B	14.1
76	Military Rd. S/S 188th St.	SeaTac	Signalized	E	D	35.5
77	SB I-5 Ramps/S 188th St.	WSDOT	Signalized	D	C	21.3
78	NB I-5 Ramps/S 188th St.	WSDOT	Signalized	D	C	33.1
79	Des Moines Memorial Dr./S 200th St.	SeaTac/Des Moines	Signalized	E	C	27.6
80	26th Ave. S/S 200th St.	SeaTac	Signalized	E	B	19.4
81	28th Ave. S/S 200th St.	SeaTac	Signalized	E	C	29.9
82	International Blvd/S 200th St.	SeaTac	Signalized	E-Mitigated	E	61.5
83	Military Rd. S/SB I-5 Ramps/S 200th St.	WSDOT	Signalized	D	E	69.7
84	International Blvd/S 204th St.	SeaTac	Signalized	E-Mitigated	A	8.3
85	International Blvd/S 208th St.	SeaTac	Signalized	E-Mitigated	B	17.7
86	Military Rd. S/NB I-5 Ramps	WSDOT	Signalized	D	C	27.8
87	Des Moines Memorial Dr./S 216th St.	WSDOT	Signalized	E	B	12.7
88	24th Ave. S/S 216th St.	Des Moines	Signalized	D	C	26.9
89	Pacific Hwy S/S 216th St.	Des Moines	Signalized	F (v/c 1.0)	D	50.3
90	Pacific Hwy S/S 220th St.	Des Moines	Signalized	E	B	17.3
91	Pacific Hwy S/S 224th St.	Des Moines	Signalized	E	C	24.0
92	24th Ave. S/SR 516	Des Moines	Signalized	D	C	24.7
93	Pacific Hwy S/SR 516	Des Moines	Signalized	F (v/c 1.2)	F	97.4
94	SB I-5 Ramps/SR 516	WSDOT	Signalized	D	D	50.7
95	NB I-5 Ramps/SR 516	WSDOT	Signalized	D	B	19.8
96	16th Ave. S/S 144th St.	SeaTac	OWSC	D	B	10.9 (NB)
97	24th Ave. S/S 148th St.	SeaTac	OWSC	D	B	12.8 (WB)
98	Des Moines Memorial Dr./S 168th St.	Burien	TWSC	C	C	16.9 (EB)
99	SR 509/Marine View Dr./S 216th St.	WSDOT	Signalized	E	C	28.2
100	8th Ave S/S 152nd St.	Burien	AWSC	C	B	11.4
101	8th Ave S/Des Moines Memorial Dr.	Burien/SeaTac	OWSC	D/E	F	50.6 (WB)
102	S. 152nd St./Des Moines Memorial Dr.	Burien/SeaTac	OWSC	E	C	21.2 (EB)
103	30th Ave. S/S 152nd St.	SeaTac	OWSC	D	A	9.5 (NB)
104	32nd Ave. S/S 152nd St.	SeaTac	TWSC	D	A	9.7 (NB)
105	34th Ave. S/S 160th St.	SeaTac	TWSC	E	C	16.8 (NB)
106	Military Rd. S/S 164th St./42nd Ave. S.	SeaTac	Signalized	E	D	35.9
107	34th Ave. S/S 170th St.	SeaTac	AWSC	E	A	8.7
108	32nd Ave. S/S 200th St.	SeaTac	Signalized	E	A	5.6
109	Military Rd. S/S 216th St.	SeaTac	Signalized	E	D	54.0

Notes:
- Signalized and stop-controlled intersections are analyzed in Synchro, Version 11. Results are based on Highway Capacity Manual (HCM) 2000
- TWSC: Two-way stop control. Shaded cells indicate intersections that fail to meet agency LOS standards.
- For two-way stop-controlled intersections, the worst delay for the minor street movements was used to report the intersection LOS.
- Intersections not meeting mobility standards are shaded in black.
- ^LOS Standard "E-Mitigated" is defined by the Puget Sound Regional Council for Tier 1 regionally significant state highways. An "E-Mitigated" standard requires the highway to operate at LOS "E" after mitigating through transit, demand management, and transportation system management strategies.
- ^ LOS Standard "F-Exception" applies to intersections where an exception has been applied to the mobility standard and no mitigation is required with an LOS F operation. Intersections that operate at LOS 'F' but meet still meet mobility standards are highlighted in light brown.

3.2 Corridor Operations

Corridor operations were analyzed at the request of WSDOT and the Port where study intersections are closely spaced and queues/congestion from one intersection may impact upstream intersection operations. Corridor operations were conducted using SimTraffic and followed WSDOT's *Synchro & SimTraffic Protocol (August 2018)*. See Attachment E for the methods and assumptions for this corridor operations analysis documenting (Measures of Effectiveness) MOEs and calibration criteria. The SimTraffic analysis was divided into nine corridors, each consisting of between two to six intersections, listed below in Table 2.

Table 2. SimTraffic Corridors Analyzed

#	Segments of Interest	Study Intersections Included
1	24th Ave. S: S 142nd St. to S 154th St.	15, 16, 17, 97, 25, 26, 27
2	SW 148th St.: 1st Ave S to SR 509	20, 21, 22
3	Des Moines Memorial Dr. : SR 518 Ramp Terminals	23, 24
4	S 154th St.: 24th Ave S and SR 518 Ramp Terminals	27, 28, 29
5	International Boulevard: S 152nd St. to SR 518 EB On-Ramp	35, 36, 37, 39
6	51st Ave S.: SR 518 Ramp Terminals	41, 42
7	SW 160th St.: 1st Ave S. to Des Moines Memorial Dr.	49, 50, 51, 52
8	NAE Off-Ramp/S 170th St. to International Boulevard/ S 188th St.	63, 64, 65, 66, 67
9	SR 516: Pacific Highway S and I-5 Ramp Terminals	93, 94, 95

MOEs for the corridor analysis were 95th percentile queues and average corridor travel time as documented in the methods and assumption scoping document. The analysis was performed to evaluate the potential for the blocking of intersections and for turn lanes exceeding provided storage lengths which may not appear in typical isolated intersection analysis. The corridors were calibrated using intersection throughput compared to field turning movement counts as the primary metric for ensuring accuracy. The intersection throughput numbers of the simulation were compared to counts taken during the 2022 PM peak hour and evaluated using a +/-10% threshold. Additionally, reported delays from SimTraffic were compared to reported delays from the Synchro analysis. Simulation results of 11 random seeds were averaged and reported. Parameters changed for the purposes of calibration include vehicle occurrence percentage, headways at 20, 50, and 80 miles per hour, gap acceptance factor, speed factor, yellow and courtesy deceleration rate, and yellow and great reaction time. Parameters were adjusted based on recommended ranges in WSDOT's *Synchro & SimTraffic Protocol (August 2018).* SimTraffic Queueing and Blocking reports are saved after the capacity analysis reports in Appendix C for each corridor.

PM peak hour conditions for 21 of the 34 study intersections report having no queuing concerns, including the entirety of Segment 3 (Des Moines Memorial Drive S.), Segment 4 (S 154th St) and Segment 6 (51st

Ave). Queues exceeding their storage lengths are observed at multiple locations along the remaining corridors. The most severe queues and delays recorded for all study intersections are summarized below:

- Int #20 – SW 148th Street/SR 518 at 1st Avenue S: All left turn queue lengths are exceeding their storage lengths.
- Int #37 – SR 99/Tukwila International Boulevard at S. 154th Street: Eastbound and westbound left turn pockets exceed their storage capacity.
- Int #49 – 1st Avenue S. at S. 160th Street: Southbound and eastbound left turn queues exceed storage. Westbound queue extends back to upstream intersection in the WB direction (Segment 7 – SW 160th St).
- Int #93 – Pacific Highway S. at Kent-Des Moines Road: Southbound queues extended over a half-mile even after additional volume was shifted to the HOV lane to better distribute southbound trips through the intersection. Queues reported in HCM results indicate queues less than a quarter-mile, however HCM queue results may also under-report the queue length due to oversaturated conditions. Google traffic congestion maps for typical conditions indicate queuing routinely spills back to S 226th Street, approximately 2,000 feet north of the intersection. This information indicates the SimTraffic results more likely replicate the field conditions.

Arterial travel times were calculated from SimTraffic by adding running time (i.e. free flow) and delay time (stopped). The distance of the corridor divided by the combination of these two times resulted in an average corridor speed. Results for each corridor's average travel time and speed are summarized in Table 3.

Table 3. SimTraffic Corridors Travel Time and Speed Results

#	Arterial	Direction	2022 PM Existing				
			Distance (mi)	Travel Time (s/veh)	Delay (s/veh)	Running Time (s/veh)	Avg Speed (mph)
1	24th Ave S	NB	0.8	92.6	12.0	80.6	31.1
		SB	0.8	93.3	17.0	76.3	30.9
2	SW 148th St/SR 518	EB	0.2	60.6	49.1	11.5	11.9
		WB	0.2	94.9	84.2	10.7	7.6
3	DMMD	NB	0.1	11.3	2.0	9.3	31.9
		SB	0.1	9.7	0.4	9.3	37.1
4	S 154th St	EB	0.2	25.8	3.3	22.5	27.9
		WB	0.2	37.2	14.6	22.6	19.4
5	SR 99	NB	0.3	80.3	54.0	26.3	13.4
		SB	0.3	86.0	58.9	27.1	12.6
6	51st Ave S	NB	0.1	25.2	9.9	15.3	14.3
		SB	0.1	15.5	0.1	15.4	23.2
7	SW 160th St	EB	0.5	79.4	32.4	47.0	22.7
		WB	0.5	99.0	52.7	46.3	18.2
8	International Blvd	NB	1.1	221.6	104.3	117.3	17.9
		SB	1.1	264.8	152.0	112.8	15.0
	S 170th St	EB	0.1	62.0	54.0	8.0	5.8
		WB	0.1	14.7	3.7	11.0	24.5
9	S Kent Des Moines Rd	EB	0.4	156.0	114.5	41.5	9.2
		WB	0.4	100.1	60.7	39.4	14.4

3.3 SR 518 VISSIM Analysis

This section summarizes the VISSIM operational analysis conducted on SR 518 freeway mainline segments between Des Moines Memorial Drive and the I-5/I-405/SR 518 interchange.

3.3.1 *Analysis Assumptions and Study Area*

A full summary of the methods and assumptions of the VISSIM analysis is documented in the *SAMP SR 518 VISSIM Traffic Analysis Methods & Assumptions* document, and provided as Attachment E. The sections below provide a summary of the analysis tools, study area, peak periods, input data sources and measures of effectiveness reported. Figure 2 shows the VISSIM study area extents. Ramp terminal intersections were not included in the VISSIM model and were analyzed using Synchro/SimTraffic per scoping with WSDOT. A boundary condition was included in the VISSIM model for eastbound SR 518 at the I-5 underpass to mimic existing congestion on northbound I-405 in the PM peak hour

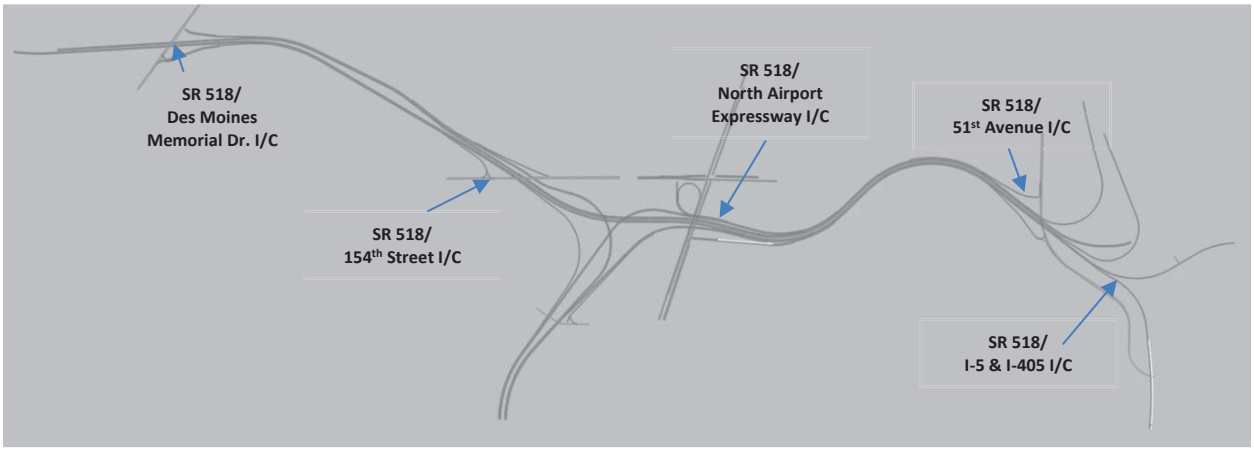


Figure 2. VISSIM Model Extents

The microscopic traffic simulation tool, VISSIM 2020 (SP 14), was used to analyze freeway and ramp operations along SR 518. The peak hour under existing conditions for the freeway system was 4:45-5:45 PM based on volume and speed data collected at WSDOT permanent counter locations along the corridor. A 2-hour peak period from 4:00-6:00 PM was used for the VISSIM analysis afternoon peak. A 30-minute simulation seeding period was also included in the VISSIM model in addition to the 2-hour analysis period. The existing demand inputs for the VISSIM model were created using traffic count data collected at the intersection, mainline, and ramps in September and October of 2022. Origin-destination data for routing was developed from Streetlight Data. Speed data used to create speed-temporal maps along the corridor was collected from WSDOT permanent data stations between I-5 and International Boulevard. Key measures of effectiveness (MOE) collected from the VISSIM analysis include corridor travel times, vehicle throughput, and segment speeds.

3.3.2 *Travel Times*

Corridor travel times during the PM peak period were reported from the VISSIM model. Field travel times were collected from February-April 2022 Streetlight Data provided by WSDOT. Streetlight Data aggregates and summarizes data from Bluetooth and GPS sources to provide a more robust sample size than typical floating car travel times. This data can then be refined to determine point-to-point travel patterns, volume, and travel time for vehicles along a corridor. The Streetlight Data was summarized into 1-hour increments (4:00-5:00 PM, 5:00-6:00 PM). The field travel time routes were replicated within VISSIM and compared using allowable differences as directed by WSDOT. The larger of the allowable difference in

travel time as calculated by one of two methods was used to determine when a travel time route was calibrated: 1) Table 7 in the *WSDOT VISSIM Protocol (2014)* or 2) 10% of field travel time. All travel times were rounded to the nearest 0.1 minutes.

A total of 18 travel time routes (9 eastbound, 9 westbound) were collected from the VISSIM model representing point-to-point travel times in both the eastbound and westbound directions. Each of the 18 travel time routes were collected and calibrated for the 4:00-5:00 PM and 5:00-6:00 PM hours. The point-to-point travel times also provided insight on lane-by-lane congestion in the eastbound direction as drivers approached the I-5/I-405/SR 518 interchange and lanes drop to specific freeway facilities. In general, eastbound travel times averaged between 1.9 and 4.5 minutes during the peak hour while westbound travel times average between 1.6 and 2.4 minutes. Table 4 summarizes the existing field and VISSIM travel time data.

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Table 4. 2022 Travel Time Calibration Summary

	ID	#	Distance [mi]	Description		4:00 - 5:00 PM							5:00 - 6:00 PM						
				From	To	Field[1] [min]	Model [min]	Diff [min]	Diff [%]	Allowable Difference [min][2]	Allowable Difference [%]	Pass?	Field[1] [min]	Model [min]	Diff [min]	Diff [%]	Allowable Difference [min][2]	Allowable Difference [%]	Pass?
Eastbound	EB1[3]	11	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-5 Ramp	2.1	2.2	0.1	5%	0.2	+/- 10%	Yes	2.8	2.5	-0.3	-11%	0.3	+/- 11%	Yes
	EB2[3]	12	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-405 Ramp	2.8	3.0	0.2	7%	0.3	+/- 11%	Yes	4.3	3.9	-0.4	-9%	0.6	+/- 14%	Yes
	EB3[3]	13	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to SB I-5 Ramp	2.3	2.4	0.1	4%	0.2	+/- 9%	Yes	3.0	2.9	-0.1	-3%	0.3	+/- 10%	Yes
	EB4[4]	14	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-5 Ramp	2.8	2.6	-0.2	-7%	0.3	+/- 11%	Yes	2.8	3.1	0.3	11%	0.3	+/- 11%	Yes
	EB5	15	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-405 Ramp	3.6	3.4	-0.2	-6%	0.4	+/- 11%	Yes	4.2	4.5	0.3	7%	0.6	+/- 14%	Yes
	EB6	16	1.7	NB NAE On Ramp from S 160th Street	EB SR 518 to SB I-5 Ramp	2.6	2.8	0.2	8%	0.3	+/- 12%	Yes	3.3	3.5	0.2	6%	0.4	+/- 12%	Yes
	EB7	17	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-5 Ramp	1.9	1.9	0.0	0%	0.2	+/- 11%	Yes	2.1	2.2	0.1	5%	0.2	+/- 10%	Yes
	EB8	18	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-405 Ramp	2.5	2.5	0.0	0%	0.3	+/- 12%	Yes	2.8	3.1	0.3	11%	0.3	+/- 11%	Yes
	EB9	19	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to SB I-5 Ramp	2.1	1.9	-0.2	-10%	0.2	+/- 10%	Yes	2.2	2.2	0.0	0%	0.2	+/- 9%	Yes
Westbound	WB1	21	1.3	SB I-5 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	1.9	1.7	-0.2	-11%	0.2	+/- 11%	Yes	1.9	1.7	-0.2	-11%	0.2	+/- 11%	Yes
	WB2	22	1.6	SB I-5 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	1.8	1.7	-0.1	-6%	0.2	+/- 11%	Yes	1.7	1.7	0.0	0%	0.2	+/- 12%	Yes
	WB3	23	1.7	SB I-5 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.2	2.1	-0.1	-5%	0.2	+/- 9%	Yes	2.2	2.1	-0.1	-5%	0.2	+/- 9%	Yes
	WB4	24	1.4	SB I-405 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	2	2.0	0.0	0%	0.2	+/- 10%	Yes	2.1	2.0	-0.1	-5%	0.2	+/- 10%	Yes
	WB5	25	1.7	SB I-405 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	1.9	2.0	0.1	5%	0.2	+/- 11%	Yes	1.9	2.0	0.1	5%	0.2	+/- 11%	Yes
	WB6	26	1.8	SB I-405 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.3	2.4	0.1	4%	0.2	+/- 9%	Yes	2.3	2.4	0.1	4%	0.2	+/- 9%	Yes
	WB7	27	1.1	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 Off Ramp to International Blvd. (Loop)	1.7	1.7	0.0	0%	0.2	+/- 12%	Yes	1.8	1.7	-0.1	-6%	0.2	+/- 11%	Yes
	WB8	28	1.4	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 s/o S. 154th Street Overpass	1.7	1.6	-0.1	-6%	0.2	+/- 12%	Yes	1.7	1.6	-0.1	-6%	0.2	+/- 12%	Yes
	WB9[4]	29	1.5	WB SR 518 On Ramp from 51st Ave S.	SB NAE s/o S. 160th Street Overpass	2.3	2.1	-0.2	-9%	0.2	+/- 9%	Yes	2.3	2.1	-0.2	-9%	0.2	+/- 9%	Yes
					Travel Time Segments Passing:	18 / 18													
						100%													
					Travel Time Segments Passing:								18 / 18						
													100%						

Notes:

1. Field data comes from hourly Streetlight Data travel times from February through April 2022.
2. Allowable difference is the max of 10% of field time or the allowable difference using free-flowing formula in Table 7 of the WSDOT VISSIM Protocol (right). Values rounded to nearest 0.1 minutes.
3. Feb-Apr 2022 travel time data indicated faster average travel times for 5-6 PM EB SR 518 travel times that could not be calibrated within the allowable tolerances. Feb-Apr 2022 data was compared to typical travel times (Google) and showed 80th-percentile travel times for Feb-Apr 2022 would be more reflective of Sep-Oct 2022 congestion. Routes EB1, EB2, and EB3 therefore use the 80th-percentile travel times from Feb-Apr 2022 Streetlight Data.
4. Average travel time routes for EB4 and WB9 may have been skewed by circuitous routing within Streetlight Data's dataset. Median travel times from the dataset were used in place of average travel times in an attempt to exclude influence from the skewed circuitous travel times.

Facility Type	Equation
Free-Flowing	$\Delta = \frac{1}{\frac{1}{t} - \frac{4.4}{L}} - t$
Interupted Flow	$\Delta = \frac{1}{\frac{1}{t} - \frac{0.1 * 5280\ S}{3600\ L}} - t$

Δ = Allowable Travel Time Variation (+/- seconds)
t = Real World Travel Time (seconds)
L = Length (feet)
S = Free Flow Speed (mph); Posted Speed may be used for FFS if unknown

Table 7 - Travel Time Calibration Criteria

3.3.3 Speed

Speed data along the SR 518 corridor was collected from September and October of 2022 where available from WSDOT's permanent counters. Speed data was extracted from the VISSIM model at the same locations on the freeway network as their location in the field. Field and model speed data was then summarized in speed-temporal charts. The speed-temporal charts were used to validate the congestion profile of the freeway network by visually displaying how the average speed along the corridor changed over the peak period.

3.3.4 Volumes

Freeway and ramp volumes for the SR 518 corridor were developed using September and October of 2022 count data for the 4:45-5:45 PM peak hour. Freeway demand volumes were developed from count locations that were unconstrained and then balanced through the SR 518 corridor to capture the demand on the SR 518 section analyzed as opposed to only throughput volumes recorded in counts. The critical eastbound volumes were started at the west end of the model near the uncongested interchange with SR 509 and balanced eastward through the congested I-5 interchange where throughput is constrained. Freeway throughput volumes within the VISSIM model were compared to field counts (throughput) in congested and uncongested links and segments to validate the VISSIM model.

Validation of the throughput volumes within the VISSIM model was done using the Geoffrey E. Havers (GEH) Statistic per the *WSDOT VISSIM Protocol (2014)*. All ramps and freeway segments were calibrated within a GEH of 3.0. Table 5 summarizes the ramp and freeway segment GEH statistics.

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Table 5. 2022 GEH Statistic Summary

Facility	Segment ID	Direction	Type	Field Volumes	Model Volumes	Diff	Diff %	GEH
SR 518	WB SR 518 between Ramp to SB I-5 and Ramp From SB I-5	WB	Mainline	2690	2703	13	0%	0.2
SR 518	WB SR 518 On-Ramp from SB I-5	WB	On-Ramp	830	820	-10	-1%	0.4
SR 518	WB SR 518 between Ramp from SB I-5 and Ramp from 51st Ave S	WB	Mainline	3520	3520	0	0%	0.0
SR 518	WB SR 518 On-ramp from 51st Ave S	WB	On-Ramp	680	666	-14	-2%	0.5
SR 518	WB SR 518 between 51st Ave S and Int Blvd/NAE Ramp	WB	Mainline	4200	4182	-18	0%	0.3
SR 518	WB SR 518 to SR 99/Intl Blvd. SB (Loop)	WB	Off-Ramp	470	465	-5	-1%	0.2
SR 518	WB SR 518 to 154 St (EB & WB)	WB	Off-Ramp	360	358	-2	0%	0.1
SR 518	WB SR 518 to SB NAE	WB	Off-Ramp	1210	1210	0	0%	0.0
SR 518	WB SR 518 between Int Blvd and On-Ramp from NB NAE/154th St	WB	Mainline	2160	2142	-18	-1%	0.4
SR 518	NB NAE to WB SR 518	WB	On-Ramp	430	431	1	0%	0.1
SR 518	WB 154th to SR 518	WB	On-Ramp	290	302	12	4%	0.7
SR 518	WB SR 518 On-Ramp from NB NAE/S 154th St (Combined)	WB	On-Ramp	720	734	14	2%	0.5
SR 518	WB SR 518 between NB NAE/S 154th St On-Ramp and DMMD Off-Ramp	WB	Mainline	2880	2876	-4	0%	0.1
SR 518	WB SR 518 to DMMD	WB	Off-Ramp	590	585	-5	-1%	0.2
SR 518	WB SR 518 between DMMD and SR 509	WB	Mainline	2290	2290	0	0%	0.0
SR 518	EB SR 518 between Off-Ramp to DMMD and On-Ramp from DMMD	EB	Mainline	2010	2068	58	3%	1.3
SR 518	EB SR 518 On-Ramp from DMMD	EB	On-Ramp	510	516	6	1%	0.2
SR 518	EB SR 518 between DMMD On-Ramp and S 154th St Off-Ramp	EB	Mainline	2520	2581	61	2%	1.2
SR 518	EB SR 518 Off-Ramp to S 154th St	EB	Off-Ramp	330	343	13	4%	0.7
SR 518	EB SR 518 between Off-Ramp to S 154th St and Off-Ramp to SB NAE	EB	Mainline	2190	2241	51	2%	1.1
SR 518	EB SR-518 Off-Ramp to SB NAE	EB	Off-Ramp	480	486	6	1%	0.3
SR 518	EB SR 518 between Off-Ramp to SB NAE and On-Ramp from NB NAE/S 160th St	EB	Mainline	1710	1755	45	3%	1.1
SR 518	NB NAE On	EB	On-Ramp	1260	1278	18	1%	0.5
SR 518	S 160th Street On	EB	On-Ramp	250	234	-16	-6%	1.0
SR 518	NB NAE/S 160th Street On-Ramp Combined	EB	On-Ramp	1510	1514	4	0%	0.1
SR 518	EB SR 518 between NAE NB on and Pacific Hwy NB on	EB	Mainline	3220	3264	44	1%	0.8
SR 518	NB Pacific Hwy on	EB	On-Ramp	570	563	-7	-1%	0.3
SR 518	EB SR 518 between Pacific Hwy and I-5	EB	Mainline	3790	3817	27	1%	0.4
SR 518	EB SR 518 to 51st Ave	EB	Off-Ramp	650	662	12	2%	0.5
SR 518	EB SR 518 between 51 St and SB I-5	EB	Mainline	3140	3152	12	0%	0.2
SR 518	EB SR 518 to I-5 NB	EB	Off-Ramp	850	850	0	0%	0.0
SR 518	EB SR 518 to I-5 SB	EB	Off-Ramp	620	618	-2	0%	0.1
SR 518	EB SR 518 @ I-5 Interchange	EB	Mainline	1670	1671	1	0%	0.0

Both Directions - Full Corridor	
Total	33
GEH >3	0
% Met	100%

WB Off-Peak - Full Corridor	
Total	15
GEH >3	0
% Met	100%

EB Peak - Full Corridor	
Total	18
GEH >3	0
% Met	100%

Total Field	50600
Total Model	50898
Difference	298
	1%

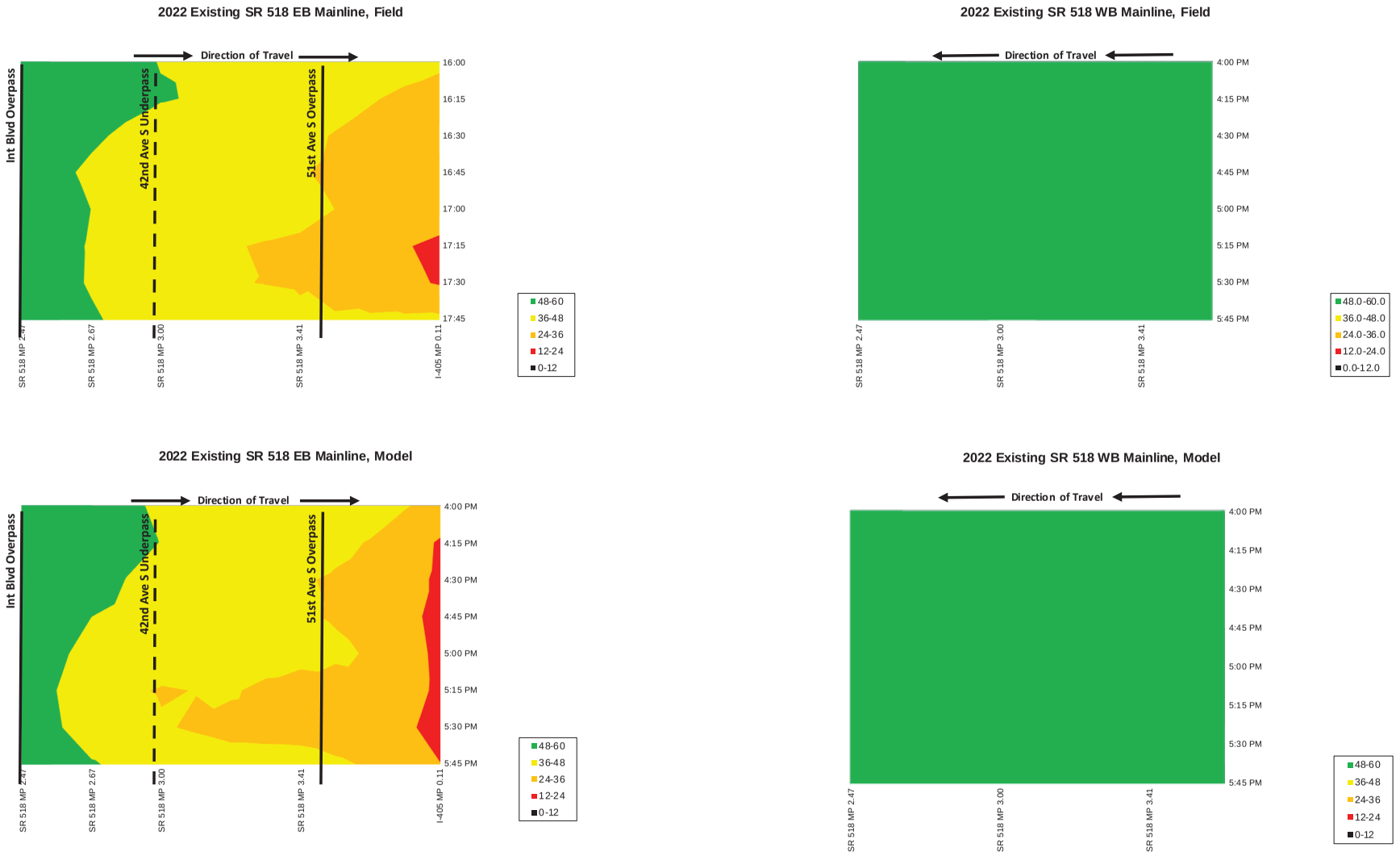


Figure 3. 2022 Existing Conditions SR 518 Corridor Speed-Temporal Maps

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3.3.5 *Lane Data*

As part of the calibration and validation process, WSDOT requested lane-by-lane data for SR 518 in the eastbound direction near the I-5/I-405/SR 518 interchange. This additional step was done to ensure the observed driver behaviors and speeds in the field related to spillback congestion from northbound I-405 were replicated within the VISSIM model. Lane-by-lane data for Milepost (MP) 3.41 near the 51st Avenue S overpass was summarized from WSDOT permanent counters. Figure 4 shows the location of the lane-by-lane data. Table 6 below shows the existing eastbound lane-by-lane speeds at MP 3.41.

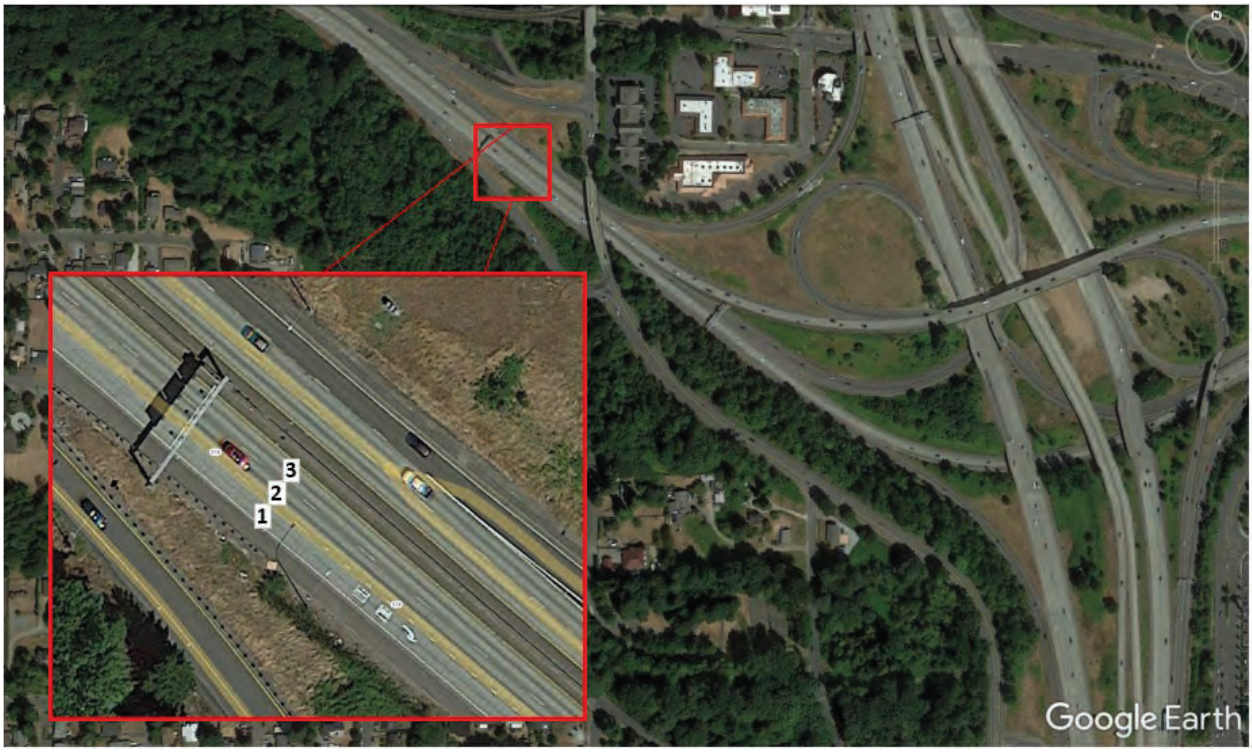


Figure 4. Eastbound SR 518 MP 3.41 Lane Identification

Table 6. Eastbound SR 518 MP 3.41 Lane-by-Lane Field Speeds

Field Data [mph]	Lane 1	Lane 2	Lane 3
Time	518es00341:_ME___1	518es00341:_ME___2	518es00341:_ME___3
4:00 PM	51	38	53
4:15 PM	50	35	51
4:30 PM	47	28	48
4:45 PM	46	27	45
5:00 PM	46	30	46
5:15 PM	45	24	44
5:30 PM	46	25	45
5:45 PM	47	26	47

The lane-by-lane data shows the congestion at the eastern end of the SR 518 corridor is primarily contributed to spillback from northbound I-405 congestion (Lane 2). Speeds in the middle lane are

consistently lower than the outside lanes for the entire two-hour peak period. This is primarily due to 1,670 vehicles in the peak hour destined for northbound I-405 and only 850 and only 620 vehicles destined to northbound (Lane 3) and southbound (Lane 1) I-5, respectively. This creates a volume imbalance across the three lanes. The primary cause for reduced speeds in Lanes 1 and 3 is drivers destined for northbound I-405 merging late into the middle lane.

This congested area of the VISSIM model attempted to replicate the field data by adjusting driver behavior parameters for the links as well as adjusting lane change distances for connectors to each of the downstream freeway facilities. Table 7 compares the field and model data for the eastbound MP 3.41 lanes. Figure 5 shows the volume throughput and speed for Lane 2 throughout the 4:00-6:00 PM peak period.

Table 7. Eastbound SR 518 MP 3.41 Lane-by-Lane Field vs. Model Speeds

Field Data [mph]

Time	Lane 1 (518es00341:_ME___1)	Lane 2 (518es00341:_ME___2)	Lane 3 (518es00341:_ME___3)
4:00 PM	51	38	53
4:15 PM	50	35	51
4:30 PM	47	28	48
4:45 PM	46	27	45
5:00 PM	46	30	46
5:15 PM	45	24	44
5:30 PM	46	25	45
5:45 PM	47	26	47

Model Data [mph]

Time	103451	103452	103453
4:00 PM	53	44	55
4:15 PM	53	35	56
4:30 PM	47	31	47
4:45 PM	48	31	48
5:00 PM	49	32	50
5:15 PM	43	26	43
5:30 PM	43	28	43
5:45 PM	46	34	46

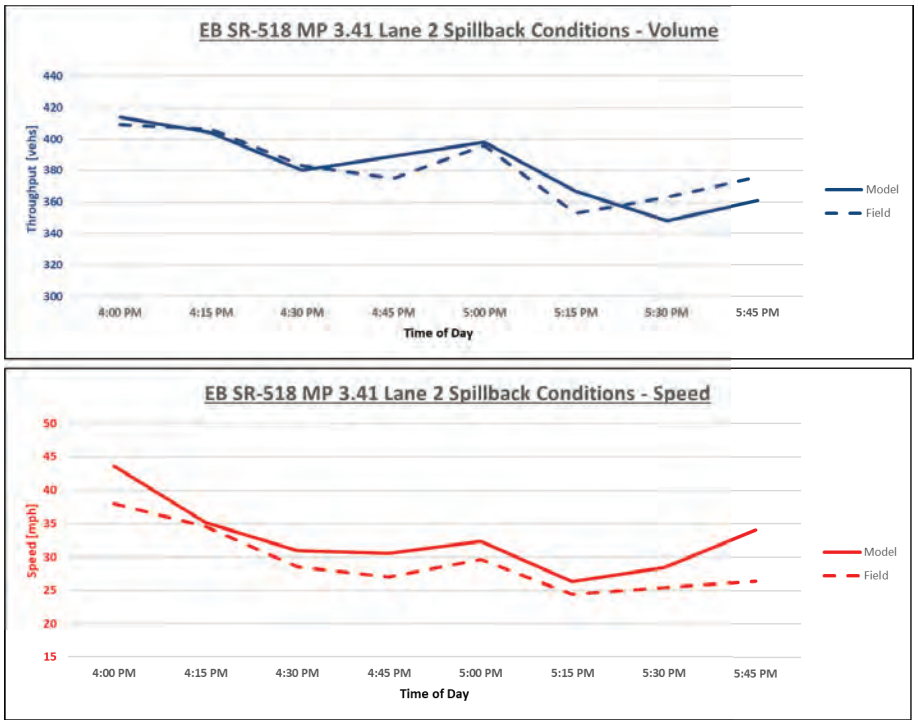


Figure 5. Eastbound SR 518 MP 3.41 Volume Throughput and Speed Comparison

The model output shows the VISSIM model is replicating field conditions and behaviors with Lane 2 showing the highest level of congestion and Lanes 1&3 showing additional congestion as vehicles merge into Lane 2. Speed and volume profiles for the peak period show Lane 2 follows the same pattern of congestion indicating the amount of spillback congestion from northbound I-405 is appropriate.

3.4 Highway Capacity Software (HCS) Analysis

WSDOT also requested Highway Capacity Software (HCS) analysis to assess impacts along regional freeways due to the planned 2nd terminal at the airport and proposed NTPs associated with the future development of the airport. The same 4:45-5:45 PM peak hour used in the VISSIM model was also used to develop volumes for the surrounding freeway system. This section will be discussing the calibration, inputs, and subsequent results of the modeling of the existing conditions of traffic on three key corridors in the vicinity of the airport: SR 518 from SR 509 to Des Moines Memorial Drive S., SR 518/I-5 & I-405 interchange area, and I-5 from Southcenter Blvd to 200th St. The approved Methods & Assumptions document for the HCS Analysis is included in Attachment E. Figure 6 shows the HCS analysis study area, and Table 8 lists the individual segments within each study area and their respective geometry.

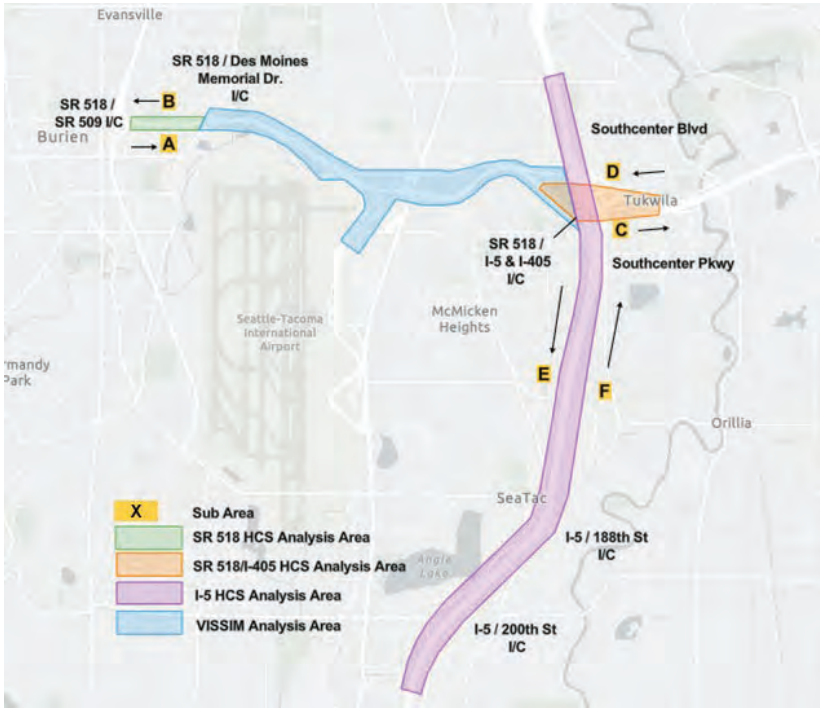


Figure 6: SAMP HCS Study Area Extent

Table 8: HCS Freeway Analysis Study Segments

Facility	ID	Study Segments	Facility Type	Analyzed Type	Number of Lanes	Basic/Overlap Type	Merge/Diverge Type			Weaving Type		
						Length (ft)	Freeway Length (ft)	Length of First Accel. /Decel. Lane (ft)	Influence Area (ft)	Short Length (ft)	Base Length (ft)	Influence Area (ft)
Sub Area A – SR 518 EB	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	Weaving	3				-	140	490	1,490
	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Mainline	Basic	2	1,790			-			-
Sub Area B – SR 518 WB	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Mainline	Basic	2	940			-			-
	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Off-Ramp	Diverge	2		1,500	890	1,500			-
Sub Area C – SR 518/I-5 & I-405 EB	C1	EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp	Off-Ramp	Basic (Drop)	3	1,030			-			-
	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Off-Ramp	Basic (Drop)	2	650			-			-
	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	Mainline	N/A[1] (Skipped)	1	1,390			-			-
	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	On-Ramp	Basic (Add)[2]	2	670			-			-
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	On-Ramp	Basic (Add)[2]	3	1,180			-			-
Sub Area D – SR 518/I-5 & I-405 WB	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Off-Ramp	Basic (Drop)[2]	3	1,820			-			-
	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Mainline	Basic	2	1,350			-			-
	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	Weaving	3				-	570	700	1,700
	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Mainline	Basic	2	1,280			-			-
	D5	WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	On-Ramp	Basic (Add)	3	760			-			-
Sub Area E – I-5 SB	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Off-Ramp	Major Diverge[2,3]	6		1,500	420	1,500			-
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Off-Ramp	Basic (Drop)[2]	5	2,240			-			-
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Mainline	Basic	4	620			-			-

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Facility	ID	Study Segments	Facility Type	Analyzed Type	Number of Lanes	Basic/Overlap Type	Merge/Diverge Type			Weaving Type		
						Length (ft)	Freeway Length (ft)	Length of First Accel. /Decel. Lane (ft)	Influence Area (ft)	Short Length (ft)	Base Length (ft)	Influence Area (ft)
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	On-Ramp	Basic (Add)[2]	5	4,330			-			-
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	On-Ramp	Merge[2]	5		1,500	1,500	1,500			-
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	Mainline	Basic[2]	5	2,000			-			-
	E7	SB I-5 at 188th St SB Off Ramp Diverge Area	Off-Ramp	Diverge[2]	5		1,500	240	1,500			-
	E8	SB I-5 from 188th St SB Off Ramp Diverge Area to Lane Reduction Point	Mainline	Basic[2]	5	1,080			-			-
	E9	SB I-5 from Lane Reduction Point to 188th St SB On Ramp	Mainline	Basic[2]	4	2,330			-			-
	E10	SB I-5 at 188th St SB On Ramp Merge Area	On-Ramp	Merge[2]	4		1,440	520	1,440			-
	E11	SB I-5 from 188th St SB On Ramp Merge Area to 200th St SB Off Ramp Diverge Area	Mainline	Overlap[2]	4	60			-			-
	E12	SB I-5 at 200th St SB Off Ramp Diverge Area	Off-Ramp	Diverge[2]	4		1,440	180	1,440			-
	E13	SB I-5 from 200th St SB Off Ramp to 200th St SB On Ramp	Mainline	Basic[2]	4	1,730			-			-
	E14	SB I-5 at 200th St SB On Ramp Merge Area	On-Ramp	Merge[2]	4		1,500	470	1,500			-
Sub Area F – I-5 NB	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Off-Ramp	Diverge[2]	4		1,500	290	1,500			-
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Mainline	Basic[2]	4	900			-			-
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	On-Ramp	Merge[2]	4		1,500	710	1,500			-
	F4	NB I-5 from Military Rd NB On Ramp to 188th St NB Off Ramp	Mainline	Basic[2]	4	2,090			-			-
	F5	NB I-5 at 188th St NB Off Ramp Diverge Area	Off-Ramp	Diverge[2]	4		1,500	180	1,500			-
	F6	NB I-5 from 188th St NB Off Ramp to 188th St NB On Ramp	Mainline	Basic[2]	4	2,260			-			-

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Facility	ID	Study Segments	Facility Type	Analyzed Type	Number of Lanes	Basic/Overlap Type	Merge/Diverge Type			Weaving Type		
						Length (ft)	Freeway Length (ft)	Length of First Accel. /Decel. Lane (ft)	Influence Area (ft)	Short Length (ft)	Base Length (ft)	Influence Area (ft)
	F7	NB I-5 at 188th St NB On Ramp Merge Area	On-Ramp	Merge[2]	4		1,500	570	1,500			-
	F8	NB I-5 from 188th St NB On Ramp to Southcenter Pkwy Off Ramp	Mainline	Basic[2]	4	4,350			-			-
	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Off-Ramp	Diverge[2]	4		1,500	840	1,500			-
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Mainline	Basic[2]	4	110			-			-
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Off-Ramp	Major Diverge[2,3]	4		1,500	200	1,500			-
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Mainline	Basic	3	2,130			-			-
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Mainline	Basic	4	150			-			-
	F14	NB I-5 at I-405 WB On Ramp Merge Area	On-Ramp	Merge	4		1,500	1,130	1,500			-
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Mainline	Basic (Add)[2]	5	700			-			-
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	On-Ramp	Merge[2]	5		1,500	1,070	1,500			-

Note:
Distance rounded to nearest 10.
[1]- One-lane freeway mainline cannot be analyzed in HCS.
[2]- HOV lane ignored due to the analysis constraint of HCS.
[3]- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge checkbox checked. For major diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

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3.4.1 Calibration

Calibration for this analysis was performed by comparing calculated Average Speed data within HCS to field speed data captured via WSDOT CDR at certain locations within the different subareas, the results of which are shown below in Table 9. The Average Speed output was calibrated by altering the Speed, Capacity, and Demand Adjustment Factors, which was done in accordance with HCS standards created by the Oregon Department of Transportation in the absence of similar standards from WSDOT.

Table 9: HCS and CDR Speed Calibration

Congested Area Speed Comparison	HCS Average Speed (mph)	CDR Field Speed (mph)	Difference
Sub Area C – SR 518 EB/I-5 & I-405 NB (C4)	34.5	30.4	13%
Sub Area D – SR 518 WB/I-5 & I-405 SB (D3)	26.8	25.6	5%
Sub Area E – I-5 SB (E1 - E2)	39.0	37.8	3%
Sub Area E – I-5 SB (E4 - E9)	23.8	22.9	4%

3.4.2 Analysis Results

After calibrating the applicable parameters such that the calculated and field-recorded average speeds aligned, MOE data was taken from the HCS analysis. WSDOT mobility standards set a minimum acceptable LOS of D along state routes, with the critical measure of effectiveness being Density (passenger cars per mile per lane(pc/mi/ln)). Results are broken down by sub-segment as seen below in Table 10.

The HCS analysis results show most of the segments exceeding WSDOT LOS D standard are on southbound I-5 or on I-405 in both directions immediately east of the interchange with I-5. Freeway segments not meeting the LOS D standard are described in more detail below:

- EB SR 518 from 51st Street Off Ramp to NB I-405 (C1-C2) – Congestion from the I-405 /I-5 interchange causes spillback to eastbound SR 518. See VISSIM Section 3.3 for more details and analysis of this congested area.
- NB I-405 from I-5 SB On-Ramp to Southcenter Parkway (C4-C5) – Congestion on northbound I-405 is caused by multiple on-ramps from northbound and southbound I-5 converging. Downstream weaving movements also contribute to the congestion in this area.
- SB I-405 from Interurban Avenue to SR 518 (D1-D3) – Southbound congestion on I-405 is primarily caused by lane changes for on and off-ramps to and from I-5 in both the northbound and southbound directions.
- WB SR 518 from I-405 to 51st Street On Ramp (D4-D5) – Congestion on westbound SR 518 is primarily due to vehicles accelerating from the I-405 interchange area uphill. Congestion dissipates farther west as vehicles accelerate to the posted speed limit.
- SB I-5 from Southcenter Boulevard to 200th Street On Ramp (E1-E14) – Congestion on southbound I-5 is present for the entire corridor extents during the PM peak hour. The congestion in the SAMP study area generally originates near S. 200th Street on-ramp and extends north to Martin Luther King Jr Way S in Seattle.

Table 10: HCS Freeway Analysis MOE Results

Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed (S, mph)	Demand - Capacity Ratio (D/C)	Avg Density (D, pc/mi/ln)
Sub Area A – SR 518 EB	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	B	56.1	0.42	13.5
	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	B	64.0	0.55	17.0
Sub Area B – SR 518 WB	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	C	60.0	0.60	19.7
	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	B	50.5	0.61	23.6
Sub Area C – SR 518 EB /I-5 & I-405 NB	C1	EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	E	38.8	0.95	38.0
	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	1.07	45.0
	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A[1] (Skipped)	-	-		-
	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add)[2]	F	34.5	1.84	45.0
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add)[2]	F	34.5	1.70	45.0
Sub Area D – SR 518 WB/ I-5 & I-405 SB	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop)[2]	F	34.5	1.37	45.0
	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	1.29	45.0
	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.8	1.44	83.2
	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	1.28	45.0
	D5	WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	Basic (Add)	F	34.5	1.02	45.0
Sub Area E – I-5 SB	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge[2,3]	E	39.0	0.88	35.8
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop)[2]	E	39.0	0.78	35.1
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	E	39.0	0.83	37.4
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add)[2]	F	27.7	0.86	49.8
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge[2]	F	24.3	1.01	63.3
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	Basic[2]	F	27.4	1.01	58.7
	E7	SB I-5 at 188th St SB Off Ramp Diverge Area	Diverge[2]	F	27.0	1.00	57.9
	E8	SB I-5 from 188th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic[2]	F	16.5	0.91	79.5
	E9	SB I-5 from Lane Reduction Point to 188th St SB On Ramp	Basic[2]	F	19.9	1.01	77.9
	E10	SB I-5 at 188th St SB On Ramp Merge Area	Merge[2]	F	31.6	1.17	55.7
	E11	SB I-5 from 188th St SB On Ramp Merge Area to 200th St SB Off Ramp Diverge Area	Overlap[2]	F	29.4	1.17	58.7
	E12	SB I-5 at 200th St SB Off Ramp Diverge Area	Diverge[2]	F	29.4	1.17	58.7
	E13	SB I-5 from 200th St SB Off Ramp to 200th St SB On Ramp	Basic[2]	F	23.0	1.13	70.0
	E14	SB I-5 at 200th St SB On Ramp Merge Area	Merge[2]	F	31.3	1.25	58.0
Sub Area F – I-5 NB	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge[2]	C	61.3	0.64	24.5
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic[2]	C	61.7	0.71	22.9
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge[2]	C	59.1	0.77	26.2
	F4	NB I-5 from Military Rd NB On Ramp to 188th St NB Off Ramp	Basic[2]	C	59.2	0.77	26.0
	F5	NB I-5 at 188th St NB Off Ramp Diverge Area	Diverge[2]	D	62.5	0.77	24.6
	F6	NB I-5 from 188th St NB Off Ramp to 188th St NB On Ramp	Basic[2]	C	62.2	0.69	22.2
	F7	NB I-5 at 188th St NB On Ramp Merge Area	Merge[2]	D	58.2	0.85	29.1
	F8	NB I-5 from 188th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic[2]	D	55.5	0.84	30.4
	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge[2]	C	62.1	0.84	27.2
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic[2]	C	59.8	0.76	25.3
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Major Diverge[2,3]	C	57.1	0.76	26.5
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	B	65.0	0.53	16.3
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	B	65.0	0.44	13.4
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	B	60.5	0.59	19.6
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add)[2]	B	64.5	0.58	18.0
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge[2]	B	59.9	0.68	17.9

Note:
Distance rounded to nearest 10.
[1]- One-lane freeway mainline cannot be analyzed in HCS.
[2]- HOV lane ignored due to the analysis constraint of HCS.
[3]- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge checkbox checked. For major diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.
[4]- WSDOT Level of Service Standard for State Routes is LOS D.

4. Transit, Parking, and Non-Motorized Facilities

The sections below summarize other key transportation facilities within the SAMP NTP study area. A more complete summary of these facilities can be found in local jurisdictions transportation master plans.

4.1 Transit Service

King County Metro (local) and Sound Transit (regional) provide transit service to and from the Airport. Table 11 lists transit that serves the Airport. Sound Transit bus routes pick up and drop off on the Lower Drive while King County Metro routes pick up and drop off on SR 99 / International Blvd., near the light rail station.

The Sound Transit Link Light Rail Station is located east of, and adjacent to, the northeast corner of the Main Garage. In addition, the Link Light Rail extends further south past the airport to Angle Lake Station.

Table 11. Transit Service Summary

Route	Airport Station Location	Route Start/End Points	Weekday Buses/Day & Hours of Operation	
Bus Service				
Metro Route 124	Tukwila Station	Downtown Seattle - Tukwila Station	137	5:00 AM-2:40 AM
Metro Route 128	Tukwila Station	West Seattle - Southcenter	103	6:00 AM-12:30 AM
Metro Route 156	International Blvd.	Highline CC - Southcenter	70	5:00 AM-11:30 PM
Metro Route 161	International Blvd., Air Cargo Rd.	Kent Station - Burien TC	100	4:45 AM-3:30 AM
Rapid Ride A	International Blvd.	Federal Way TC - Tukwila Station	213	4:30 AM-4:30 AM
Rapid Ride F	Tukwila Station	Burien TC – The Landing	162	4:45 AM-12:00 AM
Sound Transit 560	Lower Drive Station	West Seattle - Bellevue	66	5:00 AM-11:15 PM
Sound Transit 574	Lower Drive Station	Lakewood - SeaTac International Airport	78	2:00 AM-11:30 PM
Light Rail Transit				
Link Light Rail	SeaTac Airport	Seattle - Angle Lake Station	Every 6 to 15 minutes	5:00 AM-1:45 AM

4.2 Taxi, Transportation Network Companies, and Shuttles

4.2.1 Taxi, Limousine, and Shuttle Service

Currently, taxis, limousines, and shuttles pick up passengers on Level 3 of the main garage. Furthermore, taxis are allocated 70 staging spaces at the north end of Level 3 of the main garage.

Taxis and limousines are also provided a ground transportation hold lot by the Airport. This 2.5-acre lot is located on the south side of S 160th St opposite the consolidated rental car facility. The ground transportation providers currently use this facility for queuing and rest service time.

4.2.2 Transportation Network Companies

There are three app-based rideshare providers at the Airport: Uber, Lyft and Wingz. Pick-up is on the 3rd floor of the airport parking garage. Premium Uber rides like Uber Black, Select, SUV, or XL meet at the baggage claim-level door the passenger selects.

4.3 Non-Motorized Facilities

For passengers and employees arriving on foot or bicycle, there are two existing intersections of which there are pathways that pedestrians and cyclists can utilize to safely access the Airport terminal:

1. S 182nd St and International Blvd. - a sidewalk can be found on the southwest corner of the intersection. The sidewalk runs along the south side of the terminal curb exit lanes and leads to the same destination as the pathway for the first intersection. Pedestrian counts at the intersection indicated 146 pedestrians crossing the street during the PM commuter peak hour. Additionally, King County Metro's Routes 156, 161, A Line as well as Sound Transit's Route 574 serve a southbound stop on International Boulevard approximately 230 feet south of the intersection with pedestrian facilities connecting the stop to the main terminal.
2. S 176th St & International Blvd. - an elevator and stairs at the Sound Transit pick-up and drop-off facility at the northeast corner of the intersection and it leads to a pedestrian bridge that access the Light Rail Station and northeast corner of the Airport parking garage on Level 4. A designated walkway along the interior perimeter of the parking garage leads to several pedestrian bridges accessing the mezzanine level of the terminal. Pedestrian counts at the intersection indicated 105 pedestrians crossed the intersection during the PM commuter peak hour. King County Metro Routes 161 and A Line serve northbound and southbound stops on the north side of intersection. Sound Transit routes 560 and 574 serve the northbound stop only.

The Port and City of SeaTac plan for a future pedestrian connection from the intersection of S 188th Street and 28th Avenue S. Pedestrian access is currently prohibited on 28th Avenue S north of S 188th Street via signage.

4.4 Parking Facilities

4.4.1 On-Airport Parking Facilities

The terminal parking garage provides approximately 12,100 parking stalls for public parking. In addition to the parking garage, the Port maintains a 1,620 stall on-airport lot north of S. 170th St. This lot is leased and operated as the Doug Fox parking lot, with shuttle service provided on a regular basis.

The Port also provides approximately 200 spaces for cell phone parking lot just south of S.170th St., between the northbound and southbound lanes of the North Airport Expressway.

4.4.2 Employee Parking

Terminal-employee parking is provided in the main garage on Floor 1 and the north employee parking Lot (NEPL). The main garage allocates approximately 600 spaces while NEPL has an allocated capacity of

4,120 spaces. The Port provides shuttle service to and from the NEPL via a route along Air Cargo Road to the parking garage service tunnel. The route provides two stops along Air Cargo Road and then two other stops at each end of the service tunnel adjacent to Main Garage Floor 1.

Parking is also provided on individual tenant lease holds in the north and south air cargo areas, general aviation area, S. 28th Ave. logistics area, Swissport, USA Inc. (Swissport) Fueling (tank farm), Delta and Alaska hangars, and several other small locations. The toll plaza area adjacent to the Main Garage also contains spaces for permitted parking and landside operations staff.

5. Summary of Analysis

The scope for the SAMP NTP Environmental Review Surface Transportation Existing Conditions Report was refined through coordination with WSDOT, FAA, and local agencies. Intersections and freeway facilities were selected for their proximity to the SAMP NTP improvement area and the potential likelihood for surface transportation impacts based on trips generated and/or rerouted from the 2nd Terminal and NTPs. Methods and Assumptions memos for each of the analyses performed in the existing conditions (SimTraffic corridor analysis, VISSIM microsimulation freeway analysis, and HCS freeway analysis) were reviewed and approved by WSDOT. Copies of the Methods and Assumptions memos are included in Attachment E. The results of the existing conditions analysis reflect current operations of surface transportation facilities and inform appropriate levels of potential mitigation for the future year analysis. Figure 7 shows a summary of which existing surface transportation facilities currently meet their operational LOS standard. The key findings of the existing conditions analysis are summarized below:

- Of the 108 existing study intersections analyzed, 102 will meet jurisdictional mobility standards. The six existing intersections that do not meet current mobility standards are listed below:
    - #23 – SR 518 EB Ramps/Des Moines Memorial Dr. (LOS F)
    - #33 – SR 518 WB Off-Ramp Loop/S 154th St. (LOS E)
    - #50 – SR 509 SB Ramps/SW 160th Street (LOS F)
    - #83 - Military Rd. S/SB I-5 Ramps/S 200th St. (LOS E)
    - #93 – Pacific Hwy S./SR 516 (LOS F)
    - #101 - 8th Ave S./Des Moines Memorial Dr. (LOS F)
- Corridor analysis was performed on nine corridors with closely spaced intersections that had potential for compounding queuing concerns. Average travel time and speeds for each of the corridors is presented in Table 3 of this report. The intersections with the highest potential for queues spilling back past existing storage are listed below:
    - #20 – SW 148th Street/SR 518 at 1st Avenue S: All four approaches' left turn queue lengths are exceeding their storage lengths.
    - #37 – SR 99/Tukwila International Boulevard at S. 154th Street: Eastbound and westbound left turn pockets exceed their storage capacity.
    - #49 – 1st Avenue S. at S. 160th Street: Southbound and eastbound left turn queues exceed storage. Westbound queue extends back to upstream intersection in the WB direction (Segment 7 – SW 160th St).
    - #93 – Pacific Highway S. at Kent-Des Moines Road: Southbound queues extended over a half-mile even after additional volume was shifted to the HOV lane to better distribute southbound trips through the intersection.
- Freeway analysis was conducted using the microsimulation tool VISSIM 2020. An existing conditions model was calibrated and validated to 2022 conditions as outlined in WSDOT's *VISSIM Protocol (2014)*. The calibrated existing model will be used as the basis for modeling

future freeway conditions. Eastbound travel times for the SR 518 corridor between the North Airport Expressway and the I-5/I-405 interchange ranged between 1.9 and 4.5 minutes during the peak hour and westbound travel times averaged between 1.6 and 2.4 minutes.

- Additional Highway Capacity Software (HCS) freeway analysis was conducted on segments outside of the VISSIM model area on SR 518, I-5, and I-405. The HCS analysis was calibrated for existing bottlenecks on southbound I-5 and northbound I-405 which impact upstream freeway segments. Of the 44 segments analyzed, 20 operated at LOS D or better meeting WSDOT LOS standard for freeway systems. Most of the segments not meeting the LOS D standard were on southbound I-5 from Southcenter Boulevard to S 200th Street. The remaining segments operating at LOS E or worse were on I-405/SR 518 near the I-5 interchange.
- The Airport is served by eight existing bus routes operated by King County Metro and Sound Transit as well as Sound Transit's Link Light Rail 1-Line with service from Northgate to Angle Lake. All routes either serve the terminal directly or have stops located on adjacent streets.
- Non-motorized trips have access to the Airport via three primary access points with connections to surface transportation options:
    - S 188th Street & 28th Avenue S
    - S 182nd Street & International Boulevard
    - S 176th Street & International Boulevard

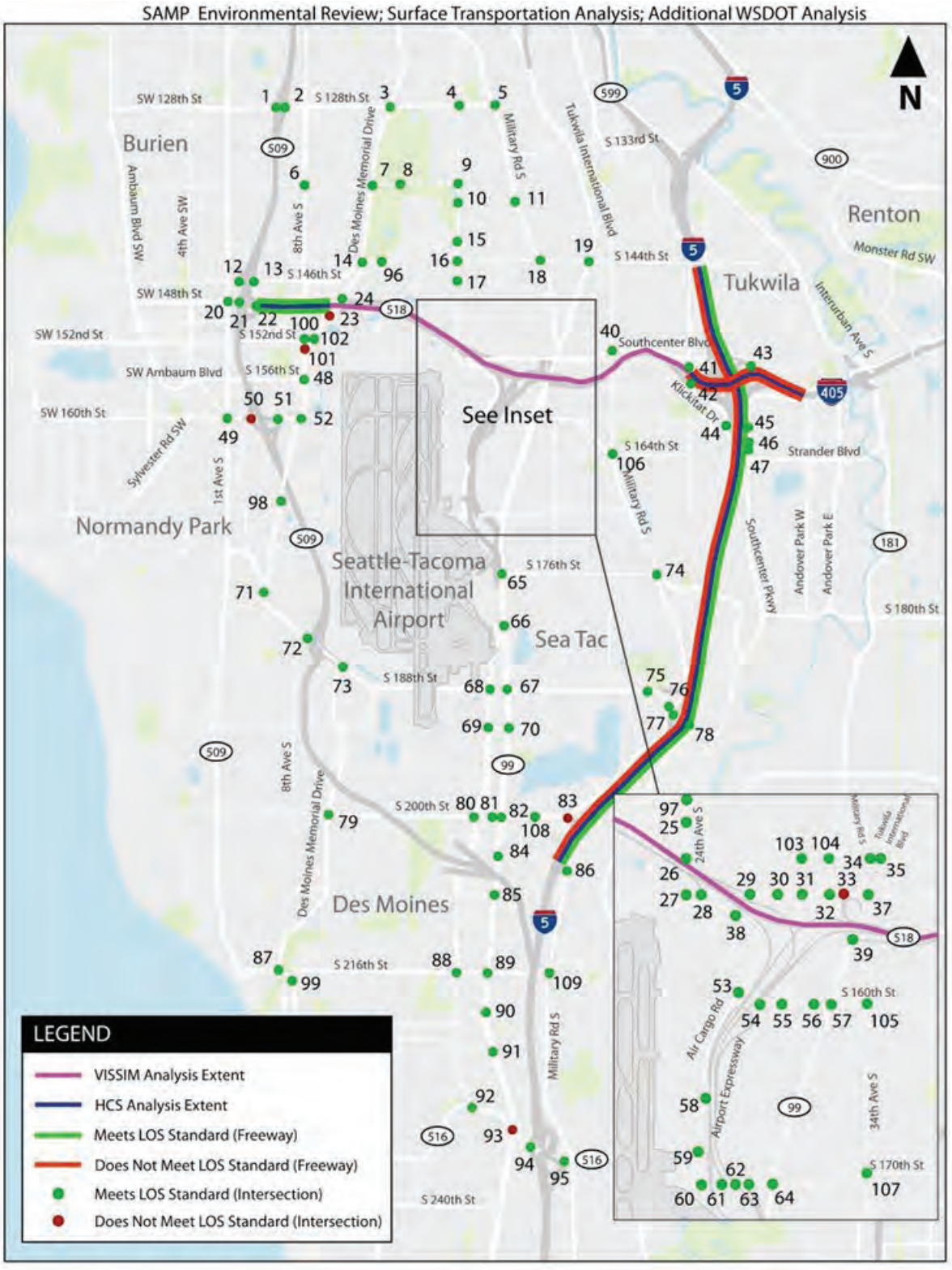


Figure 7. Intersection and HCS Analysis Results

Attachment E: Approved Analysis Methods & Assumptions Memos

AR003042

Memorandum

Client: Port of Seattle
Project: Sustainable Airport Master Plan (SAMP)
Environmental Document – Surface Transportation
Subject: Segment Analysis Methods & Assumptions
Submit to: Maan Sidhu, WSDOT
Submitted by: Steve Diebol; Concord Engineering
Date: May 1, 2023

1. Introduction and Overview

As part of the response to WSDOT's review of the Sustainable Airport Master Plan (SAMP) Traffic Analysis, Concord is proposing to segment analysis for eight (8) locations within the SAMP study area where closely spaced study intersections have operational characteristics dependent one each other. The results of the segment analysis performed for this phase of the SAMP are meant to validate improvement recommendations or identify if additional improvements are needed to address corridor issues. The purpose of the segment analysis is to quantify operations at a system-level rather than at each individual intersection. This document outlines the methods and assumptions used to perform the segment analyses. The scope of the analysis reflects WSDOT's initial comments of the individual intersection analysis documented in the SAMP Traffic Analysis.

2. Study Area and Intersections

Segments to be analyzed as a part of the analysis are identified in Table 1. These segments represent the minimum the scope and may be extended or new segments added based on stakeholder review and the outcomes of the updated traffic forecasting, intersection capacity analysis, and mitigation recommendations from the SAMP Future Conditions Traffic Analysis Summary.

Table 1: Segments of Interest

#	Segments of Interest	Study Intersections Included
1	24th Ave. S: S 142nd St. to S 154th St.	15, 16, 17, 97, 25, 26, 27
2	SW 148th St.: 1st Ave S to SR-509	20, 21, 22
3	Des Moines Memorial Dr. : SR-518 Ramp Terminals	23*, 24*
4	S 154th St.: 24th Ave S and SR-518 Ramp Terminals	27*, 28*, 29*
5	International Boulevard: S 152nd St. to SR-518 EB On-Ramp	35, 36, 37, 39
6	51st Ave S.: SR-518 Ramp Terminals	41, 42
7	SW 160th St.: 1st Ave S. to Des Moines Memorial Dr.	49, 50, 51, 52
8	NAE Off-Ramp/S 170th St. to International Boulevard/ S 188th St.	63, 64, 65, 66, 67
9	SR-516: Pacific Highway S and I-5 Ramp Terminals	93, 94, 95

Note:
[1]- DMMD – Des Moines Memorial Drive
*-Intersection also included in Preliminary Intersection Control Evaluation (ICE)

Extents of the networks are shown in Figure 1. Note that preliminary Intersection Control Evaluation (ICE) studies are being conducted as a separate task for overlapping areas as shown in Figure 1. See the Preliminary ICE Methods & Assumptions document for more information.

3. Scenarios, Analysis Tools, and Measures of Effectiveness

Study Scenarios

Study scenarios for the preliminary ICEs will match those in the SAMP Traffic Analysis (2027/2032 No Action/Proposed Action, PM peak hour only). Future traffic forecasts will remain the same as provided by the Future Conditions Traffic Analysis Summary Memo.

Analysis Tools

Traffic operational analyses will be conducted for the PM Peak period using Synchro 11 for signalized, stop controlled, and uncontrolled intersections and Sidra 9.0 for roundabouts. Measures of Effectiveness (MOEs) will be reported similar to what was previously in the SAMP Traffic Analysis. Sidra Network and SimTraffic analysis will be used to analyze potential queue spillbacks for adjacent intersections and relative changes in travel time along the networks.

Input parameters for the study intersections will match those in the updated SAMP Traffic Analysis where applicable and reflect previous comments from WSDOT. New analysis that was not completed as part of the SAMP will match parameters identified in the WSDOT's Synchro and Sidra protocols. Any deviations from these parameters will be documented.

Measures of Effectiveness

The following model outputs will be summarized for the PM peak period. The Measures of Effectiveness (MOEs) for the analysis are as follows:

- Arterial Reports (total travel time, signal delay)
- Vehicle queuing (feet) 95th percentile queue lengths based on Synchro/Sidra methodology

The SimTraffic calibration metrics will be as follows:

- Vehicles Entered/Exited (compared to projected traffic demand volumes)
- Vehicle delay per approach (compared to HCM 2000 results from the SAMP Future Conditions Traffic Analysis Summary Report)

4. Evaluation Components

The final deliverable will be a brief technical memo summarizing results and providing technical information as necessary. Tables comparing the segment analysis results to the individual intersection results and applicable outputs will be provided.

Appendix A – Study Area Map



Figure 1. Study Intersections and Networks (Segment Analysis Corridors: Green)

Note: Additional segments may be identified for analysis as the SAMP traffic analysis report is updated and POS/WSDOT reviews

Memorandum

Client:	Port of Seattle
Project:	Sustainable Airport Master Plan (SAMP); SR 518 VISSIM Analysis
Subject:	VISSIM Traffic Analysis Methods & Assumptions – Phase I
Submit to:	Steve Rybolt, Nic Longo, Tom Hooper; Port of Seattle
Copied to:	Sarah Potter, Landrum & Brown
Submitted by:	Steve Diebol, Tony Woody; Concord Engineering
Date:	April 7, 2023

1. Introduction and Overview

As part of the Sustainable Airport Master Plan (SAMP) study being conducted by the Port of Seattle at Sea-Tac International Airport, traffic analysis and modeling has been requested by WSDOT to assess impacts along SR 518 due to the planned second terminal at the airport and proposed near term projects (NTP) associated with future development of the airport. The freeway analysis for a portion of the SR 518 corridor will be conducted using the VISSIM (version 11-02 or newer) microsimulation analysis tool, while freeway analysis for other locations within the overall SAMP traffic study area will be evaluated with Highway Capacity Software (HCS) and ramp terminal intersection queueing will be evaluated with Synchro. The VISSIM microsimulation analysis will provide a relative comparison of Measures of Effectiveness (MOEs) between No Action and Proposed Action conditions where existing congestion along SR 518 is highest.

2. Study Area

The study area for the VISSIM microsimulation analysis includes the mainline freeway segment of SR 518 from Des Moines Memorial Drive S. and west of the I-5/SR-518 interchange. Freeway ramps along the segment will be included in the analysis. Figure 1 depicts the extents of the freeway microsimulation analysis area.

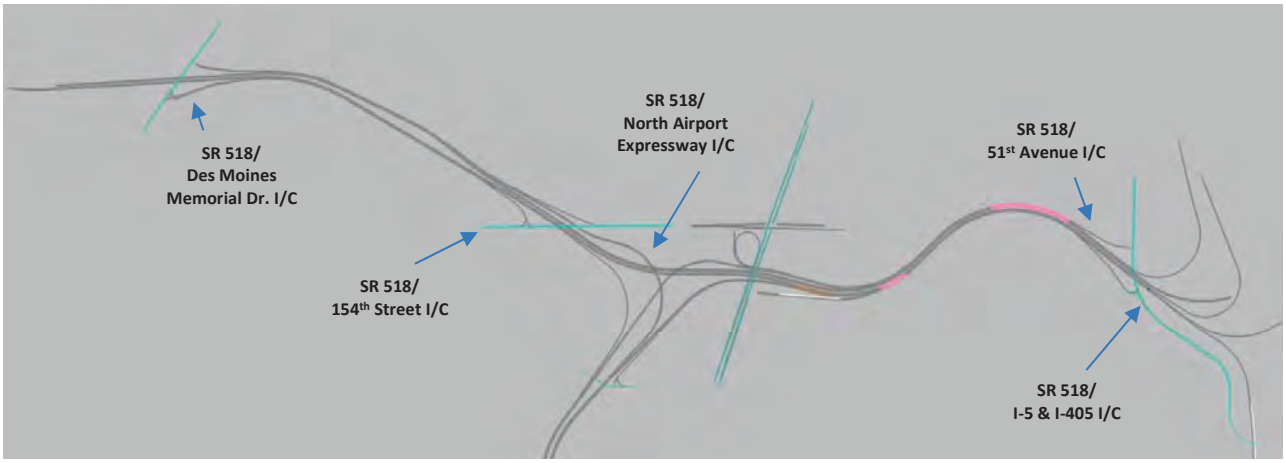


Figure 1: SR-518 Mainline Study Area Extents (Existing Conditions)

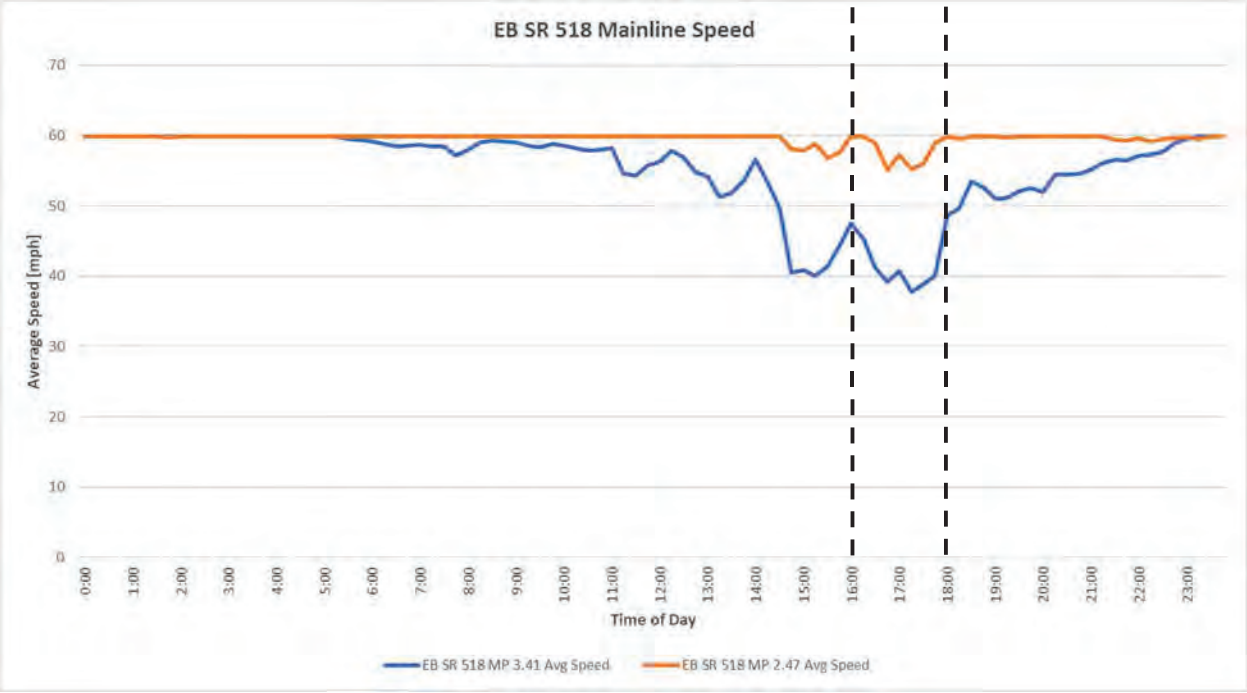
Ramp terminal intersections will not be simulated and will only be coded to facilitate vehicle routing to and from the on/off ramps along the corridor. If the Synchro/SimTraffic analysis shows a ramp terminal queue has the potential to impact mainline operations, then the extent of the queue will be verified with existing available data (Google congestion maps for typical conditions) and add a boundary condition will be added to the VISSIM model. If queuing impacts between the SR 518 mainline and the ramp terminals

are identified within the VISSIM model, ramp mitigation recommendations will be provided. In addition, if queuing impacts from the ramp terminals based on Synchro analysis results spill back to the SR 518 mainline, mitigation at the terminal intersections will also be recommended. This ramp terminal methodology is consistent with the base SR 518 VISSIM model for the Tukwila International Boulevard Station (TIBS) freeway analysis provided by WSDOT's consultant team. Existing and future ramp meters will be included within the VISSIM analysis model. Potential future ramp meters to be included in the VISSIM model will come from the SR 518 Corridor Planning Study and will be confirmed with WSDOT. Existing ramp meters are listed below:

- EB On-Ramp from S 160th Street
- EB On-Ramp from International Boulevard
- Ramp from EB SR 518 to SB I-5

3. Analysis Tools, Methods and Time Periods

Traffic operational analysis will be conducted for the pm peak period (4:00 – 6:00 pm) when congestion along SR-518 and other regional freeways (SR 509, I-5, I-405, etc.) is typically highest. This time period aligns with the peak period for which the SAMP traffic forecast was developed and also aligns with traffic analysis completed for the local intersections, arterial segments and HCS freeway analysis. Evening congestion for the airport typically occurs after 7:00 pm when regional travel demand/congestion has decreased. However, analysis of the 4:00 – 6:00 pm period represents the peak period when additional airport trips would have a higher impact on existing congestion within the freeway system. This is represented in Figure 2 showing 24-hour speed data where average speeds for eastbound SR 518 bottom below 40 mph during the 4-6 PM commuter peak period. Analyzing freeway facilities (specifically eastbound SR 518) for the 4-6 PM commuter peak is therefore the critical time period in determining potential mitigation. Average speeds for all other times of day remain above 50 mph in both directions.



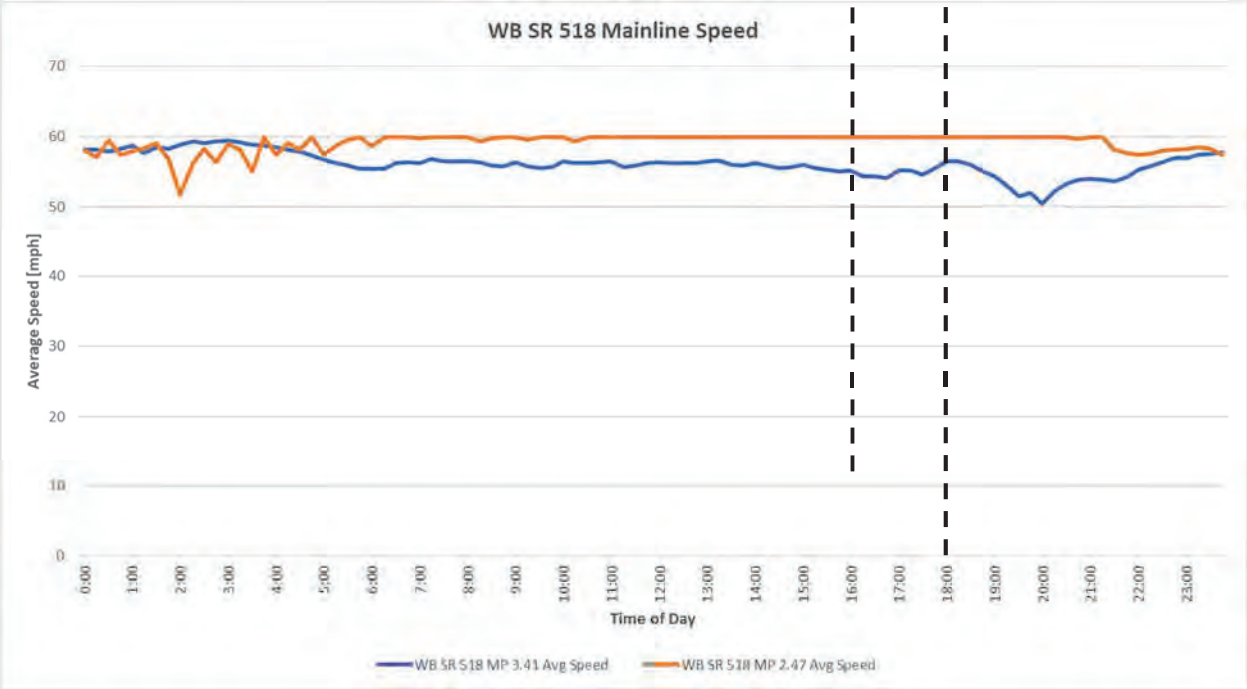


Figure 2: SR-518 Average Speeds (Source: WSDOT Loop Data, Sep/Oct, 2022)

VISSIM will be used to analyze the freeway mainline operations along SR 518. The VISSIM traffic simulation model will be constructed as a 2-hour peak period model and will only include 3 vehicle classes: Passenger Vehicle, Heavy Vehicle, and Transit. SOV/HOV splits of passenger vehicles will not be included in the VISSIM analysis due to the lack of mainline HOV facilities in the study area. The 2-hour modeling period will include a 30-minute seeding period (3:30 – 4:00 pm) and a 2-hour analysis period (4:00 – 6:00 pm).

4. Scenarios Analyzed

The VISSIM analysis will include the following five scenarios. Traffic analysis is being performed for the highest volume hour of traffic during the typical weekday (i.e., Tuesday, Wednesday, and Thursday), which is the PM peak period between 3 p.m. and 6 p.m. and is consistent with adjacent jurisdiction transportation plans and other ongoing analyses. The year 2032 was chosen as the opening day forecast year to coincide with the completion of the second terminal and associated near-term projects. Year 2037 was chosen as the long-term forecast which coincides with 5 years after all near term projects associated with the Port are completed.

- 2022 Existing Conditions – PM Peak Period
- 2032 No Action - PM Peak Period
- 2032 Proposed Action - PM Peak Period
- 2037 No Action - PM Peak Period
- 2037 Proposed Action - PM Peak Period

5. VISSIM Demand Inputs and Routing

Existing demand inputs for the VISSIM model will be developed using intersection, mainline, and ramp traffic count data collected during 2022. Future 2032 and 2037 No Action demand and routing inputs will be developed using NCHRP 765 post-processed volumes derived from dynamic traffic assignment (DTA) modeling previously completed for SAMP. SR 518 mainline volumes were post-processed and balanced using 2022 count data and DTA modeling work completed in 2020. Future 2032 and 2037 Proposed Action traffic demands and routing inputs will utilize the 2032 and 2037 No Action demands developed and incorporate volume changes from the proposed near-term projects as documented in the *SAMP Environmental Review – Affected Environment: Future Conditions Traffic Analysis Summary* memorandum.

These demands will be applied to an Origin-Destination (OD) routing structure within the VISSIM model. Routing decisions in VISSIM will be constructed using a "one-to-one" path per OD pair to avoid the complexities of calibrating parallel routes.

6. VISSIM Model Development

The SAMP SR 518 traffic analysis VISSIM models will be developed from the base SR 518 TIBS VISSIM model, which was created as part of the Sound Transit I-405 BRT program and used to test different transit stop configurations along SR 518. As part of the existing model effort, the TIBS base SR 518 model will be calibrated for the SAMP's 2022 existing conditions and validated using the methodology described in the bullet items below.

- The existing model will utilize the same study area as the base TIBS SR 518 VISSIM model (SR 518 from Des Moines Memorial Drive S. and west of the I-5/SR-518 interchange)
- The existing model will utilize roadway performance metrics from year 2022 as part of the model validation phase, which represent current operating traffic conditions for the study area.
- Model calibration will replicate boundary congested traffic conditions at the SR 518/I-405/I-5 interchange through the use of reduced speed areas within VISSIM. The reduced speeds areas will be placed on the EB SR 518 to SB I-5 ramps and the EB SR 518 to NB I-405 ramps which represent the ramps that currently experience congestion under existing conditions.
- Model validation will occur for the two-hour afternoon peak from 4:00-6:00 PM.
- Validation metrics will include EB and WB SR 518 corridor travel times between the SR 518/North Airport Expressway interchange and the SR 518/I-405/I-5 interchange, volume throughput (GEH statistic), and qualitative queueing impacts replicated through speed-temporal maps along SR 518 in the EB and WB directions.
- Qualitative validation at the lane level will occur; field data will be provided by WSDOT.

Table 1 provides a summary of the validation targets utilized for this study:

Table 1. SR 518 VISSIM Model Validation Metrics and Targets

Validation Performance Metric	Validation Target
Corridor Travel Times	EB and WB SR 518 corridor travel times within 10% of 2022 field travel time data or within allowable travel time differences per WSDOT VISSIM Protocol—whichever is greater.
Volume Throughput	SR 518 corridor mainline and ramp segments have GEH statistic less than 3.0

Table 1. SR 518 VISSIM Model Validation Metrics and Targets

Validation Performance Metric	Validation Target
Qualitative Queuing/Congestion	Based on existing VISSIM model speed-temporal maps compared to field speed-temporal maps for SR 518 under PM peak period conditions. Speed temporal maps will be developed within VISSIM using data collection measurements placed approximately ¼ mile apart along EB and WB SR 518. Speeds will be measured against WSDOT field data. Qualitative assessments will include measuring the length and duration of queuing and congestion along EB and WB SR 518.

The basis of the 2032 and 2037 SR 518 VISSIM models will be the calibrated 2022 VISSIM model. Future background improvement projects (including the preferred design for the TIBS project) will be reviewed and included in the future models. The future VISSIM models will also be updated to reflect future demands and network changes associated with each alternative and will include the major planned projects outlined in Table 2.

Table 2. Major Planned Improvements by Alternative

Planned Improvements	Future Year 2032		Future Year 2037	
	No Action	Proposed Action	No Action	Proposed Action
SR 509 Extension Phase 1	x	x	x	x
SR 509 Extension Phase 2	x	x	x	x
I-405 Renton to Bellevue Express Toll Lanes project	x	x	x	x
TIBS Project Improvements	x	x	x	x
Port of Seattle; Near-Term project and Second Terminal Improvements		x		x

Under 2032 and 2037 future conditions, traffic congestion on northbound I-405 east of I-5 is anticipated to spill back into the SR 518 study area. This congestion will be modeled in the SAMP SR-518 freeway VISSIM model by replicating the forecasted boundary conditions of the network using reduced speed areas at the eastern extent of the model. Similarly, the eastbound SR 518 to southbound I-5 ramp also experiences PM peak period congestion and will also be replicated within the freeway analysis VISSIM model. The congestion profiles for the boundary conditions at I-5 and I-405 for the 2032 and 2037 alternatives will be compared to output data from the year 2030 and 2045 *SR 518 Corridor Planning Study* VISSIM analysis models for qualitative validation of future boundary conditions.

The North Airport Expressway is not anticipated to have congestion spill back to SR-518 and Des Moines Memorial Drive after improvements associated with the Widen Arrivals and T2 Roadway projects are complete. This assumption is based on previous VISSIM modeling done by the Port of Seattle.

Measurement of Effectiveness (MOEs)

The following model outputs will be summarized for the PM peak period:

- Freeway mainline density and/or speed between interchanges, including lane by lane speeds where congestion varies between the lanes
- Corridor Travel Time: Start and end points as summarized in Table 3
- Volume Throughput
- Speed-Temporal Maps, with lane-by-lane speed-temporal maps set up for the SR 518 eastbound direction approaching I-5.

Table 3. Travel Time Routes for Calibration

Number	Travel Time Route	
	From	To
Eastbound		
EB1	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-5 Ramp
EB2	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-405 Ramp
EB3	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to SB I-5 Ramp
EB4	NB NAE s/o S. 160th Street Overpass	EB SR 518 to NB I-5 Ramp
EB5	NB NAE s/o S. 160th Street Overpass	EB SR 518 to NB I-405 Ramp
EB6	NB NAE s/o S. 160th Street Overpass	EB SR 518 to SB I-5 Ramp
EB7	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-5 Ramp
EB8	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-405 Ramp
EB9	EB SR 518 On Ramp from International Blvd.	EB SR 518 to SB I-5 Ramp
Westbound		
WB1	SB I-5 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)
WB2	SB I-5 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass
WB3	SB I-5 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass
WB4	SB I-405 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)
WB5	SB I-405 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass
WB6	SB I-405 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass
WB7	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 Off Ramp to International Blvd. (Loop)
WB8	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 s/o S. 154th Street Overpass

Table 3. Travel Time Routes for Calibration

Number	Travel Time Route	
	From	To
WB9	WB SR 518 On Ramp from 51st Ave S.	SB NAE s/o S. 160th Street Overpass

Memorandum

Client:	Port of Seattle
Project:	Sustainable Airport Master Plan (SAMP)
Subject:	HCS Freeway Analysis Methods & Assumptions
Submit to:	Christina Strand, WSDOT; Steve Rybolt, Nic Longo, Tom Hooper, Port of Seattle
Copied to:	Sarah Potter, Landrum & Brown
Submitted by:	Steve Diebol, Siqi Huang, Tony Woody; Concord Engineering
Date:	March 23, 2023

1. Introduction and Overview

As part of the Sustainable Airport Master Plan (SAMP) study being conducted by the Port of Seattle at SeaTac International Airport, freeway traffic analysis has been requested by WSDOT to assess impacts along regional freeways due to the planned second terminal at the airport and proposed near term projects associated with the future development of the airport. The freeway analysis will be conducted in two parts; VISSIM analysis along a portion of SR 518 which is covered in *SR 518 VISSIM Traffic Analysis Methods & Assumptions Memorandum* and segment and ramp analysis using Highway Capacity Software (HCS) for impacted freeway segment along SR 518, I-405 and I-5. Ramp terminal intersection queuing will also be evaluated using Synchro. This document outlines the methods and assumptions used to perform the HCS freeway analysis.

2. Study Area

The study area for the HCS analysis includes the freeway segments of SR 518 from SR 509 to Des Moines Memorial Drive S., SR 518/I-5 & I-405 interchange area, and I-5 from Southcenter Blvd to S. 200th St. Figure 1 shows the HCS analysis study area and Table 1 includes the list of segments to be analyzed.

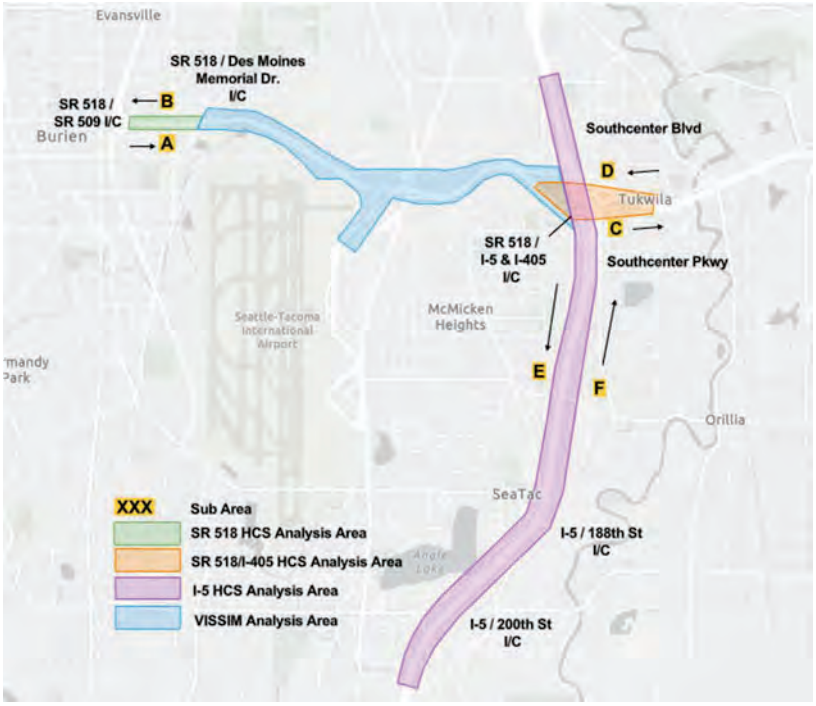


Figure 1: SAMP HCS Study Area Extents

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Table 1: HCS Freeway Analysis Study Segments

Facility	ID	Study Segments	Analyzed Type	Number of Lanes	Basic/Overlap Type	Merge/Diverge Type		Weaving Type		
					Length (ft)	Freeway Length (ft)	Length of First Accel. /Decel. Lane (ft)	Short Length (ft)	Base Length (ft)	Influence Area (ft)
Sub Area A – SR 518 EB	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	3				140	490	1,490
	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	2	1,790					-
Sub Area B – SR 518 WB	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	2	940					-
	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	2		1,500	890			-
Sub Area C – SR 518/I-5 & I-405 EB	C1	EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	3	1,030					-
	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	2	650					-
	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A[1] (Skipped)	1	1,390					-
	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add)[2]	2	670					-
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add)[2]	3	1,180					-
Sub Area D – SR 518/I-5 & I-405 WB	D1	SB I-405 from Interurban Ave S end of accel. Lane to I-5 NB Off/Southcenter Off Ramp	Basic (Drop)[2]	3	1,820					-
	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	2	1,350					-
	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	3				570	700	1,700
	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	2	1,280					-
	D5	WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	Basic (Add)	3	760					-
Sub Area E – I-5 SB	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Basic (Major Diverge)[2,3]	6	1,500					-
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop)[2]	5	2,240					-
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	4	620					-
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add)[2]	5	4,330					-
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge[2]	5		1,500	1,500			-
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	Basic[2]	5	2,000					-
	E7	SB I-5 at 188th St SB Off Ramp Diverge Area	Diverge[2]	5		1,500	240			-
	E8	SB I-5 from 188th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic[2]	5	1,080					-
	E9	SB I-5 from Lane Reduction Point to 188th St SB On Ramp	Basic[2]	4	2,330					-
	E10	SB I-5 at 188th St SB On Ramp Merge Area	Merge[2]	4		1,440	520			-

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Table 1: HCS Freeway Analysis Study Segments

Facility	ID	Study Segments	Analyzed Type	Number of Lanes	Basic/Overlap Type	Merge/Diverge Type		Weaving Type		
					Length (ft)	Freeway Length (ft)	Length of First Accel. /Decel. Lane (ft)	Short Length (ft)	Base Length (ft)	Influence Area (ft)
	E11	SB I-5 from 188th St SB On Ramp Merge Area to 200th St SB Off Ramp Diverge Area	Overlap[2]	4	60					-
	E12	SB I-5 at 200th St SB Off Ramp Diverge Area	Diverge[2]	4		1,440	180			-
	E13	SB I-5 from 200th St SB Off Ramp to 200th St SB On Ramp	Basic[2]	4	1,730					-
	E14	SB I-5 at 200th St SB On Ramp Merge Area	Merge[2]	4		1,500	470			-
Sub Area F – I-5 NB	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge[2]	4		1,500	290			-
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic[2]	4	900					-
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge[2]	4		1,500	710			-
	F4	NB I-5 from Military Rd NB On Ramp to 188th St NB Off Ramp	Basic[2]	4	2,090					-
	F5	NB I-5 at 188th St NB Off Ramp Diverge Area	Diverge[2]	4		1,500	180			-
	F6	NB I-5 from 188th St NB Off Ramp to 188th St NB On Ramp	Basic[2]	4	2,260					-
	F7	NB I-5 at 188th St NB On Ramp Merge Area	Merge[2]	4		1,500	570			-
	F8	NB I-5 from 188th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic[2]	4	4,350					-
	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge[2]	4		1,500	840			-
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic[2]	4	110					-
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Basic (Major Diverge)[2,3]	4	1,500					-
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	3	2,130					-
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	4	150					-
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	4		1,500	1,130			-
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add)[2]	5	700					-
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge[2]	5		1,500	1,070			-

Note:
Distance rounded to nearest 10.
[1]- One-lane freeway mainline cannot be analyzed in HCS.
[2]- HOV lane ignored due to the analysis constraint of HCS.
[3]- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge checkbox checked. For major diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

3. Scenarios, Analysis Tools, Methods, and Measures of Effectiveness

Study Scenarios

The HCS analysis will include the following five alternatives. The year 2032 was chosen as the opening day forecast year to coincide with completion of the second terminal and associated near-term projects. Year 2037 was chosen as the long-term forecast which coincides with 5 years after all near term projects associated with the Port are completed.

- 2022 Existing Conditions – PM Peak Period (4-6 PM)
- 2032 No Action – PM Peak Period (4-6 PM)
- 2032 Proposed Action – PM Peak Period (4-6 PM)
- 2037 No Action – PM Peak Period (4-6 PM)
- 2037 Proposed Action – PM Peak Period (4-6 PM)

Analysis Tools and Methods

Traffic operational analyses will be conducted for the PM Peak period when congestion along regional freeways (SR 518, I-5, I-405, etc.) is typically highest. This time period aligns with the peak period for which the SAMP traffic forecast was developed and also aligns with traffic analysis completed for the local intersections, arterial segments and VISSIM freeway analysis. Evening congestion for the airport typically occurs after 7 PM when regional travel demand/congestion has decreased. Therefore, analysis of the 4-6 PM period represents the peak period when additional airport trips would have a higher impact on existing congestion within the freeway system.

HCS 2022 will be used to analyze the freeway mainline, merge/diverge connections and weaving segments for the study scenarios outlined above. HCS 2022 is an analytical/deterministic model tool that replicates the operational analysis procedures of the Highway Capacity Manual.

Existing volumes used in the HCS model will be developed from 2022 intersection, mainline, and ramp traffic count data. Future 2032 and 2037 No Action volumes will be developed using NCHRP 765 post-processed volumes derived from dynamic traffic assignment (DTA) modeling previously completed for SAMP. Intersection ramp volumes used for this analysis were developed from existing data from WSDOT and SAMP turning movement counts. SR 518 mainline volumes were post-processed and balanced using WSDOT counts from 2022 count data and the SAMP DTA modeling work completed in 2020. Future 2032 and 2037 Proposed Action traffic volumes will utilize the 2032 and 2037 No Action demands developed and incorporate volume changes from the proposed near-term projects as documented in the *SAMP Environmental Review – Affected Environment: Future Conditions Traffic Analysis Summary* memorandum.

Measures of Effectiveness (MOEs)

The following operational outputs will be summarized for the PM peak period. The Measures of Effectiveness (MOEs) for the analysis are as follows:

- Freeway density for overall freeway facilities and critical segments
- Level of Service (LOS) for overall freeway facilities and critical segments
- Average speed for overall freeway facilities

APPENDIX L

Surface Transportation

Future Conditions Traffic Analysis Report Attachments

Attachment A: WSP DTA Methods & Assumptions
Attachment B: Future Forecasting Methods & Assumptions
Attachment C: NTP Trip Generation Memo
Attachment D: Freeway Volume Diagrams (Available by request)
Attachment E: 2032 and 2037 Intersection LOS Results (Available by request)
Attachment F: NTP Descriptions
Attachment G: 2032 and 2037 HCS Results (Available by request)
Attachment H: Preliminary Intersection Control Evaluation Reports (Available by request)
Attachment I: Corridor Volume and Queuing Summary (Available by request)
Attachment J: 2032 and 2037 Intersection Turning Movement Volumes (Available by request)

SAMP NTP Environmental Review:

Environmental Consequences: Future Conditions Traffic Analysis Summary

Submitted by: Concord Engineering
Date: September 9, 2024

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1. Executive Summary

This report summarizes the traffic analysis results for the future conditions of the Port of Seattle's (Port) Sustainable Airport Master Plan (SAMP) Near Term Projects (NTPs). The Port proposes to construct new facilities to accommodate passenger growth at the Seattle-Tacoma International Airport (Airport). These facilities include a new Second Terminal as well as relocation and expansion of existing airport support facilities to accommodate construction of the Second Terminal (see Section 2 of this report for additional details).

Methodology used in this report was reviewed by the Federal Aviation Administration (FAA) and the Washington State Department of Transportation (WSDOT). Additionally, WSDOT provided technical review of modeling results as well as forecasting and mitigation assumptions (see Section 3 for additional forecasting information). Outreach to local jurisdictions surrounding the Airport was completed to solicit feedback on analysis results and proposed mitigation.

The traffic analysis methods and assumptions, study area, and existing conditions traffic analysis results are documented in the "SAMP Affected Environment: Existing Traffic Analysis Summary" report (Existing Conditions Report) completed in August 2023. The following sections of this report describe future scenarios, future traffic volume projections, operational analysis results for intersections and freeways, and identified intersection mitigation/improvement options. The Proposed Action results summarized in this report would not change for the Hybrid Alternative also under consideration. The traffic analysis study area is shown in Figure 1 (see the Existing Conditions Report for more information about the traffic analysis study area). Existing intersections are shown in black, and new future intersections are shown in orange.

This analysis compares intersection and freeway Level of Service (LOS) results to mobility standards adopted by local jurisdictions and agencies to identify potential impacts (see Section 4 for intersection results, and Sections 6 and 7 for freeway results). Information on background improvements and other assumptions included in the analyses is provided. The intersection analysis identified 10 intersections where NTP trips would trigger a LOS deficiency as part of the Proposed Action (PA) analysis in either 2032 or 2037. Additionally, 18 intersections were identified as not meeting agency or jurisdiction mobility standards in the No Action (NA) analysis for 2032 and/or 2037 and the NTPs add additional delay. Mitigation options were analyzed to determine what capital improvements would be required to satisfy mobility standards (Section 7). The Freeway analysis showed that the NTPs would not result in any additional freeway segments operating below adopted mobility standards beyond those already operating at a deficient level in the 2032 and 2037 No Action scenarios. Freeway ramp terminal intersection mitigation requested by WSDOT will provide benefit to the freeway system by reducing queue impacts and providing additional capacity for future traffic growth.

2. Future Scenarios

The future conditions traffic analysis assumes 2032 as the Opening Year and 2037 as the Horizon Year for the NTPs. A total of 116 intersections and 8 miles of freeway were analyzed for surface transportation impacts. The extent of the study area was scoped with input from FAA, WSDOT, and local jurisdictions. Figure 1 shows the study area of the surface transportation analysis (existing intersections are shown in black, and new future intersections are shown in orange).

Review of Average Daily Traffic (ADT) volumes and intersection turning movement counts documented in the comprehensive plans and/or transportation master plans for the surrounding local agencies identified the PM peak period as the time of day with the highest traffic volumes for the roadways surrounding the Airport; therefore, the future conditions traffic analysis was conducted for the PM peak hour only (see the Existing Conditions Report for more information). The PM peak hour is defined as the highest four consecutive 15-minute intervals of traffic during the PM commuter peak period (4 p.m. to 6 p.m. of a typical weekday – Tuesday, Wednesday, Thursday). Four future scenarios were analyzed for this study:

1. 2032 No Action
2. 2032 Proposed Action
3. 2037 No Action
4. 2037 Proposed Action

2.1 No Action (2032 and 2037)

The No Action scenario consists of the future transportation network and demand including:

- Background traffic growth from land use changes;
- Changes in travel patterns associated with background roadway network changes, such as the SR 509 Stage 1B and 2 extensions;
- Expected increase in demand for air travel (SAMP NTP Constrained Operating Growth Scenario (COGS) forecast[1]);
- Planned and funded local transportation infrastructure projects, such as added turn lanes at existing intersections (see Section 4.1); and
- Previously approved Port of Seattle infrastructure projects such as the Airport Access Improvement and Congestion Reduction Project and the Air Cargo Road/S 170th Street Safety Improvement project.

[1] Sustainable Airport Master Plan – Near Term Projects, Constrained Operating Growth Scenarios, Seattle-Tacoma International Airport, Landrum & Brown, July 2023

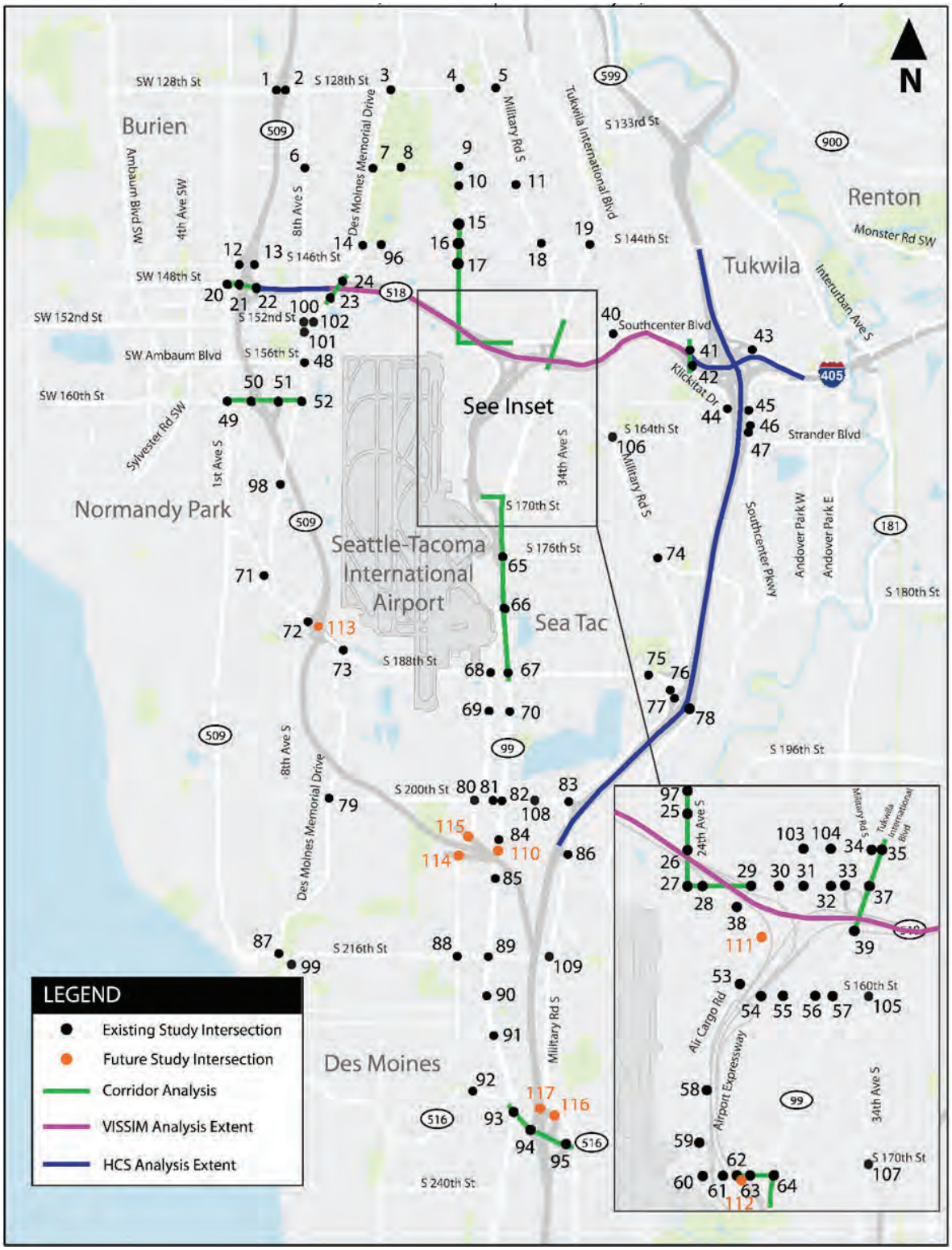


Figure 1. Traffic Analysis Study Area Intersections

2.2 Proposed Action (2032 and 2037)

The Proposed Action scenario, as compared to the No Action scenario, incorporates additional transportation and infrastructure improvements to be constructed by the Port by 2032 to accommodate projected future growth in airport employment, as well as cargo and passenger air travel demand. The collective total of all these NTPs constitute the "Proposed Action" scenario. Projects that are not funded or are expected to be completed after 2032 are not included in this traffic analysis.

A full description of the NTPs included as part of the Proposed Action analysis is included as Attachment F. Due to its size and the number of trips generated in comparison to other NTPs, the Second Terminal (NTP T02) and its associated roads and curbside operations (NTP L03) were included in the Proposed Action DTA model. Trips from all other NTPs were accounted for using separate trip generation and distribution assumptions as described in the Future Forecasting Methods and Assumptions Memo (Attachment B) and the NTP Trip Generation Memo (Attachment C).

Intersection capacity analysis was conducted for the Proposed Action scenarios and compared to the No Action scenarios to determine if the Proposed Action would cause any study intersections to degrade in performance below the local jurisdiction's mobility standards (see the Existing Conditions Report for the sources of mobility standards). Where performance degradation was indicated, intersection mitigation or improvement options were identified. Section 4 presents the traffic analysis results of future scenarios that have incorporated the identified intersection mitigation and improvements options.

3. Traffic Forecasting

3.1 Forecast Components

Table 1 provides the components that were considered in the development of each future traffic forecast.

Table 1. SAMP Traffic Forecast Components Summary

Scenario	Existing (2022)	2032 No Action	2032 Proposed Action	2037 No Action	2037 Proposed Action
MAP*	45.9	57.2	58.3	59.5	64.1
Terminal 1	X	X	X	X	X
Terminal 2			X		X
SR 509 Extension Stages 1&2		X	X	X	X
Non-Terminal Near-Term Projects			X		X

*- Million Annual Passengers from the COGs

3.3 Development of Future Traffic Volumes

Future intersection turning movement volumes were developed using a three-step process. Forecasting steps and methodologies were reviewed by WSDOT. The traffic forecasting methodology is documented in the 2032/2037 Future Forecasting Methods & Assumptions document included as Attachment B. The three-step process includes:

- Step 1 – Model and Terminal Demand Forecast
- Step 2 – Post Processed Traffic Volumes
- Step 3 – NTPs and Combined Intersection Volumes

Note that the assumptions for the No Action and Proposed Action scenarios are consistent across both the traffic forecasting models and the traffic operations analysis.

3.3.1 Step 1 - Model & Terminal Demand Forecast

The first step in determining the future intersection turning movement volumes utilized a Dynamic Traffic Assignment (DTA) model to establish future roadway segment volumes. WSP created an updated DTA model using information from the Puget Sound Gateway Project and the SR 518 Corridor Planning Study DTA models, the Puget Sound Regional Council (PSRC) 2040 land use forecast, the COGs, and other considerations detailed in the WSP report (Attachment A). WSP originally developed models for four future conditions (No Action and Proposed Action for 2027 and 2032). The major difference between the previous 2027 and 2032 DTA models was the inclusion of the SR 509 Stage 2 extension in the 2032 model. Because of the Covid-19 pandemic, the Port shifted its opening and horizon years to 2032 and 2037, respectively. This shift in opening and horizon years meant construction of the SR 509 Stage 2 extension would be included in both study years. Review of funded background network improvements planned by WSDOT and local jurisdictions were reviewed to see if any additional changes would affect regional travel patterns beyond the initial 2032 horizon year previously assumed. WSDOT acknowledged that no new improvement projects would need to be added to the DTA model and therefore regional travel patterns would remain similar to those already depicted in the 2032 No Action and Proposed Action DTA models. Airport terminal trips in the DTA models were scaled to account for the updated COGs.

For the Proposed Action scenarios, the WSP models account for transportation infrastructure changes to be constructed under the Proposed Action—primarily local access and circulation around the terminals and new direct ramps to and from Northern Airport Expressway (NAE) and the new Second Terminal.

WSP's forecasts reflect the future travel demand for the No Action conditions and Proposed Action conditions, with the exception of Non-Terminal related NTPs. Localized changes to traffic patterns associated with the Non-Terminal NTPs are not captured by the DTA model outputs, thus a traditional trip-based development traffic forecast was conducted to account for those uses (see Section 3.4).

3.3.3 Step 2 - Post-Processed Traffic Volumes

The DTA model outputs were then utilized to develop the future conditions intersection volumes. This process followed guidance from the NCHRP Report 765 and included the development of analytical tools to forecast intersection volumes, starting with the 2032 No Action scenario. Intersection volumes were then imported into Synchro and volume balancing was applied. The workflow for this step was as follows:

1. Apply screenline refinements to raw model volumes where the DTA model was not within error range of existing counts.
2. Compile volumes from future year model outputs and base year model outputs for each intersection leg approach and departure.
3. Compare volumes using the ratio and difference NCHRP factoring methods and select an appropriate method for each intersection based on existing counts.
4. Apply the factors to each intersection in iterative steps using NCHRP methods until the turning movement error is acceptable.
5. Apply manual adjustments and balance volumes where appropriate.

The base 2032 No Action intersection forecasts were then scaled and adjusted for 2037 Airport and Non-Airport trips. Concord calculated future 2037 volumes by applying a 2.2% average annual growth rate to non-terminal trips and increasing terminal trips by the percent change in the COGs.

The delta increase at ramp terminal intersections were applied to freeway on and off ramps. These deltas were carried through the SR 518 and I-5 corridors for use in Highway Capacity Software (HCS) and VISSIM (German for "Verkehr In Stadten- Simulations Modell") freeway PM peak hour analysis. Forecasted freeway volumes at the outer extents of the study area for Non-Airport trips from the WSP DTA models were compared to previous studies completed by WSDOT for consistency in trends and magnitude. The WSDOT studies referenced were completed for Puget Sound Gateway Program – Phase 1 of the SR 509 Completion Project Environmental Re-evaluation (January 2018), I-405, Renton to Bellevue Widening and Express Toll Lanes Project IJR (May 2018), and WSDOT's SR 518 Corridor Planning Study (May 2020). Freeway volume diagrams are included in Attachment D.

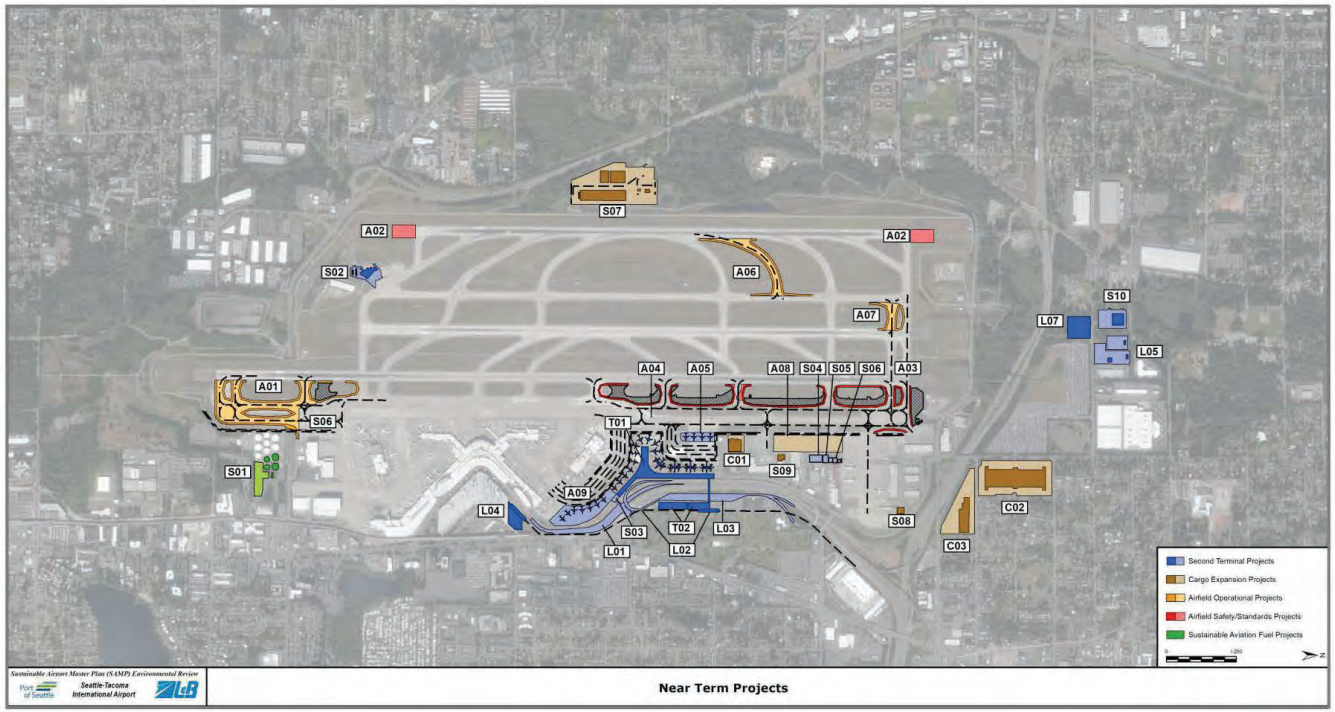
3.3.4 Step 3 - Near-Term Projects Forecasts and Combined Intersection Volumes

The third step of the traffic forecast development utilized a four-step (i.e., trip generation, trip distribution, mode choice, and trip assignment) process to evaluate the Non-Terminal NTPs under the Proposed Action conditions. The Port provided direction on all trips generated and travel patterns associated with each NTP. A summary of the NTP trip generation and trip distribution characteristics is provided Section 3.4. Additional details are provided in a separate trip generation memorandum (Attachment C). Figure 2 shows all NTPs and their locations. It should be noted that a former project L06 is no longer under consideration; the employee parking capacity from that project was added to the L07 site and no analysis was conducted for the L06 location.

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SEATTLE-TACOMA INTERNATIONAL AIRPORT | SEA-TAC AIRPORT **SUSTAINABLE AIRPORT MASTER PLAN (SAMP)**

NEAR-TERM PROJECT ENVIRONMENTAL REVIEW



AIRSIDE
A01 - Taxiway A/B Extension
A02 - Runway 16R-34L Blast Pads
A04 - Taxiway B 500' Separation & RIM Mitigation
A05 - North Hold Pad
A06 - Runway 34L Highspeed Exit
A07 - Taxiway D Extension
A08 - Hardstand (north)
A09 - Hardstand (central)
A 10 – Taxiway Fillets (not shown)

LANDSIDE
L01 - NAE Relocation (southbound lanes)
L02 - Elevated Busway & Stations
L03 - Second Terminal Roads /Curbside
L04 - Main Terminal North GT Lot
L05 - North GT Holding Lot
L07 - Employee Parking Structure

TERMINAL
T01 - North Gates
T02 - Second Terminal & Parking

CARGO
C01 - Cargo 4 South Redevelopment
C02 - Off-site Cargo PH 1 (L-Shape)
C03 - Off-site Cargo PH 2 (L-Shape)

AIRPORT/AIRLINE SUPPORT
S01 - Fuel Farm Expansion
S02 - Primary ARFF
S03 - Secondary ARFF
S04 - Fuel Rack Relocation
S05 - Triculator
S06 - Consolidated De-icing Tanks
S07 - Westside Maintenance Campus
S08 - Airline Support (north)
S09 - Airline Support (west)
S10 - Centralized Rec. & Dist. Center

Figure 2. Near-Term Project Locations (Source: Landrum & Brown)

3.4 Near-Term Projects Considered

A detailed description of all NTPs is included in Attachment F. The NTP Trip Generation Memo (Attachment C) provides detailed information on trip generation methodology and trip totals for each NTP as well as summarizing which step in the forecasting methodology each NTP's trips were included.

3.4.1 Trip Generation for Non-Terminal Near-Term Projects

NTP trip generation calculations for NTPs not included in the DTA are summarized in Attachment C. These trip generation methodologies were developed with input from the Port on expected future operations as well as referencing existing turning movement counts, and data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual 11th Edition*.

3.4.2 Trip Distribution and Assignment for Non-Terminal Near-Term Projects

Many of the NTPs involve the relocation and expansion of an existing use or function. For these NTPs, existing trips were removed from the study area intersection network and at the location of the existing use or function. Future trips were then distributed to the future study area intersection network and assigned to the relocated site. Trip distribution for new trips or for removal of existing trips from the study area intersection network followed two trip distribution models shown in Tables 2 and 3, unless the use or function dictated that a portion of site trips were between specific origins and destinations as discussed in Attachment C. These trip distribution models are based on existing PM peak hour traffic volumes on the roadways entering and exiting the outer extents of the study network. Trip routing to and from the NTPs and the outer extents of the study network were done with consideration of future roadway connectivity—specifically the SR 509 Stage 2 extension—which would divert some trips from existing local roads to the future freeway extension. Table 2 provides the distribution model for all local roads and freeways and Table 3 provides the distribution model used for regional freeways only.

Table 2. Network Trip Distribution Model

Direction To/From	Roadway	Inbound (From)*	Outbound (To)*
North	Surface Streets	5%	4%
	SR 509	8%	5%
	I-5	23%	18%
East	Surface Streets	14%	13%
	I-405	11%	9%
South	Surface Streets	10%	15%
	I-5	16%	21%
West	Surface Streets	13%	15%
Total		**100%**	**100%**

* - based on existing PM peak hour traffic volumes

Table 3. Regional Trip Distribution Model

Direction To/From	Roadway	Inbound (From)*	Outbound (To)*
North	SR 509	14%	9%
	I-5	40%	35%
East	I-405	19%	17%
South	I-5	27%	39%
Total		**100%**	**100%**

* - based on existing PM peak hour traffic volumes

3.5 Future Traffic Forecasts

Intersection volumes for the No Action scenarios were completed with the finalization of the post-processing and balancing. For the Proposed Action scenarios, balanced post-processed intersection volumes were combined with the trip assignment for Non-Terminal NTPs to create the total combined future traffic forecasts for the Proposed Action scenarios. Future conditions PM peak hour traffic volumes and intersection LOS and delays are illustrated in Attachment J.

4. Intersection Operations Analysis

The sections below summarize the intersection operations analysis associated with the NTPs and discuss planned local and regional background projects and operations analysis results.

4.1 Planned Local and Regional Background Projects

Local and regional agency planned and funded future projects were included in the analysis. Future projects that are planned but not funded were only included if the intersection LOS required improvements beyond those which were already funded to see if the planned but unfunded improvement would resolve the LOS deficiency as part of the mitigation analysis.

SeaTac (source: SeaTac 2024-2029 TIP)

- Int #7 (Des Moines Memorial Drive at S 136th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- Int #14 (Des Moines Memorial Drive at S 144th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- In #18 (Military Road S at S 144th Street): Northbound and southbound left turn lanes added (SeaTac TIP Proj #22)
- Int #27 (24th Ave S at S 154th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- Int #31 (30th Ave S at S 154th St): Install sidewalk along 30th Ave S (SeaTac TIP Proj #14)
- Int #32 (32nd Ave S at S 154th St): Install bicycle lanes and sidewalk. (SeaTac TIP Proj #12)
- Int #35 (International Boulevard at S 152nd Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)

- Int #37 (International Boulevard at S 154th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #57 (International Boulevard at S 160th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #64 (International Boulevard at S 170th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #65 (International Boulevard at S 176th Street): Leading pedestrian interval added to signal timings as well as dedicated pedestrian phase for north leg. (SeaTac TIP Proj #6)
- Int #66 (International Boulevard at S 182nd Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #67 (International Boulevard at S 188th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #68 (28th Ave S at S 188th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #69 (28th Ave S at S 192nd Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- Int #70 (International Boulevard at S 192nd Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #75 (S 188th Street at 46th Ave S): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- Int #76 (S 188th Street at Military Road S): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #4)
- Int #80 (26th Ave S at S 200th Street): Leading pedestrian interval added to signal timings. Protected NB and SB left turn phases added. (SeaTac TIP Proj #4)
- Int #82 (International Boulevard at S 200th Street): Leading pedestrian interval added to signal timings. (SeaTac TIP Proj #6)
- Int #84: (International Boulevard at S 204th Street): Leading pedestrian interval added. (SeaTac TIP Proj #6)
- Int #85 and #110 (International Boulevard at S 208th Street): Leading pedestrian interval added to signal timings. Realign east leg of S 208th Street to be new east leg at International Boulevard at S 206th Street. East leg of S 208th Street to remain as driveway access. S 206th Street will be stop controlled. (SeaTac TIP Proj #6, WSDOT SR 509 Stage 1B).
- Int #89: (Pacific Highway S at S 216th Street): Leading pedestrian interval added. (SeaTac TIP Proj #6)
- Int #94/#95, #116/#117 (Kent-Des Moines Road at I-5 Ramps). Reconstruct interchange to accommodate Veterans Drive extension improvements and SR 509 Stage 1B intersection improvements.
- Int #103 (30th Ave S at S 152nd Street): Widen roadway to provide sidewalks, bicycle lanes along 152nd Street. (SeaTac TIP Proj #9, SeaTac TIP Proj #14)

- Int #104 (32nd Ln S at S 152nd Street): Widen roadway to provide sidewalks, bicycle lanes along 152nd Street. (SeaTac TIP Proj #9, SeaTac TIP Proj #12)
- Int #105 (34th Ave S at S 160th Street): Intersection was converted to a roundabout after City of SeaTac noted potential development north of the intersection would likely provide upgrades.
- Int #106 (Military Road S/42nd Ave S/S 164th Street): City of SeaTac has recommended converting existing signal to roundabout in future. Not part of current TIP.
- Int #107 (34th Ave S and S 170th Street): City of SeaTac has recommended the installation of traffic calming and shared bicycle facilities along 34th Ave corridor (SeaTac TIP Proj #11).

Burien (source: Burien 2023-2028 TIP)

- Int #50 and #51 (S 160th Street at SR 509 Ramps): Construction of single lane roundabouts as part of SR 509 Stage 2 Extension. (Burien TIP Project #22 and #35).
- Int #101-102 (Des Moines Memorial Drive/S 152nd Street/8th Ave S): Stop-controlled intersections were consolidated into a roundabout to improve safety and operations. (Burien TIP Proj #8).

Des Moines (source: Des Moines 2022-2027 CIP)

- Int #92 (Kent-Des Moines Road at 24th Ave S): Widen east leg of intersection to 5-lanes with two lanes in each direction and center-turn lane as well as pedestrian facilities. Southbound left turn lane added. (Des Moines CIP Project #319.606 and #319.625).
- Int #93 (Pacific Highway S at Kent-Des Moines Road): Sound Transit to construct additional northbound left and northbound right turn lanes. Improvements part of mitigation for Federal Way Link Extension.

WSDOT (source: WSDOT SR 509 Transportation Technical Report, RFP Design Drawings)

- Int #50 and #51 (S 160th Street at SR 509 Ramps): Construction of single lane roundabouts as part of SR 509 Stage 2 Extension. Also included in Burien TIP.
- Int #72 (S 188th Street at SR 509 SB Ramps): Replace existing stop control intersection with multi-lane roundabout as part of SR 509 Stage 2 Extension. North leg of roundabout will accommodate on and off-ramp vehicles for SB SR 509. (WSDOT SR 509 Stage 2).
- Int #113 (S 188th Street at SR 509 NB Ramps): Construct multi-lane roundabout as part of SR 509 Stage 2 Extension. (WSDOT SR 509 Stage 2).
- Int #114/#115 (24th Ave S at SR 509 Ramps): Construct new signalized ramp terminals as part of the half-interchange improvements (SR 509 Stage 2 Extension).

Intersections #110 and #113-117 were added to the study network for the WSDOT regional improvements as part of SR 509 Stage 1B and 2 Extensions. Furthermore, the Proposed Action eliminated intersections #58-62 and created new intersections #111 and #112. These changes are described in the LOS tables in the subsequent sections and shown in Figure 1.

Traffic signal timings (splits and offsets, cycle length optimization for isolated intersections or short corridors) were optimized for locations failing to meet mobility standards under the No Action scenario. Signal timing optimization is a regular activity conducted by traffic signal owning agencies to accommodate shifts in traffic flow and is typically conducted every 3-5 years, therefore it is reasonable to

include it in all future scenarios. Additional signal timing optimization occurred after Proposed Action trips were added if the intersection did not operate at the agency or jurisdiction's mobility standard.

4.2 Intersection Operations Results

Table 4 provides a summary of the PM peak hour operational analysis results for the 2032 conditions. Table 5 provides a summary of the PM peak hour operational analysis results for the 2037 conditions. Tables 4 and 5 summarize intersection LOS with *only funded* agency and jurisdiction improvement projects. Optimized signal timings at existing signalized intersections for the 2032/2037 No Action intersections were maintained for the 2032/2037 Proposed Action intersections. Synchro reports are provided in Attachment E.

Intersections were evaluated based on the agency or jurisdiction's mobility standard that owns and/or operates the intersection. Where city limits divide an intersection or there is joint jurisdiction, both agencies and/or jurisdictions were identified. The mobility standards were obtained from the agency and/or jurisdiction comprehensive plans to evaluate when intersection operations would reach a deficient LOS. This threshold can vary by jurisdiction and by intersection or street classification type. A summary of jurisdiction and agency LOS standards is included below:

- **City of SeaTac**
  - LOS E for principal or minor arterials
  - LOS D for collector arterials and lower classification roads
  - LOS E-Mitigated for the following intersections
    - S 188th Street at International Boulevard
    - S 200th Street at International Boulevard
    - S 170th Street at International Boulevard
- **City of Burien**
  - LOS E for intersections within the Urban Center
  - LOS D for roads designated as auto/truck priority
  - LOS C for all other roadways
- **City of Des Moines**
  - LOS D or better unless otherwise noted below
    - LOS E or F in the Marina District
    - LOS F with a maximum v/c ratio of 1.0 for S 216th Street at Pacific Highway S
    - LOS F with a maximum v/c ratio of 1.2 for Kent-Des Moines Road at Pacific Highway S
- **City of Tukwila**
  - LOS E for intersections
- **WSDOT**
  - LOS D for freeways and freeway ramp terminals

Table 4. Year 2032 Future Conditions Traffic Analysis Results – Funded Improvements Only

ID	Intersection	Jurisdiction	Mobility Standard^	2032 No Action			2032 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
1	SR 509 SB Ramps/S 128th St.	WSDOT	D	Signalized	C	21.3	Signalized	C	21.7
2	SR 509 NB Ramps/S 128th St.	WSDOT	D	Signalized	B	18.7	Signalized	B	19.0
3	Des Moines Mem. Dr./S 128th St.	SeaTac (Burien)	E	Signalized	C	26.5	Signalized	C	26.6
4	24th Ave. S/S 128th St.	SeaTac	D	Signalized	A	8.4	Signalized	A	8.4
5	Military Rd. S/S 128th St.	SeaTac (Tukwila)	E	TWSC	D	25.6	TWSC	D	25.6
6	8th Ave. S/S 136th St.	Burien	C	Signalized	B	10.5	Signalized	B	10.5
7	Des Moines Mem. Dr./S 136th St.	SeaTac	E	Signalized	B	15.3	Signalized	B	15.3
8	18th Ave. S/S 136th St.	SeaTac	D	OWSC	B	11.2	OWSC	B	11.2
9	24th Ave. S/S 136th St.	SeaTac	D	AWSC	B	11.7	AWSC	B	11.6
10	24th Ave. S/S 138th St.	SeaTac	D	TWSC	B	14.8	TWSC	B	14.7
11	Military Rd. S/S 138th St.	SeaTac (Tukwila)	E	OWSC	B	14.3	OWSC	B	14.3
12	SR 509 SB Ramp/S 146th St.	WSDOT	D	OWSC	B	14.7	OWSC	C	16.5
13	SR 509 NB Ramp/S 146th St.	WSDOT	D	Uncontrolled	A	4.9	Uncontrolled	A	4.7
14	Des Moines Mem. Dr./S 144th St.	SeaTac (Burien)	E	Signalized	E	66.2	Signalized	F	267.5
15	24th Ave. S/S 142nd St.	SeaTac	D	AWSC	B	14.2	AWSC	B	14.1
16	24th Ave. S/S 144th St.	SeaTac	D	OWSC	C	16.8	OWSC	C	17.1
17	24th Ave. S/S 146th St.	SeaTac	D	TWSC	C	22.5	TWSC	E	45.3
18	Military Rd. S/S 144th St.	SeaTac (Tukwila)	E	AWSC	C	24.4	AWSC	D	25.2
19	International Blvd./S 144th St.	Tukwila	E	Signalized	D	42.7	Signalized	D	42.8
20	1st Ave. S/SW 148th St.	Burien	D	Signalized	D	43.7	Signalized	D	44.0
21	SR 509 SB Ramps/SW 148th St.	WSDOT	D	Signalized	D	46.7	Signalized	D	50.4
22	SR 509 NB Ramps/SW 148th St.	WSDOT	D	Signalized	A	8.4	Signalized	A	9.0
23	SR 518 EB Ramps/Des Moines Mem. Dr.	WSDOT	D	OWSC	F	124.0	OWSC	F	468.1
24	SR 518 WB Ramps/Des Moines Mem. Dr.	WSDOT	D	OWSC	C	23.6	OWSC	E	44.3
25	24th Ave. S/S 150th St.	SeaTac	D	TWSC	C	16.5	TWSC	C	22.3
26	24th Ave. S/S 152nd St.	SeaTac	D	OWSC	B	13.7	OWSC	D	26.0
27	24th Ave. S-Air Cargo Rd./S 154th St.	SeaTac	D	Signalized	C	28.9	Signalized	C	29.2
28	SR 518 EB Off-Ramp/S 154th St.	WSDOT	D	OWSC	F	62.2	OWSC	F	69.0
29	SR 518 WB On-Ramp/S 154th St.	WSDOT	D	Uncontrolled	0	0.0	Uncontrolled	0	0.0
30	29th Ave. S/S 154th St.	SeaTac	E	OWSC	C	16.6	OWSC	C	16.9
31	30th Ave. S/S 154th St.	SeaTac	E	TWSC	C	20.2	TWSC	C	22.5
32	32nd Ave. S/S 154th St.	SeaTac	E	TWSC	D	29.5	TWSC	D	31.3
33	SR 518 WB Off-Ramp/S 154th St.	WSDOT	D	OWSC	F	187.5	OWSC	F	266.4
34	Military Rd. S/S 152nd St.	SeaTac (Tukwila)	E	Signalized	B	12.4	Signalized	B	13.3
35	International Blvd./S 152nd St.	SeaTac (Tukwila)	E	Signalized	D	51.1	Signalized	D	51.4

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ID	Intersection	Jurisdiction	Mobility Standard^	2032 No Action			2032 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
37	International Blvd./S 154th St.	WSDOT	E-Mitigated	Signalized	F	86.5	Signalized	F	88.7
38	Air Cargo Rd./S 156th St.	Port	NA	OWSC	B	12.9	OWSC	C	16.6
39	International Blvd./SR 518 EB On-Ramp	WSDOT	E-Mitigated	Signalized	B	14.4	Signalized	B	16.0
40	Southcenter Blvd./42nd Ave. S	Tukwila	E	Signalized	D	37.8	Signalized	D	39.0
41	SR 518 WB On-Ramp/51st Ave. S	WSDOT	D	Uncontrolled	A	9.3	Uncontrolled	A	9.4
42	SR 518 EB Off-Ramp/51st Ave. S	WSDOT	D	OWSC	C	24.6	OWSC	D	30.4
43	Southcenter Blvd./Macadam Rd.	Tukwila	E	Signalized	B	16.7	Signalized	B	16.8
44	Klickitat Dr./I-5 SB On-Ramp	WSDOT	D	Uncontrolled	A	9.9	Uncontrolled	A	9.9
45	Southcenter Blvd./I-5 NB Off-Ramp	WSDOT	E	Signalized	C	24.0	Signalized	C	24.2
46	Klickitat Dr./Southcenter Blvd.	Tukwila	E	Signalized	C	26.9	Signalized	C	30.7
47	Southcenter Blvd./NB I-5 Off Ramp	WSDOT	D	OWSC	C	17.2	OWSC	C	17.9
48	8th Ave. S/S 156th St.	SeaTac	E	Signalized	C	33.3	Signalized	E	65.1
49	1st Ave. S/SW 160th St.	Burien	D	Signalized	E	56.2	Signalized	E	56.6
50	SR 509 SB Ramps/SW 160th St.	WSDOT	D	Roundabout	A	5.1	Roundabout	A	5.4
51	SR 509 NB Ramps/SW 160th St.	WSDOT	D	Roundabout	A	6.3	Roundabout	A	6.4
52	Des Moines Memorial Dr./SW 160th St.	SeaTac	E	Signalized	B	14.5	Signalized	B	16.4
53	Air Cargo Rd./S 160th St.	Port	N/A	AWSC	D	25.2	AWSC	A	9.9
54	Host Rd./SR 518 On-Ramp/S 160th St.	SeaTac/WSDOT	E	TWSC	E	39.2	TWSC	E	49.9
55	SeaTac Rental Car Facility Dr. W/S 160th St.	SeaTac	E	Signalized	B	17.6	Signalized	A	9.2
56	SeaTac Rental Car Facility Dr. E/S 160th St.	SeaTac	E	TWSC	C	17.0	TWSC	C	16.1
57	Pacific Hwy S/S 160th St.	SeaTac	E	Signalized	D	51.9	Signalized	D	50.7
58	Air Cargo Rd./S 166th St.	Port	N/A	OWSC	C	16.0	Not Present in PA Scenario		
59	Air Cargo Rd./SB Airport Expressway On-Ramp	Port	N/A	Signalized	A	2.0	Not Present in PA Scenario		
60	Air Cargo Rd./S 170th St.	Port	N/A	AWSC	A	8.3	Not Present in PA Scenario		
61	SB Airport Expressway Off-Ramp/S 170th St.	Port/SeaTac	E	Signalized	C	28.5	Not Present in PA Scenario		
62	Doug Fox Parking Lot/S 170th Street	SeaTac	C	OWSC	C	15.1	Not Present in PA Scenario		
63	NB Airport Expressway Off-Ramp/S 170th St.	SeaTac	C	Signalized	A	6.3	OWSC	A	9.9
64	International Blvd/S 170th St.	SeaTac	E-Mitigated	Signalized	D	54.7	Signalized	D	53.3
65	International Blvd/S 176th St.	SeaTac	E-Mitigated	Signalized	C	21.6	Signalized	C	22.7
66	International Blvd/S 182nd St./Arrivals Dr.	SeaTac	E-Mitigated	Signalized	E	58.4	Signalized	E	56.0
67	International Blvd/S 188th St.	SeaTac	E-Mitigated	Signalized	E	60.1	Signalized	D	55.0
68	28th Ave. S/S 188th St.	SeaTac	E	Signalized	D	51.9	Signalized	D	53.5
69	28th Ave. S/S 192nd St.	SeaTac	E	Signalized	A	8.8	Signalized	A	9.1
70	International Blvd/S 192nd St.	SeaTac	E-Mitigated	Signalized	B	12.4	Signalized	B	12.9
71	S Normandy Rd./Ambaum Blvd. S	Burien	D	Signalized	C	29.4	Signalized	C	29.4
72	SB SR 509 Off Ramp/Des Moines Memorial Dr.	WSDOT	D	Roundabout	A	9.0	Roundabout	A	9.3

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ID	Intersection	Jurisdiction	Mobility Standard^	2032 No Action			2032 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
73	Des Moines Memorial Dr./S 188th St.	SeaTac	E	Signalized	C	20.1	Signalized	C	27.3
74	Military Rd. S/S 176th St.	SeaTac	E	Signalized	C	32.9	Signalized	C	31.9
75	46th Ave. S/S 188th St.	SeaTac	E	Signalized	C	24.4	Signalized	C	24.2
76	Military Rd. S/S 188th St.	SeaTac	E	Signalized	D	45.8	Signalized	D	45.3
77	SB I-5 Ramps/S 188th St.	WSDOT	D	Signalized	C	31.8	Signalized	C	33.3
78	NB I-5 Ramps/S 188th St.	WSDOT	D	Signalized	E	63.7	Signalized	E	65.3
79	Des Moines Memorial Dr./S 200th St.	SeaTac (Des Moines)	E	Signalized	C	30.4	Signalized	C	30.9
80	26th Ave. S/S 200th St.	SeaTac	E	Signalized	C	34.3	Signalized	C	34.5
81	28th Ave. S/S 200th St.	SeaTac	E	Signalized	B	18.9	Signalized	B	18.9
82	International Blvd/S 200th St.	SeaTac	E-Mitigated	Signalized	D	48.6	Signalized	D	48.8
83	Military Rd. S/SB I-5 Ramps/S 200th St.	WSDOT	D	Signalized	D	47.7	Signalized	D	51.8
84	International Blvd/S 204th St.	SeaTac	E-Mitigated	Signalized	B	17.7	Signalized	B	17.8
85	International Blvd/S 208th St.	SeaTac	E-Mitigated	Signalized	B	18.5	Signalized	B	18.3
86	Military Rd. S/NB I-5 Ramps	WSDOT	D	Signalized	D	52.5	Signalized	E	69.3
87	Des Moines Memorial Dr./S 216th St.	WSDOT	E	Signalized	B	12.6	Signalized	B	12.7
88	24th Ave. S/S 216th St.	Des Moines	D	Signalized	C	33.0	Signalized	C	33.2
89	Pacific Hwy S/S 216th St.	Des Moines	F (v/c 1.0)	Signalized	E	66.6	Signalized	E	66.8
90	Pacific Hwy S/S 220th St.	Des Moines	E	Signalized	C	30.4	Signalized	C	30.5
91	Pacific Hwy S/S 224th St.	Des Moines	E	Signalized	D	35.7	Signalized	D	35.6
92	24th Ave. S/SR 516	Des Moines	D	Signalized	B	13.5	Signalized	B	13.6
93	Pacific Hwy S/SR 516	Des Moines	F (v/c 1.2)	Signalized	F	94.8	Signalized	F	98.2
94	SB I-5 Ramps/SR 516	WSDOT	D	Signalized	D	44.7	Signalized	D	49.2
95	NB I-5 Ramps/SR 516	WSDOT	D	Signalized	C	26.4	Signalized	C	26.9
96	16th Ave. S/S 144th St.	SeaTac	D	OWSC	B	11.8	OWSC	D	26.2
97	24th Ave. S/S 148th St.	SeaTac	D	OWSC	B	13.7	OWSC	C	17.8
98	Des Moines Memorial Dr./S 168th St.	Burien	C	TWSC	C	19.8	TWSC	C	24.8
99	SR 509/Marine View Dr./S 168th St.	WSDOT	E	Signalized	C	29.2	Signalized	C	29.5
100	8th Ave. S/S 152nd St.	Burien	C	AWSC	B	13.5	AWSC	B	13.6
101	8th Ave. S/Des Moines Memorial Dr. S	Burien/SeaTac	D/E	OWSC	F	169.0	OWSC	F	319.7
102	S 152nd St./Des Moines Memorial Dr. S	SeaTac (Burien)	E	OWSC	D	25.3	OWSC	D	34.7
103	30th Ave. S/S 152nd St.	SeaTac	D	OWSC	A	9.7	OWSC	B	10.9
104	32nd Ave. S/S 152nd St.	SeaTac	D	TWSC	B	11.2	TWSC	B	11.6
105	32nd Ave. S/S 160th St.	SeaTac	E	TWSC	F	165.6	TWSC	F	212.8
106	Military Rd. S/S 164th St./42nd Ave. S	SeaTac	E	Signalized	E	59.8	Signalized	E	70.6
107	34th Ave. S/S 170th St.	SeaTac	E	AWSC	E	36.5	AWSC	D	32.6
108	32nd Ave. S/S 200th St.	SeaTac	E	Signalized	A	6.2	Signalized	A	6.2

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ID	Intersection	Jurisdiction	Mobility Standard^	2032 No Action			2032 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
109	Military Rd. S/S 216th St.	SeaTac	E	Signalized	F	84.8	Signalized	F	91.8
110	S 206th St & International Boulevard	SeaTac	E	OWSC	B	10.2	OWSC	B	10.3
111	SB NAE On Ramp & Air Cargo Rd (via 160th)	Port	N/A	Not Present in NA Scenario			Uncontrolled		
112	S 170th St & SB NAE on ramp/Terminal 2 Access	Port	N/A	Not Present in NA Scenario			Roundabout	A	6.9
113	S 188th St & NB SR 509 Ramps	WSDOT	D	Roundabout	A	6.2	Roundabout	A	6.2
114	28th Ave S & SB SR 509 On Ramp	WSDOT	D	Signalized	A	0.1	Signalized	A	0.1
115	28th Ave S & NB SR 509 Off Ramp	WSDOT	D	Signalized	B	11.9	Signalized	B	11.9
116	Veterans Dr & NB I-5 On Ramp	WSDOT	D	Signalized	C	20.8	Signalized	C	22.5
117	Veterans Dr & SB I-5 Off Ramp	WSDOT	D	Signalized	B	17.6	Signalized	B	17.6

Notes:
- Signalized and stop-controlled intersections are analyzed in Synchro, Version 11. Results are based on Highway Capacity Manual (HCM) 2000
- OWSC: One-way stop control. TWSC: Two-way stop control. AWSC: All-way stop control.
- For one-way stop and two-way stop-controlled intersections, the worst delay for the minor street movements was used to report the intersection LOS. For all-way stop, roundabout, and signalized intersections, the overall intersection delay was used to report the LOS.
- LOS and Delay values for intersections not meeting mobility standards are shaded in black.
- ^LOS Standard "E-Mitigated" is defined by the Puget Sound Regional Council for Tier 1 regionally significant state highways. An "E-Mitigated" standard requires the highway to operate at LOS "E" after mitigating through transit, demand management, and transportation system management strategies.
- ^ LOS Standard "F-Exception" applies to intersections where an exception has been applied to the mobility standard by the local agency and no mitigation is required with an LOS F operation. Intersections that operate at LOS 'F' but still meet mobility standards are shaded black.
-NA: Not Applicable - The Port of Seattle does not have mobility standards for their intersections.

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Table 5. Year 2037 Future Conditions Traffic Analysis Results – Funded Improvements Only

ID	Intersection	Jurisdiction	Mobility Standard^	2037 No Action			2037 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
1	SR 509 SB Ramps/S 128th St.	WSDOT	D	Signalized	C	27.7	Signalized	C	29.5
2	SR 509 NB Ramps/S 128th St.	WSDOT	D	Signalized	C	21.2	Signalized	C	21.5
3	Des Moines Mem. Dr./S 128th St.	SeaTac (Burien)	E	Signalized	C	29.4	Signalized	C	29.6
4	24th Ave. S/S 128th St.	SeaTac	D	Signalized	A	8.7	Signalized	A	8.7
5	Military Rd. S/S 128th St.	SeaTac (Tukwila)	E	TWSC	D	31.4	TWSC	D	31.4
6	8th Ave. S/S 136th St.	Burien	C	Signalized	B	11.9	Signalized	B	11.9
7	Des Moines Mem. Dr./S 136th St.	SeaTac	E	Signalized	B	17.4	Signalized	B	17.5
8	18th Ave. S/S 136th St.	SeaTac	D	OWSC	B	11.7	OWSC	B	11.7
9	24th Ave. S/S 136th St.	SeaTac	D	AWSC	B	13.2	AWSC	B	13.2
10	24th Ave. S/S 138th St.	SeaTac	D	TWSC	C	16.7	TWSC	C	16.1
11	Military Rd. S/S 138th St.	SeaTac (Tukwila)	E	OWSC	C	15.5	OWSC	C	15.5
12	SR 509 SB Ramp/S 146th St.	WSDOT	D	OWSC	C	16.3	OWSC	C	18.8
13	SR 509 NB Ramp/S 146th St.	WSDOT	D	Uncontrolled	A	5.1	Uncontrolled	A	4.9
14	Des Moines Mem. Dr./S 144th St.	SeaTac (Burien)	E	Signalized	E	78.0	Signalized	F	300.1
15	24th Ave. S/S 142nd St.	SeaTac	D	AWSC	C	17.3	AWSC	C	17.3
16	24th Ave. S/S 144th St.	SeaTac	D	OWSC	C	20.0	OWSC	C	20.8
17	24th Ave. S/S 146th St.	SeaTac	D	TWSC	D	26.4	TWSC	F	73.7
18	Military Rd. S/S 144th St.	SeaTac (Tukwila)	E	AWSC	E	41.5	AWSC	E	40.6
19	International Blvd./S 144th St.	Tukwila	E	Signalized	D	52.7	Signalized	D	52.6
20	1st Ave. S/SW 148th St.	Burien	D	Signalized	D	51.6	Signalized	D	51.7
21	SR 509 SB Ramps/SW 148th St.	WSDOT	D	Signalized	E	55.3	Signalized	E	67.1
22	SR 509 NB Ramps/SW 148th St.	WSDOT	D	Signalized	B	10.4	Signalized	B	11.2
23	SR 518 EB Ramps/Des Moines Mem. Dr.	WSDOT	D	OWSC	F	261.4	OWSC	F	981.0
24	SR 518 WB Ramps/Des Moines Mem. Dr.	WSDOT	D	OWSC	E	36.1	OWSC	F	186.9
25	24th Ave. S/S 150th St.	SeaTac	D	TWSC	C	18.8	TWSC	D	27.1
26	24th Ave. S/S 152nd St.	SeaTac	D	OWSC	B	14.7	OWSC	D	33.7
27	24th Ave. S-Air Cargo Rd./S 154th St.	SeaTac	D	Signalized	C	33.4	Signalized	D	35.0
28	SR 518 EB Off-Ramp/S 154th St.	WSDOT	D	OWSC	F	150.5	OWSC	F	171.7
29	SR 518 WB On-Ramp/S 154th St.	WSDOT	D	Uncontrolled	0	0.0	Uncontrolled	0	0.0
30	29th Ave. S/S 154th St.	SeaTac	E	OWSC	C	18.1	OWSC	C	18.6
31	30th Ave. S/S 154th St.	SeaTac	E	TWSC	C	23.4	TWSC	D	27.1
32	32nd Ave. S/S 154th St.	SeaTac	E	TWSC	E	43.9	TWSC	E	47.1
33	SR 518 WB Off-Ramp/S 154th St.	WSDOT	D	OWSC	F	389.9	OWSC	F	504.9
34	Military Rd. S/S 152nd St.	SeaTac (Tukwila)	E	Signalized	B	14.3	Signalized	B	15.3
35	International Blvd./S 152nd St.	SeaTac (Tukwila)	E	Signalized	E	63.0	Signalized	E	64.0
37	International Blvd./S 154th St.	WSDOT	E-Mitigated	Signalized	F	106.3	Signalized	F	110.9
38	Air Cargo Rd./S 156th St.	Port	N/A	OWSC	B	14.0	OWSC	C	19.2
39	International Blvd./SR 518 EB On-Ramp	WSDOT	E-Mitigated	Signalized	B	16.6	Signalized	B	18.8
40	Southcenter Blvd./42nd Ave. S	Tukwila	E	Signalized	D	44.3	Signalized	D	47.8
41	SR 518 WB On-Ramp/51st Ave. S	WSDOT	D	Uncontrolled	B	10.5	Uncontrolled	B	10.8

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ID	Intersection	Jurisdiction	Mobility Standard^	2037 No Action			2037 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
42	SR 518 EB Off-Ramp/51st Ave. S	WSDOT	D	OWSC	D	31.1	OWSC	E	42.4
43	Southcenter Blvd./Macadam Rd.	Tukwila	E	Signalized	C	23.8	Signalized	C	24.1
44	Klickitat Dr./I-5 SB On-Ramp	WSDOT	D	Uncontrolled	B	10.3	Uncontrolled	B	10.3
45	Southcenter Blvd./I-5 NB Off-Ramp	WSDOT	E	Signalized	C	25.5	Signalized	C	25.7
46	Klickitat Dr./Southcenter Blvd.	Tukwila	E	Signalized	C	31.6	Signalized	D	39.7
47	Southcenter Blvd./NB I-5 Off Ramp	WSDOT	D	OWSC	C	19.4	OWSC	C	21.4
48	8th Ave. S/S 156th St.	SeaTac	E	Signalized	E	76.6	Signalized	F	196.7
49	1st Ave. S/SW 160th St.	Burien	D	Signalized	E	61.4	Signalized	E	62.8
50	SR 509 SB Ramps/SW 160th St.	WSDOT	D	Roundabout	A	5.2	Roundabout	A	5.6
51	SR 509 NB Ramps/SW 160th St.	WSDOT	D	Roundabout	A	6.5	Roundabout	A	6.5
52	Des Moines Memorial Dr./SW 160th St.	SeaTac	E	Signalized	B	17.1	Signalized	C	24.9
53	Air Cargo Rd./S 160th St.	Port	N/A	AWSC	E	38.0	AWSC	B	11.4
54	Host Rd./SR 518 On-Ramp/S 160th St.	SeaTac/WSDOT	E	TWSC	F	54.6	TWSC	F	122.9
55	SeaTac Rental Car Facility Dr. W/S 160th St.	SeaTac	E	Signalized	B	18.8	Signalized	B	10.2
56	SeaTac Rental Car Facility Dr. E/S 160th St.	SeaTac	E	TWSC	C	20.7	TWSC	C	19.8
57	Pacific Hwy S/S 160th St.	SeaTac	E	Signalized	E	56.9	Signalized	E	56.3
58	Air Cargo Rd./S 166th St.	Port	N/A	OWSC	C	17.9	Not Present in PA Scenario		
59	Air Cargo Rd./SB Airport Expressway On-Ramp	Port	N/A	Signalized	A	1.4	Not Present in PA Scenario		
60	Air Cargo Rd./S 170th St.	Port	N/A	AWSC	A	8.6	Not Present in PA Scenario		
61	SB Airport Expressway Off-Ramp/S 170th St.	Port/SeaTac	E	Signalized	C	31.6	Not Present in PA Scenario		
62	Doug Fox Parking Lot/S 170th Street	SeaTac	C	OWSC	C	15.9	Not Present in PA Scenario		
63	NB Airport Expressway Off-Ramp/S 170th St.	SeaTac	C	Signalized	A	6.8	OWSC	B	10.2
64	International Blvd/S 170th St.	SeaTac	E-Mitigated	Signalized	E	58.7	Signalized	E	57.4
65	International Blvd/S 176th St.	SeaTac	E-Mitigated	Signalized	C	24.8	Signalized	C	25.6
66	International Blvd/S 182nd St./Arrivals Dr.	SeaTac	E-Mitigated	Signalized	E	66.6	Signalized	E	68.1
67	International Blvd/S 188th St.	SeaTac	E-Mitigated	Signalized	E	74.8	Signalized	E	71.0
68	28th Ave. S/S 188th St.	SeaTac	E	Signalized	E	55.5	Signalized	E	58.7
69	28th Ave. S/S 192nd St.	SeaTac	E	Signalized	A	9.1	Signalized	A	9.6
70	International Blvd/S 192nd St.	SeaTac	E-Mitigated	Signalized	B	13.5	Signalized	B	13.8
71	S Normandy Rd./Ambaum Blvd. S	Burien	D	Signalized	C	32.2	Signalized	C	32.6
72	SB SR 509 Off Ramp/Des Moines Memorial Dr.	WSDOT	D	Roundabout	B	10.3	Roundabout	B	11.0
73	Des Moines Memorial Dr./S 188th St.	SeaTac	E	Signalized	C	21.7	Signalized	C	29.9
74	Military Rd. S/S 176th St.	SeaTac	E	Signalized	D	41.5	Signalized	D	38.8
75	46th Ave. S/S 188th St.	SeaTac	E	Signalized	C	31.8	Signalized	C	31.3
76	Military Rd. S/S 188th St.	SeaTac	E	Signalized	D	51.2	Signalized	D	50.7
77	SB I-5 Ramps/S 188th St.	WSDOT	D	Signalized	D	46.8	Signalized	D	51.7
78	NB I-5 Ramps/S 188th St.	WSDOT	D	Signalized	F	95.5	Signalized	F	97.9
79	Des Moines Memorial Dr./S 200th St.	SeaTac (Des Moines)	E	Signalized	D	37.9	Signalized	D	38.5
80	26th Ave. S/S 200th St.	SeaTac	E	Signalized	D	37.2	Signalized	D	37.6
81	28th Ave. S/S 200th St.	SeaTac	E	Signalized	C	21.8	Signalized	C	21.8
82	International Blvd/S 200th St.	SeaTac	E-Mitigated	Signalized	D	54.6	Signalized	E	56.3

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ID	Intersection	Jurisdiction	Mobility Standard^	2037 No Action			2037 Proposed Action		
				Traffic Control	LOS	Vehicle Delay (sec)	Traffic Control	LOS	Vehicle Delay (sec)
83	Military Rd. S/SB I-5 Ramps/S 200th St.	WSDOT	D	Signalized	D	54.4	Signalized	E	64.3
84	International Blvd/S 204th St.	SeaTac	E-Mitigated	Signalized	B	19.2	Signalized	B	19.7
85	International Blvd/S 208th St.	SeaTac	E-Mitigated	Signalized	B	18.5	Signalized	B	18.3
86	Military Rd. S/NB I-5 Ramps	WSDOT	D	Signalized	E	64.6	Signalized	F	81.2
87	Des Moines Memorial Dr./S 216th St.	WSDOT	E	Signalized	B	14.4	Signalized	B	14.4
88	24th Ave. S/S 216th St.	Des Moines	D	Signalized	C	33.5	Signalized	C	33.6
89	Pacific Hwy S/S 216th St.	Des Moines	F (v/c 1.0)	Signalized	E	77.4	Signalized	E	79.0
90	Pacific Hwy S/S 220th St.	Des Moines	E	Signalized	C	32.5	Signalized	C	32.5
91	Pacific Hwy S/S 224th St.	Des Moines	E	Signalized	D	42.0	Signalized	D	42.4
92	24th Ave. S/SR 516	Des Moines	D	Signalized	B	15.3	Signalized	B	15.4
93	Pacific Hwy S/SR 516	Des Moines	F (v/c 1.2)	Signalized	F	107.7	Signalized	F	111.5
94	SB I-5 Ramps/SR 516	WSDOT	D	Signalized	E	59.6	Signalized	E	66.4
95	NB I-5 Ramps/SR 516	WSDOT	D	Signalized	C	23.7	Signalized	C	23.7
96	16th Ave. S/S 144th St.	SeaTac	D	OWSC	B	12.4	OWSC	E	43.0
97	24th Ave. S/S 148th St.	SeaTac	D	OWSC	B	15.0	OWSC	C	20.1
98	Des Moines Memorial Dr./S 168th St.	Burien	C	TWSC	C	23.4	TWSC	D	33.3
99	SR 509/Marine View Dr./S 168th St.	WSDOT	E	Signalized	C	33.2	Signalized	C	33.4
100	8th Ave. S/S 152nd St.	Burien	C	AWSC	C	15.9	AWSC	C	16.2
101	8th Ave. S/Des Moines Memorial Dr. S	Burien/SeaTac	D/E	OWSC	F	310.8	OWSC	F	538.2
102	S 152nd St./Des Moines Memorial Dr. S	SeaTac (Burien)	E	OWSC	D	32.7	OWSC	F	56.7
103	30th Ave. S/S 152nd St.	SeaTac	D	OWSC	A	9.9	OWSC	B	11.2
104	32nd Ave. S/S 152nd St.	SeaTac	D	TWSC	B	11.6	TWSC	B	12.0
105	32nd Ave. S/S 160th St.	SeaTac	E	TWSC	F	305.0	TWSC	F	377.4
106	Military Rd. S/S 164th St./42nd Ave. S	SeaTac	E	Signalized	F	95.7	Signalized	F	101.2
107	34th Ave. S/S 170th St.	SeaTac	E	AWSC	F	59.1	AWSC	F	59.8
108	32nd Ave. S/S 200th St.	SeaTac	E	Signalized	A	6.7	Signalized	A	6.8
109	Military Rd. S/S 216th St.	SeaTac	E	Signalized	F	114.1	Signalized	F	123.9
110	S 206th St & International Boulevard	SeaTac	E	OWSC	B	10.5	OWSC	B	10.6
111	SB NAE On Ramp & Air Cargo Rd (via 160th)	Port	N/A	Not Present in NA Scenario			Uncontrolled		
112	S 170th St & SB NAE On Ramp/Terminal 2 Access	Port	N/A	Not Present in NA Scenario			Roundabout	A	7.0
113	S 188th St & NB SR 509 ramps	WSDOT	D	Roundabout	A	6.6	Roundabout	A	6.7
114	28th Ave S & SB SR 509 on ramp	WSDOT	D	Signalized	A	0.1	Signalized	A	0.1
115	28th Ave S & NB SR 509 off ramp	WSDOT	D	Signalized	B	12.8	Signalized	B	12.9
116	Veterans Dr & NB I-5 On Ramp	WSDOT	D	Signalized	C	22.0	Signalized	C	24.1
117	Veterans Dr & SB I-5 Off Ramp	WSDOT	D	Signalized	C	20.3	Signalized	C	20.3

Notes:
- Signalized and stop-controlled intersections are analyzed in Synchro, Version 11. Results are based on Highway Capacity Manual (HCM) 2000
- OWSC: One-way stop control. TWSC: Two-way stop control. AWSC: All-way stop control.
- For one-way stop and two-way stop-controlled intersections, the worst delay for the minor street movements was used to report the intersection LOS. For all-way stop, roundabout, and signalized intersections, the overall intersection delay was used to report the LOS.
- LOS and Delay values for intersections not meeting mobility standards are shaded in black.
- ^LOS Standard "E-Mitigated" is defined by the Puget Sound Regional Council for Tier 1 regionally significant state highways. An "E-Mitigated" standard requires the highway to operate at LOS "E" after mitigating through transit, demand management, and transportation system management strategies.
- ^ LOS Standard "F-Exception" applies to intersections where an exception has been applied to the mobility standard by the local agency and no mitigation is required with an LOS F operation. Intersections that operate at LOS 'F' but still meet mobility standards are shaded black.
-NA: Not Applicable - The Port of Seattle does not have mobility standards for their intersections.

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4.3 Intersection Mitigation and Improvements

This section summarizes intersection operations and categorizes intersections into one of four categories depending on when or if LOS deficiencies are triggered based on jurisdiction or agency mobility standards. It should be noted an intersection may change from one category to another depending on the year of analysis because of background traffic growth. The categories identified are listed below:

- Category 1: Intersection has a LOS deficiency in Proposed Action only because of additional trips added by the NTPs. Direct mitigation by the Port is proposed.
- Category 2: Intersection has a LOS deficiency in No Action and NTP trips will add additional delay. Potential background improvements have been identified to bring LOS within acceptable mobility standards. The Port would only be responsible to mitigate the delay added by the NTP trips and not bring the intersection delay back to acceptable LOS standards.
- Category 3: Intersection meets the mobility standard in both the No Action and Proposed Action scenarios but NTP trips will increase the delay. The Port is not proposing any mitigation for these intersections given that the intersection meets the mobility standard with the additional delay.
- Category 4: Intersection delay improves or does not change with the NTPs because NTP trips are diverted/rerouted or because of roadway improvements included with the NTPs. No mitigation is proposed by the Port.

The Port has an existing interlocal agreement with the City of SeaTac for transportation planning efforts and assessing transportation impacts. The Port will continue to adhere to the requirements of the existing interlocal agreement.

4.3.1 Categorization of Intersection Impacts

Category 1 mitigation options are identified for intersections which operate at or better than the local agency mobility standard under the No Action conditions, but then degrade to worse than the local agency mobility standards under the Proposed Action conditions for either the 2032 or 2037 analysis year. If the intersection falls into a different category for an analysis year, the table identifies which category it belongs to. These locations are listed in Table 6 and described individually in Section 4.3.2.

Table 6. Category 1 Intersections - Locations Failing Mobility Standards Resulting from Proposed Action

ID - Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
14 - Des Moines Mem. Dr./S 144th St.	SeaTac (Burien)	E	E	F	201.3	E	F	222.1
17 - 24th Ave. S/S 146th St.	SeaTac	D	C	E	22.8	D	F	47.3
24 - SR 518 WB Ramps/Des Moines Mem. Dr.	WSDOT	D	C	E	20.7	Category 2		
42 - SR 518 EB Off-Ramp/51st Ave. S	WSDOT	D	Category 3			D	E	11.3
48 - 8th Ave. S/S 156th St.	SeaTac	E	Category 3			E	F	120.1
83 - Military Rd. S/SB I-5 Ramps/S 200th St.	WSDOT	D	Category 3			D	E	9.9
86 - Military Rd. S/NB I-5 Ramps	WSDOT	D	D	E	16.8	Category 2		
96 - 16th Ave. S/S 144th St.	SeaTac	D	Category 3			B	E	30.6
98 - Des Moines Memorial Dr./S 168th St.	Burien	C	Category 3			C	D	9.9
102 – S 152nd St./Des Moines Memorial Dr. S	SeaTac (Burien)	E	Category 3			D	F	24.0

- NA – No Action, PA – Proposed Action, LOS – Level-of-Service, Delay (seconds)

Table 7 lists Category 2 intersections which operate worse than the local agency mobility standard under the No Action conditions and experience increased delay under the Proposed Action conditions. The Port would only be responsible to mitigate the increased delay from the additional NTP trips. Section 4.3.3 provides information on the mitigation that the Port is proposing for the additional delay.

Table 7. Category 2 Intersections - Locations Failing Mobility Standard in No Action with Added Delay in Proposed Action

ID - Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
21 - SR 509 SB Ramps/SW 148th St.	WSDOT	D	Category 3			E	E	11.8
23 - SR 518 EB Ramps/Des Moines Mem. Dr.	WSDOT	D	F	F	344.1	F	F	719.6
24 - SR 518 WB Ramps/Des Moines Mem. Dr.	WSDOT	D	Category 1			E	F	150.8
28 - SR 518 EB Ramps/S 154th St.	WSDOT	D	F	F	6.8	F	F	21.2
33 - SR 518 WB Off-Ramp (Loop)/S 154th St.	WSDOT	D	F	F	78.9	F	F	115.0
37 - International Blvd./S 154th St.	WSDOT	E-Mitigated	F	F	2.2	F	F	4.6
49 - 1st Ave. S/SW 160th St.	Burien	D	E	E	0.4	E	E	1.4
54 - Host Rd./SR 518 On-Ramp/S 160th St.	SeaTac/WSDOT	E	Category 3			F	F	68.3
78 - NB I-5 Ramps/S 188th St.	WSDOT	D	E	E	1.6	F	F	2.4
86 - Military Rd. S/NB I-5 Ramps	WSDOT	D	Category 1			E	F	16.6
89 - Pacific Hwy S/S 216th St.	Des Moines	F (v/c 1.0)	E	E	0.2	E	E	1.6
93 - Pacific Hwy S/SR 516	Des Moines	F (v/c 1.2)	F	F	3.4	F	F	3.8
94 - SB I-5 Ramps/SR 516	WSDOT	D	Category 3			E	E	6.8
101 - 8th Ave. S/Des Moines Memorial Dr. S	Burien/SeaTac	D/E	F	F	150.7	F	F	227.4
105 - 32nd Ave. S/S 160th St.	SeaTac	E	F	F	47.2	F	F	72.4
106 - Military Rd. S/S 164th St./42nd Ave. S	SeaTac	E	Category 3			F	F	5.5
107 - 34th Ave. S/S 170th St.	SeaTac	E	Category 4			F	F	0.7
109 - Military Rd. S/S 216th St.	SeaTac	E	F	F	7.0	F	F	9.8

- NA – No Action, PA – Proposed Action, LOS – Level-of-Service, Delay (seconds)

Table 8 lists Category 3 intersections which are expected to experience increases in delay but will continue operating at or better than the local agency mobility standard under the Proposed Action conditions. Mitigation is not being proposed for these intersections because they meet the mobility standard even with the additional delay.

Table 8. Category 3 Intersections - Locations Meeting LOS Mobility Standards in Both No Action and Proposed Action

ID - Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
1 - SR 509 SB Ramps/S 128th St.	WSDOT	D	C	C	0.4	C	C	1.8
2 - SR 509 NB Ramps/S 128th St.	WSDOT	D	B	B	0.3	C	C	0.3
3 - Des Moines Mem. Dr./S 128th St.	SeaTac (Burien)	E	C	C	0.1	C	C	0.2
7 - Des Moines Mem. Dr./S 136th St.	SeaTac	E	Category 4			B	B	0.1
12 - SR 509 SB Ramp/S 146th St.	WSDOT	D	B	C	1.8	C	C	2.5
16 - 24th Ave. S/S 144th St.	SeaTac	D	C	C	0.3	C	C	0.8
18 - Military Rd. S/S 144th St.	SeaTac (Tukwila)	E	C	D	0.8	Category 4		
19 - International Blvd./S 144th St.	Tukwila	E	D	D	0.1	Category 4		
20 - 1st Ave. S/SW 148th St.	Burien	D	D	D	0.3	D	D	0.1
21 - SR 509 SB Ramps/SW 148th St.	WSDOT	D	D	D	3.7	Category 2		
22 - SR 509 NB Ramps/SW 148th St.	WSDOT	D	A	A	0.6	B	B	0.8
25 - 24th Ave. S/S 150th St.	SeaTac	D	C	C	5.8	C	D	8.3
26 - 24th Ave. S/S 152nd St.	SeaTac	D	B	D	12.3	B	D	19
27 - 24th Ave. S-Air Cargo Rd./S 154th St.	SeaTac	D	C	C	0.3	C	D	1.6
30 - 29th Ave. S/S 154th St.	SeaTac	E	C	C	0.3	C	C	0.5
31 - 30th Ave. S/S 154th St.	SeaTac	E	C	C	2.3	C	D	3.7
32 - 32nd Ave. S/S 154th St.	SeaTac	E	D	D	1.8	E	E	3.2
34 - Military Rd. S/S 152nd St.	SeaTac (Tukwila)	E	B	B	0.9	B	B	1
35 - International Blvd./S 152nd St.	SeaTac (Tukwila)	E	D	D	0.3	E	E	1
38 - Air Cargo Rd./S 156th St.	Port	NA	B	C	3.7	B	C	5.2
39 - International Blvd./SR 518 EB On-Ramp	WSDOT	E-Mitigated	B	B	1.6	B	B	2.2
40 - Southcenter Blvd./42nd Ave. S	Tukwila	E	D	D	1.2	D	D	3.5
41 - SR 518 WB On-Ramp/51st Ave. S	WSDOT	D	A	A	0.1	B	B	0.3
42 - SR 518 EB Off-Ramp/51st Ave. S	WSDOT	D	C	D	5.8	Category 1		
43 - Southcenter Blvd./Macadam Rd.	Tukwila	E	B	B	0.1	C	C	0.3
45 - Southcenter Blvd./I-5 NB Off-Ramp	WSDOT	E	C	C	0.2	C	C	0.2
46 - Klickitat Dr./Southcenter Blvd.	Tukwila	E	C	C	3.8	C	D	8.1
47 - Southcenter Blvd./NB I-5 Off Ramp	WSDOT	D	C	C	0.7	C	C	2
48 - 8th Ave. S/S 156th St.	SeaTac	E	C	E	31.8	Category 1		
50 - SR 509 SB Ramps/SW 160th St.	WSDOT	D	A	A	0.3	A	A	0.4
51 - SR 509 NB Ramps/SW 160th St.	WSDOT	D	A	A	0.1	Category 4		
52 - Des Moines Memorial Dr./SW 160th St.	SeaTac	E	B	B	1.9	B	C	7.8
54 - Host Rd./SR 518 On-Ramp/S 160th St.	SeaTac/WSDOT	E	E	E	10.7	Category 2		

Table 8. Category 3 Intersections - Locations Meeting LOS Mobility Standards in Both No Action and Proposed Action

ID - Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
63 - NB Airport Expressway Off-Ramp/S 170th St.	SeaTac	C	A	A	3.6	A	B	3.4
65 - International Blvd/S 176th St.	SeaTac	E-Mitigated	C	C	1.1	C	C	0.8
66 - International Blvd/S 182nd St./Arrivals Dr.	SeaTac	E-Mitigated	Category 4			E	E	1.5
68 - 28th Ave. S/S 188th St.	SeaTac	E	D	D	1.6	E	E	3.2
69 - 28th Ave. S/S 192nd St.	SeaTac	E	A	A	0.3	A	A	0.5
70 - International Blvd/S 192nd St.	SeaTac	E-Mitigated	B	B	0.5	B	B	0.3
71 - S Normandy Rd./Ambaum Blvd. S	Burien	D	Category 4			C	C	0.4
72 - SB SR 509 Off Ramp/Des Moines Memorial Dr.	WSDOT	D	A	A	0.3	B	B	0.7
73 - Des Moines Memorial Dr./S 188th St.	SeaTac	E	C	C	7.2	C	C	8.2
77 - SB I-5 Ramps/S 188th St.	WSDOT	D	C	C	1.5	D	D	4.9
79 - Des Moines Memorial Dr./S 200th St.	SeaTac (Des Moines)	E	C	C	0.5	D	D	0.6
80 - 26th Ave. S/S 200th St.	SeaTac	E	C	C	0.2	D	D	0.4
82 - International Blvd/S 200th St.	SeaTac	E-Mitigated	D	D	0.2	D	E	1.7
83 - Military Rd. S/SB I-5 Ramps/S 200th St.	WSDOT	D	D	D	4.1	Category 1		
84 - International Blvd/S 204th St.	SeaTac	E-Mitigated	B	B	0.1	B	B	0.5
87 - Des Moines Memorial Dr./S 216th St.	WSDOT	E	B	B	0.1	Category 4		
88 - 24th Ave. S/S 216th St.	Des Moines	D	C	C	0.2	C	C	0.1
90 - Pacific Hwy S/S 220th St.	Des Moines	E	C	C	0.1	Category 4		
91 - Pacific Hwy S/S 224th St.	Des Moines	E	Category 4			D	D	0.4
92 - 24th Ave. S/SR 516	Des Moines	D	B	B	0.1	B	B	0.1
94 - SB I-5 Ramps/SR 516	WSDOT	D	D	D	4.5	Category 2		
95 - NB I-5 Ramps/SR 516	WSDOT	D	C	C	0.5	Category 4		
96 - 16th Ave. S/S 144th St.	SeaTac	D	B	D	14.4	Category 1		
97 - 24th Ave. S/S 148th St.	SeaTac	D	B	C	4.1	C	C	5.1
98 - Des Moines Memorial Dr./S 168th St.	Burien	C	C	C	5	Category 1		
99 - SR 509/Marine View Dr./S 168th St.	WSDOT	E	C	C	0.3	C	C	0.2
100 - 8th Ave. S/S 152nd St.	Burien	C	B	B	0.1	C	C	0.3
102 - S 152nd St./Des Moines Memorial Dr. S	SeaTac (Burien)	E	D	D	9.4	Category 1		
103 - 30th Ave. S/S 152nd St.	SeaTac	D	A	B	1.2	A	B	1.3
104 - 32nd Ave. S/S 152nd St.	SeaTac	D	B	B	0.4	B	B	0.4
106 - Military Rd. S/S 164th St./42nd Ave. S	SeaTac	E	E	E	10.8	Category 2		
108 - 32nd Ave. S/S 200th St.	SeaTac	E	Category 4			A	A	0.1
110 - S 206th St & International Boulevard	SeaTac	E	B	B	0.1	B	B	0.1
112 - S 170th St & SB NAE On Ramp/Terminal 2 Access[1]	Port	NA	0	A	6.9	0	A	7
113 – S 188th St & NB SR 509 Ramps	WSDOT	D	Category 4			A	A	0.1
115 – 28th Ave S & NB SR 509 Off Ramp	WSDOT	D	Category 4			B	B	0.1

Table 8. Category 3 Intersections - Locations Meeting LOS Mobility Standards in Both No Action and Proposed Action

ID - Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
116 – Veterans Dr & NB I-5 On Ramp	WSDOT	D	C	C	1.7	C	C	2.1

- NA – No Action, PA – Proposed Action, LOS – Level-of-Service, Delay (seconds)
[1]New intersection in Proposed Action analysis.

Lastly, Table 9 lists Category 4 intersections which are expected to experience no added delay or a decrease in delay and will continue to operate at or better than the local agency mobility standard under the Proposed Action conditions due to road network and traffic pattern changes. Intersection Improvement options have not been identified for these locations, as these locations reflect benefits experienced due to the Proposed Action.

Table 9. Category 4 Intersections – Locations with No Added Delay or Decrease in Delay in Proposed Action

ID – Intersection	Agency	Mobility Standard	2032			2037		
			NA LOS	PA LOS	Change in Delay (sec)	NA LOS	PA LOS	Change in Delay (sec)
4 - 24th Ave. S/S 128th St.	SeaTac	D	A	A	0	A	A	0
5 - Military Rd. S/S 128th St.	SeaTac (Tukwila)	E	D	D	0	D	D	0
6 - 8th Ave. S/S 136th St.	Burien	C	B	B	0	B	B	0
7 - Des Moines Mem. Dr./S 136th St.	SeaTac	E	B	B	0	Category 3		
8 - 18th Ave. S/S 136th St.	SeaTac	D	B	B	0	B	B	0
9 - 24th Ave. S/S 136th St.	SeaTac	D	B	B	-0.1	B	B	0
10 - 24th Ave. S/S 138th St.	SeaTac	D	B	B	-0.1	C	C	-0.6
11 - Military Rd. S/S 138th St.	SeaTac (Tukwila)	E	B	B	0	C	C	0
13 - SR 509 NB Ramp/S 146th St.	WSDOT	D	A	A	-0.2	A	A	-0.2
15 - 24th Ave. S/S 142nd St.	SeaTac	D	B	B	-0.1	C	C	0
18 - Military Rd. S/S 144th St.	SeaTac (Tukwila)	E	Category 3			E	E	-0.9
19 - International Blvd./S 144th St.	Tukwila	E	Category 3			D	D	-0.1
29 - SR 518 WB Ramps/S 154th St.	WSDOT	D	0	0	0	0	0	0
44 - Klickitat Dr./I-5 SB On-Ramp	WSDOT	D	A	A	0	B	B	0
51 - SR 509 NB Ramps/SW 160th St.	WSDOT	D	Category 3			A	A	0
53 - Air Cargo Rd./S 160th St.	Port	NA	D	A	-15.3	E	B	-26.6
55 - SeaTac Rental Car Facility Dr. W/S 160th St.	SeaTac	E	B	A	-8.4	B	B	-8.6
56 - SeaTac Rental Car Facility Dr. E/S 160th St.	SeaTac	E	C	C	-0.9	C	C	-0.9
57 - Pacific Hwy S/S 160th St.	SeaTac	E	D	D	-1.2	E	E	-0.6
58 - Air Cargo Rd./S 166th St.[1]	Port	NA	C	0	-16	C	0	-17.9
59 - Air Cargo Rd./SB Airport Expressway On-Ramp[1]	Port	NA	A	0	-2	A	0	-1.4
60 - Air Cargo Rd./S 170th St.[1]	Port	NA	A	0	-8.3	A	0	-8.6
61 - SB Airport Expressway Off-Ramp/S 170th St.[1]	Port/SeaTac	E	C	0	-28.5	C	0	-31.6

62 - Doug Fox Parking Lot/S 170th Street[1]	SeaTac	C	C	0	-15.1	C	0	-15.9
64 - International Blvd/S 170th St.	SeaTac	E-Mitigated	D	D	-1.4	E	E	-1.3
66 - International Blvd/S 182nd St./Arrivals Dr.	SeaTac	E-Mitigated	E	E	-2.4	Category 3		
67 - International Blvd/S 188th St.	SeaTac	E-Mitigated	E	E	-5.1	E	E	-3.8
71 - S Normandy Rd./Ambaum Blvd. S	Burien	D	C	C	0	Category 3		
74 - Military Rd. S/S 176th St.	SeaTac	E	C	C	-1	D	D	-2.7
75 - 46th Ave. S/S 188th St.	SeaTac	E	C	C	-0.2	C	C	-0.5
76 - Military Rd. S/S 188th St.	SeaTac	E	D	D	-0.5	D	D	-0.5
81 - 28th Ave. S/S 200th St.	SeaTac	E	B	B	0	C	C	0
85 - International Blvd/S 208th St.	SeaTac	E-Mitigated	B	B	-0.2	B	B	-0.2
87 - Des Moines Memorial Dr./S 216th St.	WSDOT	E	Category 3			B	B	0
90 - Pacific Hwy S/S 220th St.	Des Moines	E	Category 3			C	C	0
91 - Pacific Hwy S/S 224th St.	Des Moines	E	D	D	-0.1	Category 3		
95 - NB I-5 Ramps/SR 516	WSDOT	D	Category 3			C	C	0
107 - 34th Ave. S/S 170th St.	SeaTac	E	E	D	-3.9	Category 2		
108 - 32nd Ave. S/S 200th St.	SeaTac	E	A	A	0	Category 3		
111 - SB NAE On Ramp & Air Cargo Rd (via 160th)	Port	NA	Not Present			Uncontrolled		
113 - S 188th St & NB SR 509 Ramps	WSDOT	D	A	A	0	Category 3		
114 - 28th Ave S & SB SR 509 On Ramp	WSDOT	D	A	A	0	A	A	0
115 - 28th Ave S & NB SR 509 Off Ramp	WSDOT	D	B	B	0	Category 3		
117 - Veterans Dr & SB I-5 Off Ramp	WSDOT	D	B	B	0	C	C	0

- NA – No Action, PA – Proposed Action, LOS – Level-of-Service, Delay (seconds)
[1]Intersection removed as part of Proposed Action analysis.

4.3.2 Options for Category 1 Intersections

This section documents intersections in the traffic analysis study area which degrade to LOS below the respective local agency mobility standards under the Proposed Action conditions (Category 1), as shown in Table 6. These locations were shown to be operating at acceptable LOS under the No Action conditions for at least one of the two future scenarios (2032 or 2037) but not under the Proposed Action conditions. Intersection mitigation options are identified to meet the agency mobility standards, or justification is provided why intersection mitigation options are not identified. Synchro reports for the conditions with intersection mitigation options identified are provided in Attachment E. Note that the results for unsignalized intersections in the tables below represent the worst approach at the intersection. Black shading indicates the intersection does not meet the agency mobility standard in the respective scenario/year.

14. Des Moines Memorial Drive & S 144th Street (West Side: City of Burien, East Side: City of SeaTac)
In 2032, the intersection degrades from LOS E with 66.2 seconds of delay to LOS F with 267.5 seconds of delay under the Proposed Action (below agency mobility standard of LOS E). In 2037, the intersection degrades from LOS E with 78.0 seconds of delay to LOS F with 300.1 seconds of delay under the Proposed Action (below agency mobility standard of LOS E).

Proposed intersection mitigation: The Port proposes widening the east leg to provide a westbound left turn lane, widening the south leg to provide a northbound right turn lane and modifying traffic signal to eliminate split phasing. The mitigation will be designed to be consistent with the City of SeaTac's long-term improvement plan ST-024 from the City's Transportation Master Plan. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation. With the implementation of this mitigation, the intersection is expected to operate at LOS D in 2032 and LOS D in 2037 which meets the agency mobility standard.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	66.2	F	>150	D	35.8
2037	E	78.0	F	>150	D	41.4

17. 24th Avenue S & S 146th Street (City of SeaTac)
In 2032, the intersection degrades from LOS C with 22.5 seconds of delay to LOS E with 45.3 seconds of delay under the Proposed Action (below agency mobility standard of LOS D). In 2037, the intersection degrades from LOS D with 26.4 seconds of delay to LOS F with 73.7 seconds of delay under the Proposed Action (below agency mobility standard of LOS D).

Proposed intersection mitigation: The Port proposes constructing a new signal and maintaining existing channelization. A leading protected northbound left turn phase should be provided to accommodate the increased volumes seen in each Proposed Action scenario. Other left turns at the intersection can be made permissively while maintaining an acceptable LOS. Design for the proposed signal will include evaluation of required intersection footprint and sight distances to implement Flashing Yellow Arrows.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	C	22.5	E	45.3	B	12.0
2037	D	26.4	F	73.7	B	13.5

24. SR 518 WB Ramps & Des Moines Memorial Drive (WSDOT)
In 2032, the intersection degrades from LOS C with 23.6 seconds of delay to LOS E with 44.3 seconds of delay under the Proposed Action (below agency mobility standard of LOS D). In 2037, the intersection degrades from LOS E with 36.1 seconds of delay to LOS F with 186.9 seconds of delay under the Proposed Action (below agency mobility standards of LOS D).

Proposed intersection mitigation: The Port proposes converting the intersection from stop control to roundabout and add a slip westbound right turn lane, the northbound and southbound approaches can remain single lane. An Intersection Control Evaluation would need to be reviewed and approved by WSDOT for implementation of the assumed mitigation. A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation. With this mitigation the intersection is expected to operate at LOS A with 3.4 seconds of delay in the 2032 Proposed Action scenario, and LOS A with 4.1 seconds of delay in the 2037 Proposed Action scenario.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	C	23.6	E	44.3	A	3.4
2037	E	36.1	F	186.9	A	4.1

42. SR 518 EB Off-Ramp & 51st Avenue S (WSDOT)

In 2032, the intersection degrades from LOS C with 24.6 seconds of delay to LOS D with 30.4 seconds of delay under the Proposed Action which would still meet the agency standard of LOS D. In 2037, the intersection degrades from LOS D with 31.1 seconds of delay to LOS E with 42.4 seconds of delay under the Proposed Action (below agency mobility standards of LOS D).

Proposed intersection mitigation: A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report. After review of the ICE and the additional delay added by NTP trips, WSDOT declined mitigation at this intersection in favor of consolidated mitigation at Category 2 locations. More details are provided in Section 7 of this report.

48. 8th Avenue S & S 156th Street (City of SeaTac)

In 2032, the intersection degrades from LOS C with 33.3 seconds of delay to LOS E with 65.1 seconds of delay under the Proposed Action. In 2037, the intersection degrades from LOS E with 76.6 seconds of delay to LOS F with 196.7 seconds of delay under the Proposed Action (below agency mobility standards of LOS E).

Proposed intersection mitigation: The Port proposes shifting the southbound lanes west to add a dedicated southbound left and right turn lanes and a dedicated northbound left turn lane. With the additional turn lanes, the signal timing can be modified to utilize standard NEMA phasing with protected left turns on each approach. Design for the proposed signal will include evaluation of required intersection footprint and sight distances. Mitigation analysis did not include NBL and SBL flashing yellow arrows because of high northbound and southbound volume-to-capacity ratios as a conservative assumption. Inclusion of flashing yellow arrows would allow the intersection to operate more efficiently than what is identified in this report. Feasibility of flashing yellow arrows can be evaluated prior to design and construction of the signal. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation. With this mitigation the intersection is expected to operate at LOS D with 44.8 seconds of delay in the 2032 Proposed Action scenario, and LOS E with 60.3 seconds of delay in the 2037 Proposed Action scenario.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	C	33.3	E	65.1	D	44.8
2037	E	76.6	F	196.7	E	60.3

83. Military Road S & SB I-5 Ramps/S 200th Street (WSDOT)

In 2032, the intersection degrades from LOS D with 47.7 seconds of delay to LOS D with 51.8 seconds of delay under the Proposed Action. In 2037, the intersection degrades from LOS D with 54.4 seconds of delay to LOS E with 64.3 seconds of delay under the Proposed Action (below agency mobility standard of D).

Proposed intersection mitigation: The Port proposes modifying the existing signal timings by increasing the cycle length by ten seconds and adjusting splits. WSDOT indicated this type of signal optimization is typically done on a regular basis and would not require additional mitigation from the Port. With this mitigation the intersection is expected to operate at LOS D with 51.8 seconds of delay in the 2032 Proposed Action scenario and LOS E with 56.3 seconds of delay in the 2037 Proposed Action Scenario.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	D	47.7	D	51.8	D	51.8
2037	D	54.4	E	64.3	E	56.3

86. Military Road S & NB I-5 Ramps (WSDOT)

In 2032, the intersection degrades from LOS D with 52.5 seconds of delay to LOS E with 69.3 seconds of delay under the Proposed Action (below agency mobility standard of LOS D). In 2037, the intersection degrades from LOS E (below agency mobility standards of LOS D) with 64.6 seconds of delay to LOS F with 81.2 seconds of delay under the Proposed Action. Since the intersection is not expected to meet the mobility standard under 2037 No Action conditions the goal of the mitigation will be to reach a LOS approximately equal to the No Action LOS under Proposed Action conditions.

Proposed intersection mitigation: The Port proposes modifying the existing signal timings by reducing the cycle length by five seconds and redistributing splits while maintaining the existing channelization. WSDOT indicated this type of signal optimization is typically done on a regular basis and would not require additional mitigation from the Port. With this mitigation the intersection is expected to operate at LOS D with 45.9 seconds of delay in the 2032 Proposed Action scenario. With this mitigation the intersection is expected to operate at LOS E with 65.8 seconds of delay under 2037 Proposed Action Conditions, 1.2 seconds above the LOS seen under 2037 No Action conditions.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	D	52.5	E	69.3	D	45.9
2037	E	64.6	F	81.2	E	65.8

96. 16th Avenue S & S 144th Street (City of SeaTac)

In 2032, the intersection degrades from LOS B with 11.8 seconds of delay to LOS D with 26.2 seconds of delay under the Proposed Action. In 2037, the intersection degrades from LOS B with 12.4 seconds of delay to LOS E with 43.0 seconds of delay under the Proposed Action (below agency mobility standards of LOS D).

Proposed intersection mitigation: The Port proposes constructing an eastbound right turn lane. Frontage improvements (including street and pedestrian lighting) will be designed to current City standards and in coordination with the City's planned improvement project ST-024. With this mitigation the intersection is expected to operate at LOS C with 16.9 seconds of delay in the 2032 Proposed Action Scenario. The intersection is expected to operate at LOS C with 21.1 seconds of delay in the 2037 Proposed Action scenario with the recommended mitigation.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	B	11.8	D	26.2	C	16.9
2037	B	12.4	E	43.0	C	21.1

98. Des Moines Memorial Drive & S 168th Street (City of Burien)

In 2032, the intersection degrades from LOS C with 19.8 seconds of delay to LOS C with 24.8 seconds of delay under the Proposed Action. In 2037, the intersection degrades from LOS C with 23.4 seconds of delay to LOS D with 33.3 seconds of delay under the Proposed Action (below agency mobility standards of LOS C).

Proposed intersection mitigation: The Port proposes constructing a new signal and modify the westbound channelization to provide a dedicated left turn lane and a shared through and right turn lane. All left turns would be permissive under the proposed signal timing. The Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation. With this mitigation the intersection is expected to operate at LOS A with a delay of 7.3 seconds per vehicle under 2032 Proposed Action conditions. The intersection is expected to operate at LOS B with 10.5 seconds of delay per vehicle under 2037 Proposed Action conditions with proposed mitigation.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	C	19.8	C	24.8	A	7.3
2037	C	23.4	D	33.3	B	10.5

102. S 152nd Street & Des Moines Memorial Drive S (City of SeaTac/Burien)
In 2032, the intersection degrades from LOS D with 25.3 seconds of delay to LOS D with 34.7 seconds of delay under the Proposed Action. In 2037, the intersection degrades from LOS D with 32.7 seconds of delay to LOS F with 56.7 seconds of delay under the Proposed Action (below agency mobility standards of LOS E).

Proposed intersection mitigation: The Port proposes constructing a roundabout that would consolidate the intersection with intersections #100 and #101 as mitigation. The City of Burien has a TIP improvement that would convert this intersection and two adjacent intersections (#100, #101) into a roundabout. The proposed roundabout would combine the three intersections into a single four-leg roundabout with a single lane on each approach. The Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation. Future construction of roundabout will be designed to be compatible with the City of SeaTac's ST-029 improvement project as well. With this proposed mitigation, intersection #102 is expected to operate at LOS A with 6.8 seconds of delay in the 2032 Proposed Action scenario, and LOS A with 8.8 seconds of delay in the 2037 Proposed Action scenario.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	D	25.3	D	34.7	A	6.8
2037	D	32.7	F	56.7	A	8.8

4.3.3 Options for Category 2 Intersections

This section provides proposed mitigation for intersections which are expected to fail to meet mobility standards under the No Action conditions even after funded improvement projects are assumed and where the Proposed Action is expected to add additional delay as shown in Table 7 (Category 2). The Port is only responsible to mitigate the delay added by the NTPs. Synchro reports for the conditions with other improvements are provided in Attachment E. Note that the results for unsignalized intersections in the tables below represent the worst approach at the intersection.

21. SR 509 SB Ramps & SW 148th Street (WSDOT)

In 2032, the signalized intersection operates at an acceptable LOS D in both the No Action and Proposed Action scenarios. In 2037, the signalized intersection would operate at LOS E 55.3 seconds (below the agency standard of LOS D) in the No Action scenario and LOS E 67.1 in the Proposed Action scenario. The NTPs would add 11.8 seconds of average delay in 2037. The NTPs will add 195 vehicle trips to the intersection in the 2037 Proposed Action and comprise 4% of the total intersection volume.

Proposed intersection mitigation: The intersection operates as a coordinated system with adjacent intersections #20 and #22. Constructed capital improvements to improve the LOS E in No Action would require additional improvements to adjacent intersections that already operate at acceptable levels of service. Optimizing splits and offsets with Proposed Action intersection volumes at all three intersections to reduce the overall coordinated network delay would result in an added delay of approximately 9.0 seconds compared to No Action. WSDOT indicated this type of signal optimization is typically done on a regular basis and would not require additional mitigation from the Port. WSDOT requested the remainder of the delay added be mitigated at other WSDOT Category 2 intersections through consolidation of constructed improvements.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	D	46.7	D	50.4	-	-
2037	E	55.3	E	67.1	E	64.3

23. SR 518 EB Ramps & Des Moines Memorial Drive (WSDOT)

In 2032, the stop-controlled approach of the intersection degrades to LOS F with 124.0 seconds of delay under the No Action scenario (which is below the agency mobility standard of LOS D), with the Proposed Action operating at LOS F with 468.1 seconds of delay. In 2037, the stop-controlled approach of the intersection degrades to LOS F with 261.4 seconds of delay under the No Action scenario (which is below the agency mobility standard of LOS D), with the Proposed Action operating at LOS F with 981.0 seconds of delay. The NTPs would add 344.1 seconds of delay in 2032 and 719.6 seconds of delay in 2037. The NTPs would add approximately 300 PM peak hour trips and would make up 16% of the total 2037 Proposed Action intersection volume.

Proposed intersection mitigation: The Port is proposing to convert the intersection to a single lane roundabout, maintaining existing channelization on the eastbound approach. Design of the intersection will accommodate the West Side Trail connection along the east side of Des Moines Memorial Drive S. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation. This improvement would require approval by WSDOT via an Intersection Control Evaluation. A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report (Network 1). With this improvement the intersection is expected to operate at LOS A with 5.5 seconds of delay under 2032 Proposed Action conditions, and LOS A with 6.1 seconds of delay under 2037 Proposed Action conditions. The delay reduction achieved by the Port-constructed roundabout would mitigate delay beyond what was added by NTP trips. Therefore, the constructed roundabout represents a consolidated mitigation location of Category 2 impacts at multiple WSDOT intersections.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	F	124.0	F	468.1	A	5.5
2037	F	261.4	F	981.0	A	6.1

28. SR 518 EB Off Ramp & S 154th Street (WSDOT)

In 2037, the stop-controlled approach of the intersection degrades to LOS F with over 150 seconds of delay under the No Action conditions (which is below the agency mobility standard of LOS D). The NTPs will add 21.2 seconds of delay. The NTPs would add approximately 10 PM peak hour trips in the 2037 Proposed Action scenario and would comprise 1% of the total intersection volume.

Proposed intersection mitigation: A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report (Network 2). After review of the ICE and the additional delay added by NTP trips, WSDOT declined mitigation at this intersection in favor of consolidated mitigation at WSDOT other Category 2 locations. More details are provided in Section 7 of this report.

33. SR 518 WB Off-Ramp (Loop) & S 154th Street (WSDOT)

In 2037, the stop-controlled approach of the intersection degrades to LOS F with over 300 seconds of delay under the No Action conditions (which is below the agency mobility standard of LOS D). The NTPs will add approximately 78.9 seconds of delay in 2032 and approximately 115 seconds of delay in 2037. The NTPs would add approximately 50 PM peak hour trips to the westbound off-ramp intersection in the 2037 Proposed Action scenario and comprise 2% of the total intersection volume.

Proposed intersection mitigation: The Port will install a three-phase traffic signal in the intersection's current location coordinated with intersection #37. This improvement would require design approval by WSDOT via an Intersection Control Evaluation. A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report (Network 3). The delay reduction achieved by the Port-constructed signal would mitigate delay beyond what was added by NTP trips. Therefore, the constructed signal represents a consolidated mitigation location of Category 2 impacts at multiple WSDOT intersections. The City of SeaTac has identified realigning the off-ramp with 32nd Avenue S as a preferred improvement which would require approval by WSDOT to realign the ramp as well as additional property acquisition. To date, the feasibility of this concept has not been evaluated by either the City or WSDOT and therefore was not included in the analysis. With the implementation of a signal at the current intersection location, the intersection is expected to operate at LOS C in 2032 and LOS C in 2037 which meets the agency mobility standard.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	F	187.5	F	266.4	C	28.2
2037	F	389.9	F	504.9	C	30.9

37. International Boulevard & S 154th Street (WSDOT)

In 2037, the signalized intersection is expected to operate at LOS F with 106.3 seconds of delay (below agency standard of LOS E-Mitigated). The Proposed Action would increase delay to an LOS F with 110.9 seconds of delay. The NTPs would add approximately 2.2 seconds of delay in 2032 and 4.6 seconds of delay in 2037. The NTPs would add approximately 95 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and would comprise 2% of the total intersection volume.

Proposed intersection mitigation: WSDOT declined mitigation at the intersection in favor of consolidated improvements at other WSDOT Category 2 intersections. Signal improvements to the intersection immediately to the west (#33) would require coordination with intersection #37 given the proximity of the two. Eastbound and westbound channelization and coordination between the two intersections will be confirmed during completion of the future final ICE for intersection #33. No additional mitigation for intersection #37 was requested by WSDOT.

49. 1st Avenue S & SW 160th Street (City of Burien)

In 2037, the signalized intersection is expected to operate at LOS E with 61.4 seconds of delay (below agency standard of LOS D). The Proposed Action would increase delay to an LOS E with 62.8 seconds of delay. The NTPs will add approximately 0.4 seconds of delay in 2032 and 1.4 seconds of delay in 2037. The NTPs will add approximately 55 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and would comprise 1% of the total intersection volume.

Proposed intersection mitigation: The City of Burien has identified corridor improvements to the SW 160th Street corridor (Project No. 22 in 2023-2028 TIP) to optimize traffic flow. Reoptimizing signal timings in the 2037 Proposed Action analysis would reduce the 2037 Proposed Action delay to LOS E with 62.0 seconds of delay—resulting in a less than one second increase in average delay. The Port is proposing a proportionate share payment for costs of the corridor improvement program ($1,500,000) equal to the NTPs percentage of trips at the intersection (1%). This results in a proportionate share payment of $15,000.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	56.2	E	56.6	E	56.2
2037	E	61.4	E	62.8	E	62.0

54. Host Rd/SR 518 EB On Ramp & S 160th St (City of SeaTac/WSDOT)

In 2032, the Proposed Action will cause the intersection to degrade to LOS E with 49.9 seconds of delay on the worst stop-controlled approach. In the 2037 No Action, the intersection will operate at a LOS F with 54.6 seconds of delay and the Proposed Action will cause the intersection to degrade to LOS F with 122.9 seconds of delay on the worst stop-controlled approach (below the agency mobility standard LOS E). The NTPs will add approximately 10.7 seconds of delay in 2032 and approximately 68.3 seconds of delay in 2037. The NTPs are expected to decrease the volume on S 160th Street which will reduce the overall intersection volume by 25 trips (2% decrease), however the NTPs will increase northbound traffic by 130 trips.

Proposed intersection mitigation: The Port is proposing to install a two-phase traffic signal with an eastbound permitted & protected left turn. This improvement does not require roadway widening. The north leg of the intersection is within WSDOT ROW so assumed improvements will need to be reviewed and approved by WSDOT through an Intersection Control Evaluation. A preliminary ICE was prepared for review by WSDOT and is included in the appendices of this report (Network 5). With the implementation of this improvement, the intersection is expected to operate at LOS A in 2032 and 2037 Proposed Action which meets the agency mobility standard.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	39.2	E	49.9	A	6.0
2037	F	54.6	F	122.9	A	6.2

78. S 188th Street & I-5 Southbound Ramps (WSDOT)

In 2037, the signalized intersection would operate at LOS F 95.5 seconds (below the agency standard of LOS D) in the No Action scenario and LOS E 97.9 in the Proposed Action scenario. Reoptimization of the signal timings after the Proposed Action results in a LOS F with 85.1 seconds of delay which would drop the delay below No Action. WSDOT confirmed this type of signal optimization would occur through typical signal maintenance by WSDOT. No other improvements were proposed by the Port as mitigation for NTP trips. The NTPs will add approximately 1.6 seconds of delay in 2032 and approximately 2.4 seconds of delay in 2037.

Proposed intersection mitigation: Added delay by NTP trips at the intersection will be addressed through consolidated constructed improvements at other WSDOT Category 2 intersections as requested by WSDOT.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	63.7	E	65.3	D	54.7
2037	F	95.5	F	97.9	F	85.1

89. Pacific Highway S & S 216th Street (City of Des Moines)

In 2037, the signalized intersection would operate at LOS E with 77.4 seconds of delay with eastbound left turns and northbound left turns operating at a v/c greater than 1.0 in the No Action scenario. The City has adopted a LOS F and v/c 1.0 standard for the intersection. Although the average delay in the 2037 No Action and Proposed Action scenarios would operate better than a LOS F, the eastbound and northbound left turns would operate at a v/c greater than 1.0. Signal timing reoptimization after the 2037 Proposed Action scenario could reduce the overall intersection delay added to less than one second per vehicle on average. No other improvements were proposed. The NTPs will add approximately 0.2 second of delay in 2032 and 1.6 seconds of delay in 2037. The NTPs will add approximately 75 PM peak hour trips to the intersection (2% increase) in the 2037 Proposed Action scenario.

Proposed intersection mitigation: The City requested that proportional impacts to City streets and intersections be evaluated using the number of NTP trips added at intersection #93. No Port mitigation is therefore identified for intersection #89.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	66.6	E	66.8	-	-
2037	E	77.4 (v/c 1.06)	E	79.0 (v/c 1.11)	E	78.0 (v/c 1.05)

93. Pacific Highway S & Kent-Des Moines Road (SR 516) (City of Des Moines)

In 2037, the signalized intersection would operate at LOS E 107.7 seconds with southbound through lanes operating at a v/c of 1.28 in the 2037 No Action scenario. The NTPs would add approximately 135 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and comprise 2% of the total intersection volume. The NTPs will add approximately 3.4 seconds of delay in 2032 and 3.8 seconds of delay in 2037.

Analysis for the intersection includes the planned improvements by Sound Transit for an additional northbound left turn lane and an additional northbound right turn lane. The City of Des Moines has adopted a LOS F and v/c 1.2 standard for the intersection. Signal timing reoptimization after the 2037 Proposed Action scenario to increase the cycle length to 185 seconds could reduce the overall intersection delay added back to No Action levels, however the southbound through lanes would still operate at a v/c of 1.22. No other improvements were proposed. The intersection was assumed to still operate uncoordinated with I-5 interchange signals to the east.

Proposed intersection mitigation: The City requested proportionate share for delay added by NTP trips be evaluated using the total number of PM peak hour trips added to intersection #93 multiplied by the City's current traffic impact fee amount ($7,651.41 per PM peak hour trip). This results in a total proportionate share payment to the City of Des Moines of $1,032,940.35 based on the current fee schedule.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	F	94.8	F	98.2	F	95.3
2037	F	107.7 (v/c 1.28)	F	111.5 (v/c 1.28)	F	107.2 (v/c 1.22)

94. Kent-Des Moines Road (SR 516) & I-5 Southbound Ramps (WSDOT)

In 2032, the intersection will operate at an acceptable LOS D in both the No Action and Proposed Action scenarios. In the 2037 No Action, the intersection will operate at a LOS E with 59.6 seconds of delay and the Proposed Action will cause the intersection to degrade to LOS E with 66.4 seconds of delay (below the agency mobility standard LOS D). The NTPs would add approximately 195 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and would comprise 4% of the total intersection volume. The NTPs will add approximately 4.5 seconds of delay in 2032 and 6.8 seconds of delay in 2037.

Proposed intersection mitigation: Added delay by NTP trips at the intersection will be addressed through consolidated constructed improvements at other WSDOT Category 2 intersections as requested by WSDOT. The intersection will have southbound channelization improvements constructed by WSDOT as part of the SR 509 Stage 1B and Veterans Drive extensions. The intersection will operate as a coordinated system with the corresponding northbound I-5 ramp terminal on Kent-Des Moines Road (SR 516) as well as two new intersections on Veterans Drive. Signal timings were reoptimized after the 2037 Proposed Action for the coordinated system to reduce network delay at the four intersections. This type of signal optimization would occur through typical signal maintenance by WSDOT. After optimization the intersection is expected to operate at LOS E with 66.3 seconds of delay. No other improvements were proposed.

Scenario	No Action		Proposed Action		Proposed Action with Optimization	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	D	44.7	D	49.2	-	-
2037	E	59.6	E	66.4	E	66.3

105. 32nd Avenue S & S 160th Street (City of SeaTac)

The intersection is expected to operate at LOS F with more than 150 seconds of delay for the northbound stop-controlled approach for both the 2032 No Action and Proposed Action scenarios which would exceed the allowable LOS D standard. The intersection would exceed 300 seconds of delay in the 2037 No Action and Proposed Action scenarios as well. The NTPs would add approximately 60 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and would comprise 4% of the total intersection volume. The NTPs will add approximately 47.2 seconds of delay in 2032 and 72.4 seconds of delay in 2037.

Proposed intersection mitigation: The City of SeaTac indicated a private development located in the City of Tukwila has proposed a roundabout as an access improvement at this location in the future as part of initial site plans. However, discussion with the City of Tukwila indicated there is no timeline for when the improvement might occur. The Port is therefore proposing to construct the roundabout as mitigation given the uncertainty of the private development. Agreements with the cities of SeaTac and Tukwila will be documented outlining the timing of the roundabout construction and any potential latecomer's agreement. A multi-lane roundabout converting the westbound curb lane to right turn only while maintaining existing channelization for other approaches was assumed. With these improvements the intersection is expected to operate at LOS A under 2032 Proposed Action and 2037 Proposed Action conditions, meeting the City of SeaTac mobility standard of E.

Scenario	No Action		Proposed Action		Proposed Action with Mitigation	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	F	165.6	F	212.8	A	4.3
2037	F	305.0	F	377.4	A	4.5

106. Military Road S/S 164th Street/42nd Avenue S (City of SeaTac)

The signalized intersection is expected to operate at LOS F with 95.7 seconds of delay for the 2037 No Action scenario which would not meet the City's LOS E standard. The 2037 Proposed Action scenario would increase the delay to 101.2 seconds of delay. The NTPs would add approximately 90 PM peak hour trips to the intersection in the 2037 Proposed Action scenario comprising 4% of the total intersection volume. The NTPs will add approximately 10.8 seconds of delay in 2032 and approximately 5.5 seconds of delay in 2037.

Proposed intersection mitigation: The City of SeaTac has prepared a study indicating a planned but unfunded improvement to replace the signal with a roundabout to improve safety and operations. The five-leg roundabout would operate at a LOS B in both the 2037 No Action and Proposed Action scenarios. The City of SeaTac indicated the intersection improvement is part of the S 160th Street/Military Road corridor improvement project (ST 116) and that a fee payment based on the corridor improvement cost would be sufficient for the Port's proportionate share mitigation towards the intersection improvements. The current TIP only has design and ROW costs assumed for the next six years, therefore the planning-level cost identified in the City's Transportation Master Plan was used as the basis for the proportionate share calculation ($14,870,000). The Port is proposing mitigating NTP trips impacting the intersection by paying a proportionate share of intersection improvement costs equal to the NTPs' percentage of total intersection volume (4%). The Port's proportionate share payment would therefore be $594,800 for the intersection improvements.

Scenario	No Action		Proposed Action		Proposed Action with Improvements	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	59.8	E	70.6	-	-
2037	F	95.7	F	101.2	B	14.8

107. 34th Avenue S & S 170th Street (City of SeaTac)

The all-way stop control intersection is expected to operate at LOS F with 59.1 seconds of delay in the 2037 No Action scenario which would not meet the City's LOS E standard. The 2037 Proposed Action scenario would increase the delay to 59.8 seconds of delay. The NTPs would add approximately 10 PM peak hour trips to the intersection in the 2037 Proposed Action scenario comprising 1% of the total intersection volume. The NTPs will reduce delay by 3.9 seconds in 2032 and add approximately 0.7 second of delay in 2037.

Proposed intersection mitigation: No changes to the intersection's control are assumed in the City's current ST-016 improvement project. Replacing the all-way stop-control with a signal utilizing existing channelization and two-phase timing plan was assumed as the future year improvement to meet the LOS E standard. The signal would operate at an acceptable LOS B in the 2037 Proposed Action scenario. The City indicated the intersection does not have a signal identified in the current 34th Avenue S Phase 2 corridor project that is included in the 6-year TIP as ST-016, but will have conduit installed to allow installation of a signal in the future when warranted. The Port is proposing mitigating NTP trips impacting the intersection by paying a proportionate share of corridor improvement costs equal to the NTPs' percentage of total intersection volume (1%). This would equate to a $152,000 proportionate share payment by the Port.

Scenario	No Action		Proposed Action		Proposed Action with Improvements	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	E	36.5	D	32.6	-	-
2037	F	59.1	F	59.8	B	18.6

109. Military Road S & S 216th Street (City of SeaTac)

The signalized intersection is expected to operate at LOS F with 84.8 seconds of delay for the 2032 No Action scenario which would not meet the City's LOS E standard. The 2032 Proposed Action scenario would increase the delay to 91.8 seconds of delay. The signal would operate at LOS F with 114.1 seconds of delay for the 2037 No Action scenario and would increase the delay to 123.9 seconds of delay with the Proposed Action. The NTPs would add approximately 50 PM peak hour trips to the intersection in the 2037 Proposed Action scenario and comprise 2% of the total intersection volume. The NTPs will add approximately 7.0 seconds of delay in 2032 and approximately 9.8 seconds of delay in 2037.

Proposed intersection mitigation: There are funded improvements to widen S 216th Street to a three-lane road across I-5 as part of the SR 509 Stage 1B project on the west leg of the intersection. The intersection currently has a single westbound lane (east leg of intersection) and operates with split phasing for eastbound and westbound approaches. Removal of the split phasing to allow simultaneous eastbound and westbound through movements would be required to achieve the LOS E standard. The future improvements assumed an additional eastbound right turn lane and dedicated westbound left turn lane to achieve an LOS E in the 2037 No Action and Proposed Action scenarios. The increase in delay under Proposed Action is primarily from southbound NTP trips diverting from southbound I-5 to avoid congestion on the freeway. The intersection is not expected to see an increase in freight traffic resulting from the NTPs. The City indicated that there will likely be channelization improvements as part of project ST-140 in the current 6-year TIP and that the proportionate share calculation could be based on the TIP project cost ($2,550,000). The Port is proposing mitigating NTP trips impacting the intersection by paying a proportionate share for intersection improvement costs equal to the NTPs' percentage of total intersection volume (2%). This equates to a proportionate share payment of $51,000.

Scenario	No Action		Proposed Action		Proposed Action with Improvements	
	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)	LOS	Vehicle Delay (sec)
2032	F	84.8	F	91.8	D	53.0
2037	F	114.1	F	123.9	E	70.5

5. Arterial Corridor Operations Analysis

Corridor operations were analyzed at the request of WSDOT where study intersections are closely spaced and queues/congestion from one intersection may impact upstream intersection operations. It should be noted WSDOT does not identify a LOS or other Measures of Effectiveness (MOE) standard that is required to be maintained. The City of SeaTac maintains a concurrency model that evaluates corridor capacity

throughout the City. Per the City and Port's current interlocal agreement, projects located outside the Airport Activity Area (AAA) would be subject to SeaTac's concurrency analysis at the time of building permit application.

Corridor operations were conducted using SimTraffic and followed WSDOT's *Synchro & SimTraffic Protocol (August 2018)*. Future corridor analysis was conducted to identify queue spillback concerns and to provide additional insight on future signal timing optimization and potential impacts of proposed mitigation. The SimTraffic analysis was divided into nine corridors, each consisting of between two to six intersections, listed below in Table 10. Additional SimTraffic and Sidra Network analysis was completed for the Preliminary ICEs documented in Attachment H.

Table 10. SimTraffic Corridors Analyzed

#	Segments of Interest	Study Intersections Included
1	24th Ave. S: S 142nd St. to S 154th St.	15, 16, 17, 97, 25, 26, 27
2	SW 148th St.: 1st Ave S to SR 509	20, 21, 22
3	Des Moines Memorial Dr. : SR 518 Ramp Terminals	23, 24
4	S 154th St.: 24th Ave S and SR 518 Ramp Terminals	27, 28, 29
5	International Boulevard: S 152nd St. to SR 518 EB On-Ramp	35, 36, 37, 39
6	51st Ave S: SR 518 Ramp Terminals	41, 42
7	SW 160th St.: 1st Ave S to Des Moines Memorial Dr.	49, 50, 51, 52
8	NAE Off-Ramp/S 170th St. to International Boulevard/ S 188th St.	63, 64, 65, 66, 67
9	SR 516: Pacific Highway S and I-5 Ramp Terminals	93, 94, 95

MOEs for the corridor analysis were 95th percentile queues and average corridor travel time as documented in the methods and assumption scoping document. The analysis was performed to evaluate the potential for the blocking of intersections and for turn lanes exceeding provided storage lengths which may not appear in typical isolated intersection analysis. SimTraffic Queueing and Blocking reports are located after the capacity analysis reports in Attachment I for each corridor.

Both the 2032/2037 No Action and Proposed Action scenarios showed increase queuing spillback compared to the existing conditions. These were minimized as much as possible through future No Action and Proposed Action signal timing optimization assumptions. Increased travel times and decreased average speeds occurred on most corridors compared to the existing conditions. Corridor results in Table 11 summarize the assumed mitigated/improved scenario for Proposed Action. The Proposed Action reduced average speeds on the corridors by 0-2 miles per hour except as noted below:

- Segment 1, 24th Avenue S – 2037 Proposed Action average speeds decrease by approximately 4 mph in both the northbound and 7-8 mph in the southbound direction. This is a result of increased

volumes on 24th Avenue S because of NTPs constructed north of SR 518 as well as a new signal added in the Proposed Action scenario at 24th Avenue S at S 146th Street. The northbound and southbound approaches currently operate without and stop control and will have delay added once the signal is constructed. Northbound and southbound 95th-percentile queues at the signal are expected to be less than 250 feet in both directions and are not expected to impact adjacent intersections.

- Segment 3, Des Moines Memorial Drive – 2037 Proposed Action southbound average speed will decrease by approximately 10-22 mph. This is due to the Port constructing roundabouts at each SR 518 ramp terminal as well as increased volumes on the corridor from NTPs constructed north SR 518. The 2037 Proposed Action 95th-percentile southbound queue was 438 feet as reported from the Sidra Network analysis as part of the Preliminary ICE for this corridor for the dual roundabout configuration. This queue length would not impact the next intersection to the north (S. 144th Street).
- Segment 7, SW 160th Street – 2037 Proposed Action westbound average speed will increase by approximately 5 mph. This is due to additional green time added for westbound trips at 1st Avenue S in the 2037 Proposed Action mitigated scenario.
- Segment 8, S 170th Street – 2037 Proposed Action westbound average speed will increase by approximately 4 mile per hour because of a reduction in volume after construction of Terminal 2 and relocation of facilities served by Air Cargo Road.

Table 11. SimTraffic Corridors PM Peak Hour Travel Time and Speed Results

#	Arterial	Direction	Distance (mi)	2022 Existing		2032 No Action		2032 Proposed Action with Mitigated/Optimized				2037 No Action		2037 Proposed Action with Mitigation/Optimization			
				Travel Time (s/veh)	Avg Speed (mph)	Travel Time (s/veh)	Avg Speed (mph)	Travel Time (s/veh)	Avg Speed (mph)	Travel Time Diff, 2032 NA Mit (s/veh)	Avg Speed Diff, 2032 NA Mit (mph)	Travel Time (s/veh)	Avg Speed (mph)	Travel Time (s/veh)	Avg Speed (mph)	Travel Time Diff, 2037 NA Mit (s/veh)	Avg Speed Diff, 2037 NA Mit (mph)
Segment 1	24th Ave S	NB	0.8	92.6	31.1	96.7	29.8	110.7	26.0	14	-3.8	97.9	29.4	112.1	25.7	14.2	-3.7
		SB	0.8	93.3	30.9	114.9	25.1	156.2	18.4	41.3	-6.7	116.3	24.8	170.8	16.9	54.5	-7.9
Segment 2	SW 148th St/SR 518	EB	0.2	60.6	11.9	79.7	9.0	81.3	8.9	1.6	-0.1	66.3	10.9	71.2	10.1	4.9	-0.8
		WB	0.2	94.9	7.6	77.6	9.3	80.5	8.9	2.9	-0.4	113.9	6.3	89.8	8.0	-24.1	1.7
Segment 3	DMMD	NB	0.1	11.3	31.9	11.8	30.5	18.0	20.0	6.2	-10.5	12.0	30.0	18.2	19.8	6.2	-10.2
		SB	0.1	9.7	37.1	10.0	36.0	24.2	14.9	14.2	-21.1	10.1	35.6	28.7	12.5	18.6	-23.1
Segment 4	S 154th St	EB	0.2	25.8	27.9	27.9	25.8	28.0	25.7	0.1	-0.1	27.8	25.9	27.9	25.8	0.1	-0.1
		WB	0.2	37.2	19.4	56.3	12.8	59.5	12.1	3.2	-0.7	66.8	10.8	71.3	10.1	4.5	-0.7
Segment 5	SR 99	NB	0.3	80.3	13.4	188.0	5.7	181.2	6.0	-6.8	0.3	164.6	6.6	187.5	5.8	22.9	-0.8
		SB	0.3	86.0	12.6	168.7	6.4	200.6	5.4	31.9	-1	184.9	5.8	193.7	5.6	8.8	-0.2
Segment 6	51st Ave S	NB	0.1	25.2	14.3	29.7	12.1	33.4	10.8	3.7	-1.3	46.1	7.8	50.2	7.2	4.1	-0.6
		SB	0.1	15.5	23.2	15.5	23.2	15.5	23.2	0	0	15.6	23.1	15.6	23.1	0	0
Segment 7	SW 160th St	EB	0.5	79.4	22.7	140.0	12.9	168.9	10.7	28.9	-2.2	149.5	12.0	173.5	10.4	24	-1.6
		WB	0.5	71.4	25.2	160.2	11.2	136.0	13.2	-24.2	2	242.5	7.4	144.0	12.5	-98.5	5.1
Segment 8	International Blvd	NB	1.1	221.6	17.9	503.6	7.9	804.3	4.9	300.7	-3	618.6	6.4	900.8	4.4	282.2	-2
		SB	1.1	264.8	15.0	570.9	6.9	465.7	8.5	-105.2	1.6	646.4	6.1	678.5	5.8	32.1	-0.3
	S 170th St	EB	0.1	62.0	5.8	55.0	6.5	61.4	5.9	6.4	-0.6	61.4	5.9	65.6	5.5	4.2	-0.4
		WB	0.1	14.7	24.5	10.5	34.3	9.4	38.3	-1.1	4	10.8	33.3	9.6	37.5	-1.2	4.2
Segment 9	S Kent Des Moines Rd	EB	0.4	156.0	9.2	128.6	11.2	131.4	11.0	2.8	-0.2	126.0	11.4	157.1	9.2	31.1	-2.2
		WB	0.4	100.1	14.4	247.5	5.8	229.6	6.3	-17.9	0.5	345.7	4.2	307.2	4.7	-38.5	0.5

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6. Freeway Operations Analysis

Freeway operations analysis was conducted in two phases using VISSIM and Highway Capacity Software (HCS). The study area for the freeway operations matched that analyzed for the existing conditions. Background improvement projects were incorporated into the modeling based on analysis conducted in previous studies and additional data collected from WSDOT data sources.

6.1 Future Conditions HCS Analysis

Extents of the HCS analysis focused on I-5, I-405, and SR 518 matching the extents analyzed in the existing conditions. Figure 3 shows the extents of the HCS analysis. Segmentation of the corridors was developed with input from WSDOT.

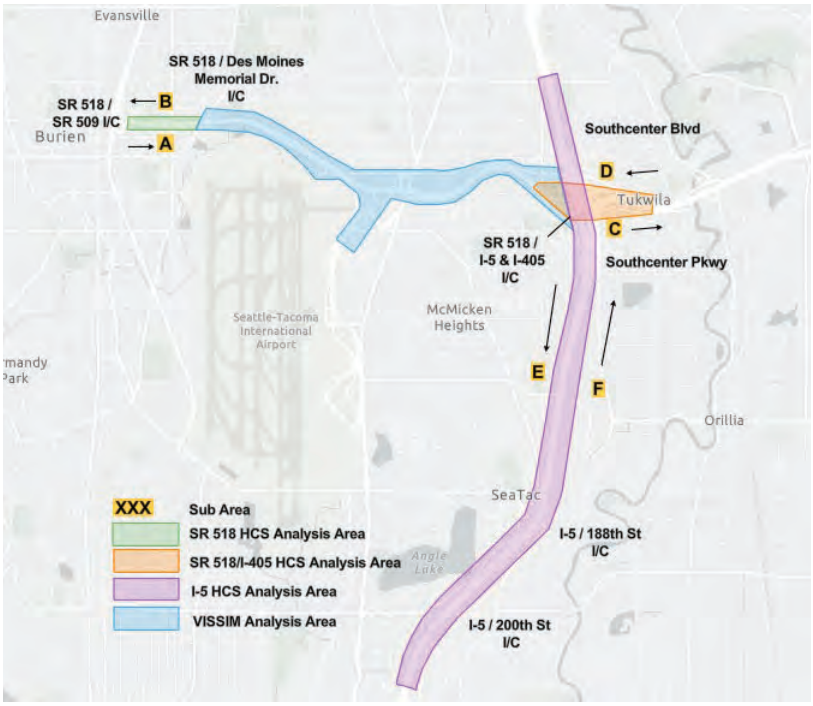


Figure 3: SAMP HCS Study Area Extent

6.1.1 Improvement Projects and Boundary Conditions

Completion of the SR 509 Stages 1B and 2 extensions will result in volume shifts and reduced congestion on the I-5 corridor. The 2018 SR 509 NEPA Re-Evaluation forecasted average speeds on southbound I-5 between I-405 and S 200th Street to be 44 mph in 2045 with completion of the SR 509 Stage 2 extension. Speed, capacity, and demand adjustment factors were modified from the assumptions used in the existing conditions to match the expected future improvements on southbound I-5 in PM peak hour. HCS speeds and densities show improvement in the 2032/2037 No Action and Proposed Action scenarios compared to the existing speed and densities, however, the 2032/2037 No Action and Proposed Action forecasted demand volumes still exceed the capacity calculated by HCS and therefore all southbound I-5 segments exceed the LOS D standard.

Completion of the I-405 Express Toll Lanes from Tukwila to I-90 will also provide speed and density improvements to northbound I-405. Southbound I-405 does not see the same benefit as northbound I-405 in the NTP study area because the SR 518/I-5/I-405 interchange still acts as a constraining factor for southbound I-405 similar to how it operates as a constraining factor for eastbound SR 518. I-405 northbound is expected to have a speed of approximately 35-45 mph immediately east of I-5 before Tukwila Parkway.

The PM peak hour HCS results show the Proposed Action will not cause any additional freeway segments to operate at a deficient LOS beyond those already operating at deficient levels in the No Action scenario. Incremental impacts to freeway speeds and densities from the Proposed Action to WSDOT's Highways of Statewide Significance will be focused on the SR 518 ramp terminals where NTP trips are highest and will benefit mainline operations by limiting queue spillback and providing additional vehicle capacity for future growth. The 2032/2037 No Action and Proposed Action HCS results are summarized in Table 12. Detailed HCS reports and freeway volumes are included in Attachment G.

Table 12: HCS Results Summary for PM Peak Hour

				Existing			2032 NA			2032 PA			2037 NA			2037 PA		
Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)
Sub Area A – SR 518 EB	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	B	56.1	13.5	C	46.0	21.1	C	45.2	22.0	C	45.4	22.9	C	44.4	24.4
	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	B	64.0	17.0	C	63.0	20.4	C	62.9	20.7	C	62.1	22.3	C	61.5	23.2
Sub Area B – SR 518 WB	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	C	60.0	19.7	C	57.2	26.0	D	55.9	27.9	D	54.0	30.4	D	51.4	33.8
	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	B	50.5	23.6	C	50.4	29.9	C	50.4	31.2	C	50.2	33.1	C	50.2	35.0
Sub Area C – SR 518 EB /I-5 & I-405 NB	C1	EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	E	38.8	38.0	E	35.3	43.7	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A[1] (Skipped)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add)[2]	F	34.5	45.0	F	44.5	45.0	F	44.5	45.0	F	44.5	45.0	F	44.5	45.0
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add)[2]	F	34.5	45.0	F	44.5	45.0	F	44.5	45.0	F	44.5	45.0	F	44.5	45.0
Sub Area D – SR 518 WB/ I-5 & I-405 SB	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop)[2]	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.8	83.2	F	26.3	83.2	F	26.4	82.9	F	26.7	81.7	F	26.8	81.4
	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
	D5	WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	Basic (Add)	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0	F	34.5	45.0
Sub Area E – I-5 SB	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge[2,3]	E	39.0	35.8	E	39.0	39.5	E	39.0	40.0	E	39.0	40.6	F	39.0	31.5
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop)[2]	E	39.0	35.1	E	39.0	39.4	E	39.0	39.4	E	39.0	40.1	F	20.6	69.5
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	E	39.0	37.4	F	20.0	71.9	F	20.0	71.9	F	20.0	71.9	F	20.0	71.9
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add)[2]	F	27.7	49.8	F	18.1	76.6	F	18.1	76.6	F	18.0	76.8	F	18.0	76.8
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge[2]	F	24.3	63.3	F	23.9	64.4	F	23.9	64.4	F	23.8	64.6	F	23.8	64.6
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	Basic[2]	F	27.4	58.7	F	39.5	45.0	F	39.5	45.0	F	39.5	45.0	F	39.5	45.0
	E7	SB I-5 at 188th St SB Off Ramp Diverge Area	Diverge[2]	F	27.0	57.9	F	50.3	28.2	F	50.3	28.2	F	50.1	28.4	F	50.1	28.4
	E8	SB I-5 from 188th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic[2]	F	16.5	79.5	F	50.8	27.5	F	50.9	27.3	F	51.4	26.3	F	51.4	26.2
	E9	SB I-5 from Lane Reduction Point to 188th St SB On Ramp	Basic[2]	F	19.9	77.9	F	22.7	71.9	F	22.7	71.9	F	22.7	71.9	F	22.7	71.9
	E10	SB I-5 at 188th St SB On Ramp Merge Area	Merge[2]	F	31.6	55.7	F	57.3	33.1	F	57.3	33.1	F	57.1	33.8	F	57.0	33.8
	E11	SB I-5 from 188th St SB On Ramp Merge Area to 200th St SB Off Ramp Diverge Area	Overlap[2]	F	29.4	58.7	F	57.3	33.1	F	57.3	33.1	F	57.1	33.8	F	57.0	33.8
	E12	SB I-5 at 200th St SB Off Ramp Diverge Area	Diverge[2]	F	29.4	58.7	F	60.0	31.1	F	60.0	31.1	F	59.8	31.2	F	59.7	31.2
	E13	SB I-5 from 200th St SB Off Ramp to 200th St SB On Ramp	Basic[2]	F	23.0	70.0	F	32.0	51.6	F	33.4	49.5	F	33.4	48.9	F	34.4	47.5
	E14	SB I-5 at 200th St SB On Ramp Merge Area	Merge[2]	F	31.3	58.0	F	32.3	56.3	F	32.5	55.8	F	32.6	55.6	F	33.0	55.1
Sub Area F – I-5 NB	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge[2]	C	61.3	24.5	C	61.7	21.3	C	61.7	21.7	C	61.7	20.5	C	61.7	20.9
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic[2]	C	61.7	22.9	C	63.9	19.5	C	63.7	19.9	C	64.4	18.4	C	64.2	18.8
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge[2]	C	59.1	26.2	C	59.4	24.0	C	59.3	24.5	C	59.5	23.3	C	59.5	23.7
	F4	NB I-5 from Military Rd NB On Ramp to 188th St NB Off Ramp	Basic[2]	C	59.2	26.0	C	61.5	23.2	C	61.1	23.7	C	62.1	22.3	C	61.7	22.8
	F5	NB I-5 at 188th St NB Off Ramp Diverge Area	Diverge[2]	D	62.5	24.6	C	62.4	22.8	C	62.3	23.2	C	62.2	22.3	C	62.3	22.6
	F6	NB I-5 from 188th St NB Off Ramp to 188th St NB On Ramp	Basic[2]	C	62.2	22.2	C	64.0	19.3	C	63.7	19.8	C	64.4	18.3	C	64.3	18.7
	F7	NB I-5 at 188th St NB On Ramp Merge Area	Merge[2]	D	58.2	29.1	D	58.3	27.6	D	58.2	28.2	D	58.1	27.5	D	58.0	28.1
	F8	NB I-5 from 188th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic[2]	D	55.5	30.4	D	57.7	27.8	D	56.9	28.7	D	58.1	27.3	D	57.3	28.3
	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge[2]	C	62.1	27.2	C	62.0	25.9	C	61.9	26.4	C	61.8	25.7	C	61.8	26.2
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic[2]	C	59.8	25.3	C	61.9	22.6	C	61.4	23.3	C	62.4	21.9	C	62.0	22.5
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Major Diverge[2,3]	C	57.1	26.5	C	57.1	24.5	C	57.1	25.0	C	57.1	23.9	C	57.1	24.4
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	B	65.0	16.3	B	65.0	14.6	B	65.0	14.8	B	65.0	13.6	B	65.0	13.8
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	B	65.0	13.4	B	65.0	12.3	B	65.0	12.4	B	65.0	11.5	B	65.0	11.7
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	B	60.5	19.6	B	60.9	17.8	B	60.8	17.9	B	60.9	17.1	B	60.9	17.3
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add)[2]	B	64.5	18.0	B	64.7	17.4	B	64.6	17.8	B	64.7	17.6	C	64.5	18.2
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge[2]	B	59.9	17.9	B	60.0	17.6	B	59.9	17.9	C	59.8	18.1	C	59.7	18.6

Note:
Distance rounded to nearest 10.

[1]- One-lane freeway mainline cannot be analyzed in HCS.

[2]- HOV lane ignored due to the analysis constraint of HCS.

[3]- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge checkbox checked. For major diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

[4]- WSDOT Level of Service Standard for State Routes is LOS D

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6.2 Future Conditions VISSIM Analysis

The VISSIM model included the SR 518 mainline as well as on and off-ramps along the corridor from the east half of the Des Moines Memorial Drive interchange to the west half of the SR 518/I-5/I-405 interchange. The same extents of the SR 518 corridor modeled in existing conditions were modeled for the 2032 and 2037 No Action and Proposed Action scenarios.

6.2.1 Improvement Projects and Boundary Conditions

Queuing conditions for the SR 518 off-ramps were replicated in the 2032 and 2037 No Action VISSIM models by incorporating queueing information from the intersection corridor analysis conducted in SimTraffic. This analysis showed two off ramps would likely have queue spillback to the SR 518 mainline if the existing ramp terminal intersection control was maintained. These two locations are discussed below:

- SR 518 Westbound Off-Ramp to S 154th Street: The westbound off-ramp to S 154th Street operates as a stop-controlled intersection for the northbound off-ramp approach with an existing LOS E which does not meet WSDOT's LOS standard. Without future improvements the westbound off-ramp would operate at LOS F in the 2032 and 2037 No Action conditions and would have queues continue to build that would impact westbound SR 518 mainline operations. A boundary condition was added to the VISSIM model at the end of the off-ramp to replicate queuing conditions observed in the No Action SimTraffic models.
- SR 518 Eastbound Off-Ramp to 51st Avenue S: The eastbound off-ramp to 51st Avenue S operates as a stop-controlled intersection for the eastbound off-ramp approach with an existing LOS C. Queues from the SimTraffic corridor model showed queues from the eastbound left turn movement could spill out of the existing storage and block throughput for the eastbound right turn movement. The right turn movement has forecasted volumes of 660 PM peak hour trips in the 2032 No Action and 690 PM peak hour trips in the 2037 No Action scenarios. When blocked by the eastbound left turn queue, the queue for the eastbound off-ramp would spill back to the gore point of the SR 518 mainline. Although this did not block any mainline lanes, it had a small impact on mainline operations because of vehicles slowing earlier than expected.

In addition to the off-ramp boundary conditions added to the VISSIM model, the boundary condition from eastbound SR 518 to northbound I-405 was adjusted to account for future planned improvements. The I-405 Renton to Bellevue Widening and Express Toll Lanes Project is expected to improve mainline speeds and throughput on northbound I-405 during the PM peak hour. This project would therefore also reduce the impact of the existing boundary condition included in the existing NTP SR 518 VISSIM model. However, discussion with WSDOT indicated that complete removal of the boundary condition would not be appropriate as the single lane from eastbound SR 518 to northbound I-405 would remain as-is today and would still have physical constraints associated with its curvature and the speeds at which drivers felt comfortable driving. To verify, throughput for the single lane from eastbound SR 518 to northbound I-405 was reviewed for all hours of a typical weekday using WSDOT's permanent counter data at NB I-405 Milepost 0.11. The data showed a 95th-percentile 15-minute flowrate of 470 vehicles across all hours of a typical weekday—equivalent to a flowrate of approximately 1,880 vehicles per hour. Using the 95th-percentile of throughput over an entire weekday as the basis for the future boundary condition would improve operations because it represents existing conditions where northbound I-405 congestion spillback has less impact on eastbound SR 518 operations outside of the PM peak hour. The boundary condition in the 2032 No Action VISSIM model was adjusted to replicate the 95th-percentile throughput

which resulted in an increase of the average speed at the eastern extents of the VISSIM model to approximately 32 mph for the 4-6 PM peak period. This represented an approximately 9 mph increase in the average speed at the eastern extents of the model compared to existing conditions (23 mph). Figure 4 summarizes the speed vs. volume plot at the eastern boundary condition using WSDOT data.

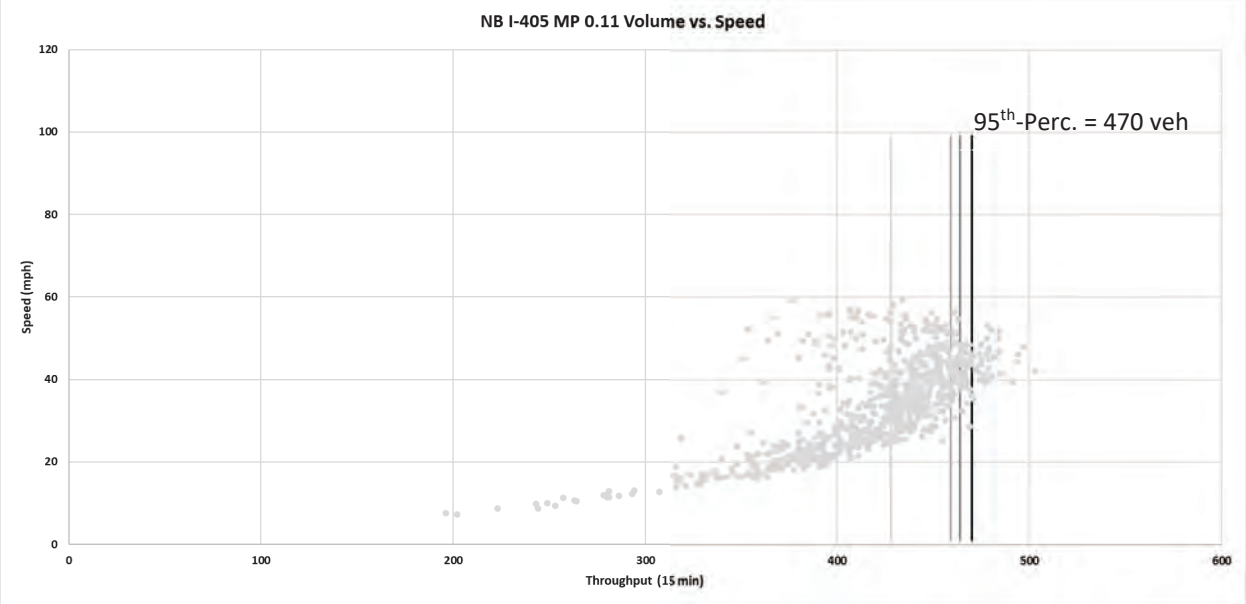


Figure 4: Eastbound SR 518 Boundary Condition Data

The future NTP SR 518 VISSIM models also included the addition of the Tukwila International Boulevard Station (TIBS) in the median of SR 518 east of the International Boulevard overpass. This station is planned to be constructed as part of Sound Transit's S1 bus rapid transit line. Preliminary conceptual striping plans were provided to change gore points for existing on and off ramps as well as include the extents of bus-only diverge and merge points in the model.

Corridor Travel Times

Travel time results were evaluated in the 2032 and 2037 VISSIM models for the same routes analyzed in the existing conditions. The travel time results are summarized in Tables 13 and 14.

ID		#	Distance [mi]	Description		2022 Existing [min]		Future Scenario									
								2032 No Action [min]		2032 Proposed Action [min]				2032 Proposed Action Mitigated [min]			
				From	To	4-5 PM	5-6 PM	4-5 PM	5-6 PM	4-5 PM	Δ No Action	5-6 PM	Δ No Action	4-5 PM	Δ No Action	5-6 PM	Δ No Action
Eastbound	EB1	11	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-5 Ramp	2.2	2.5	2.3	2.5	2.5	0.2	2.8	0.3	2.5	0.2	2.8	0.3
	EB2	12	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-405 Ramp	3.0	3.9	2.8	3.1	3.2	0.4	3.7	0.6	3.2	0.4	3.7	0.6
	EB3	13	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to SB I-5 Ramp	2.4	2.9	2.4	2.7	2.7	0.3	3.1	0.4	2.7	0.3	3.2	0.5
	EB4	14	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-5 Ramp	2.6	3.1	2.8	3.0	3.0	0.2	3.6	0.6	3.0	0.2	3.6	0.6
	EB5	15	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-405 Ramp	3.4	4.5	3.3	3.6	3.7	0.4	4.6	1.0	3.7	0.4	4.6	1.0
	EB6	16	1.7	NB NAE On Ramp from S 160th Street	EB SR 518 to SB I-5 Ramp	2.8	3.5	2.9	3.2	3.2	0.3	3.9	0.7	3.2	0.3	3.9	0.7
	EB7	17	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-5 Ramp	1.9	2.2	2.2	2.2	2.2	0.0	2.3	0.1	2.2	0.0	2.3	0.1
	EB8	18	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-405 Ramp	2.5	3.1	2.5	2.6	2.7	0.2	2.8	0.2	2.7	0.2	2.8	0.2
	EB9	19	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to SB I-5 Ramp	1.9	2.2	2.1	2.2	2.2	0.1	2.3	0.1	2.2	0.1	2.3	0.1
Westbound	WB1	21	1.3	SB I-5 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	1.7	1.7	1.7	1.7	3.0	1.3	5.8	4.1	1.7	0.0	1.7	0.0
	WB2	22	1.6	SB I-5 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	1.7	1.7	1.7	1.7	1.9	0.2	2.8	1.1	1.7	0.0	1.7	0.0
	WB3	23	1.7	SB I-5 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.1	2.1	2.1	2.1	2.6	0.5	4.2	2.1	2.1	0.0	2.1	0.0
	WB4	24	1.4	SB I-405 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	2.0	2.0	2.0	2.0	3.5	1.5	6.6	4.6	2.0	0.0	2.0	0.0
	WB5	25	1.7	SB I-405 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	2.0	2.0	2.0	2.0	2.4	0.4	3.5	1.5	2.0	0.0	2.0	0.0
	WB6	26	1.8	SB I-405 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.4	2.4	2.4	2.4	3.1	0.7	5.0	2.6	2.4	0.0	2.4	0.0
	WB7	27	1.1	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 Off Ramp to International Blvd. (Loop)	1.7	1.7	1.6	1.6	2.8	1.2	5.7	4.1	1.6	0.0	1.6	0.0
	WB8	28	1.4	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 s/o S. 154th Street Overpass	1.6	1.6	1.6	1.6	1.8	0.2	2.4	0.8	1.7	0.1	1.7	0.1
	WB9	29	1.5	WB SR 518 On Ramp from 51st Ave S.	SB NAE s/o S. 160th Street Overpass	2.1	2.1	2.0	2.0	2.6	0.6	4.0	2.0	2.0	0.0	2.0	0.0

Table 13: Future VISSIM Travel Times (2032)

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ID		#	Distance [mi]	Description		2022 Existing [min]		Future Scenario									
				From	To			2037 No Action [min]		2037 Proposed Action [min]				2037 Proposed Action Mitigated [min]			
						4-5 PM	5-6 PM	4-5 PM	5-6 PM	4-5 PM	Δ No Action	5-6 PM	Δ No Action	4-5 PM	Δ No Action	5-6 PM	Δ No Action
Eastbound	EB1	11	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-5 Ramp	2.2	2.5	2.4	2.6	2.9	0.5	3.3	0.7	2.9	0.5	3.3	0.7
	EB2	12	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to NB I-405 Ramp	3.0	3.9	2.9	3.3	3.7	0.8	4.2	0.9	3.7	0.8	4.2	0.9
	EB3	13	1.8	EB SR 518 e/o Ramp to SB NAE	EB SR 518 to SB I-5 Ramp	2.4	2.9	2.5	2.9	3.2	0.7	3.7	0.8	3.2	0.7	3.7	0.8
	EB4	14	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-5 Ramp	2.6	3.1	3.0	3.4	3.9	0.9	5.0	1.6	3.9	0.9	4.9	1.5
	EB5	15	1.8	NB NAE On Ramp from S 160th Street	EB SR 518 to NB I-405 Ramp	3.4	4.5	3.4	4.1	4.6	1.2	5.9	1.8	4.6	1.2	5.8	1.7
	EB6	16	1.7	NB NAE On Ramp from S 160th Street	EB SR 518 to SB I-5 Ramp	2.8	3.5	3.0	3.6	4.1	1.1	5.4	1.8	4.1	1.1	5.3	1.7
	EB7	17	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-5 Ramp	1.9	2.2	2.2	2.3	2.3	0.1	2.4	0.1	2.3	0.1	2.4	0.1
	EB8	18	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to NB I-405 Ramp	2.5	3.1	2.5	2.7	2.8	0.3	2.9	0.2	2.8	0.3	2.9	0.2
	EB9	19	1.3	EB SR 518 On Ramp from International Blvd.	EB SR 518 to SB I-5 Ramp	1.9	2.2	2.2	2.3	2.3	0.1	2.4	0.1	2.3	0.1	2.4	0.1
Westbound	WB1	21	1.3	SB I-5 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	1.7	1.7	2.8	5.3	4.4	1.6	7.6	2.3	1.7	-1.1	1.7	-3.6
	WB2	22	1.6	SB I-5 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	1.7	1.7	1.9	3.0	2.5	0.6	4.5	1.5	1.7	-0.2	1.7	-1.3
	WB3	23	1.7	SB I-5 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.1	2.1	2.5	4.3	3.5	1.0	6.1	1.8	2.1	-0.4	2.1	-2.2
	WB4	24	1.4	SB I-405 to WB SR 518 Ramp	WB SR 518 Off Ramp to International Blvd. (Loop)	2.0	2.0	3.2	6.4	5.3	2.1	9.8	3.4	2.0	-1.2	2.0	-4.4
	WB5	25	1.7	SB I-405 to WB SR 518 Ramp	WB SR 518 s/o S. 154th Street Overpass	2.0	2.0	2.2	3.8	3.3	1.1	6.4	2.6	2.0	-0.2	2.0	-1.8
	WB6	26	1.8	SB I-405 to WB SR 518 Ramp	SB NAE s/o S. 160th Street Overpass	2.4	2.4	2.9	5.2	4.4	1.5	8.2	3.0	2.4	-0.5	2.4	-2.8
	WB7	27	1.1	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 Off Ramp to International Blvd. (Loop)	1.7	1.7	2.6	5.3	4.2	1.6	6.7	1.4	1.7	-0.9	1.7	-3.6
	WB8	28	1.4	WB SR 518 On Ramp from 51st Ave S.	WB SR 518 s/o S. 154th Street Overpass	1.6	1.6	1.8	2.6	2.2	0.4	3.2	0.6	1.7	-0.1	1.7	-0.9
	WB9	29	1.5	WB SR 518 On Ramp from 51st Ave S.	SB NAE s/o S. 160th Street Overpass	2.1	2.1	2.5	4.1	3.4	0.9	5.4	1.3	2.0	-0.5	2.0	-2.1

Table 14: Future VISSIM Travel Times (2037)

Case: 25-7439, 08/10/2026, DktEntry: 45.3, (151 of 276), Page 394 of 674, (394 of 674)

The Port is proposing to construct a signal at the SR 518 westbound off-ramp to S 154th Street as mitigation (see Intersection #33 in Section 4.3.3). This signal will improve queuing conditions and prevent spillback of queues to the westbound SR 518 mainline. The boundary condition included in the No Action and Proposed Action models at this location was removed for the Proposed Action + Mitigation VISSIM models. Construction of the signal is expected to improve westbound travel times by up to 4.4 minutes in the 2037 PM peak hour compared to the 2037 No Action conditions.

The eastbound direction shows more congestion than westbound because of the existing and future bottlenecks at the SR 518/I-5/I-405 interchange. The single lane from eastbound SR 518 to northbound I-405 will remain and limit vehicle throughput as discussed earlier. This will cause congestion to spill back from the SR 518/I-5/I-405 interchange back to International Boulevard and NAE. Eastbound SR 518 mainline travel times from west of International Boulevard to the SR 518/I-5/I-405 interchange are expected to increase by less than 1 minute between No Action and Proposed Action in both 2032 and 2037. This increase is well within the current range of existing travel times (approximately 2-8 minutes). Eastbound travel times from the International Boulevard on ramp to the SR 518/I-5/I-405 interchange are expected to increase by less than 30 seconds. The travel time from S 160th Street to the SR 518/I-5/I-405 interchange will see the highest increase of travel time of approximately 1-2 minutes which is still within the current range of existing travel times (2-6 minutes).

Corridor Speeds

Speed-temporal maps for the entire VISSIM model extents were developed. These speed-temporal maps showed similar trends to the existing conditions with westbound showing near free-flow operations after improvements are implemented and eastbound being constrained by the existing SR 518/I-5/I-405 interchange. There is increased congestion near the eastbound on ramps from NAE and International Boulevard in the 2037 Proposed Action scenario beginning around 4:30 PM, however, this merging congestion is expected to nearly subside by 6 PM and is therefore only expected to occur during peak-of-peak time periods. As noted previously, this congestion is only expected to add 0-1 minutes of travel time for trips on eastbound SR 518 and 1-2 minutes of travel time for trips on northbound NAE. Figures 5 and 6 show the comparison of No Action and Proposed Action scenarios for 2032 and 2037.

Figure 5: 2032 and 2037 SR 518 Eastbound Speed-Temporal Maps

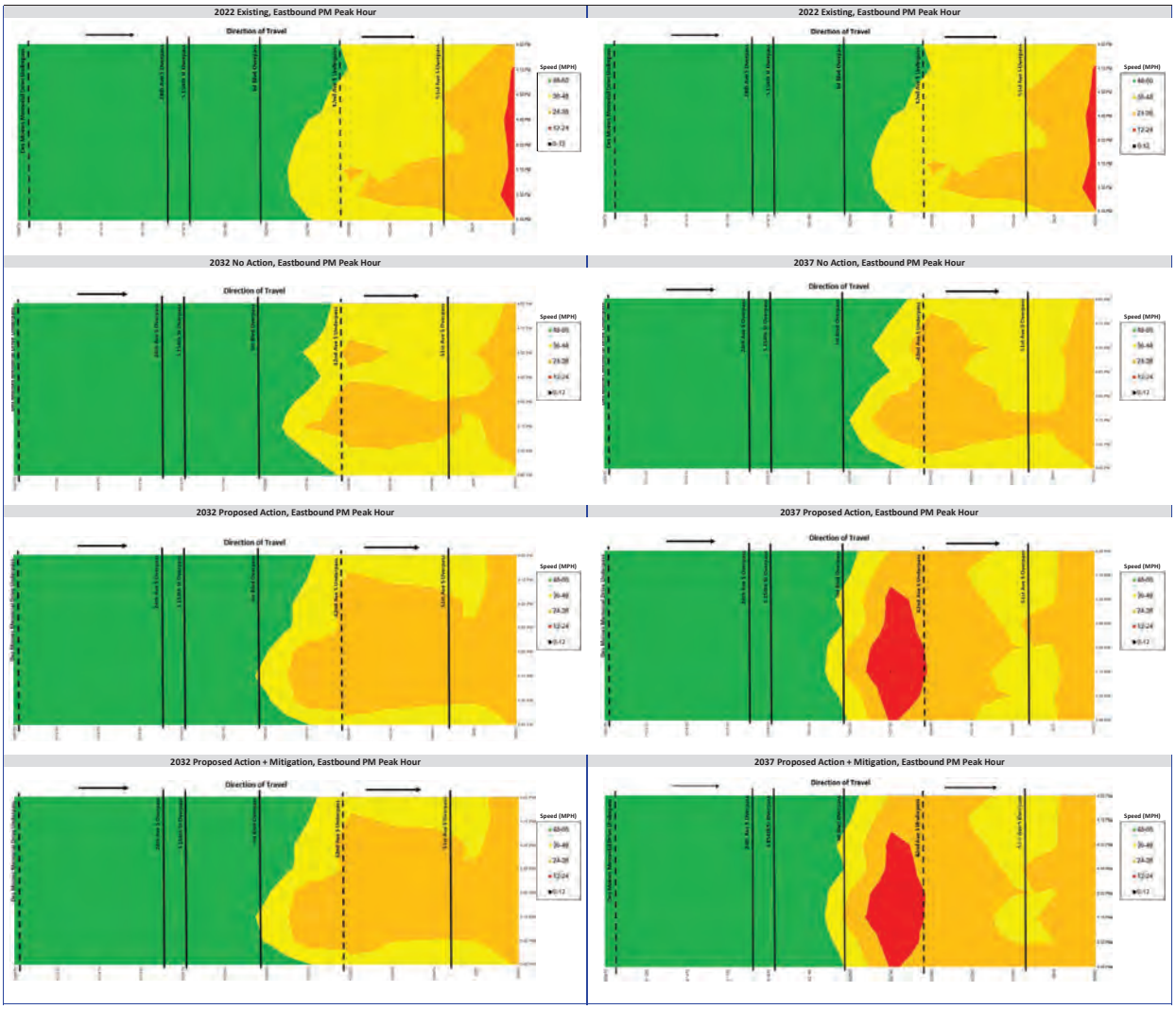
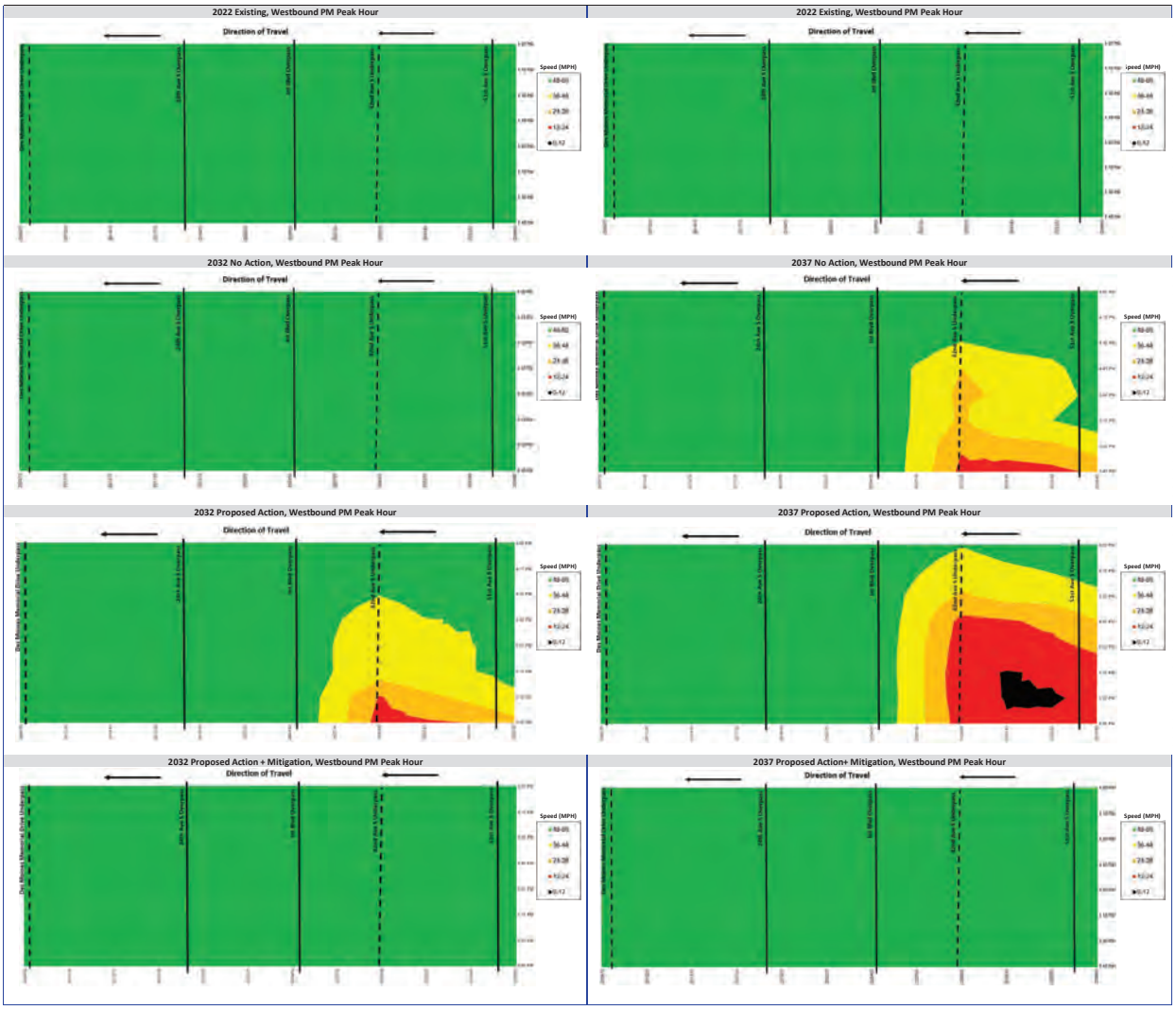


Figure 6: 2032 and 2037 SR 518 Westbound Speed-Temporal Maps



7. Mitigation Implementation

The Port is committed to implementing the mitigation triggered by the NTPs identified in this report. The mitigation proposed by the Port for each intersection will be required to be constructed prior to completion of the NTPs in 2032 even if intersections are not projected to fail mobility standards until 2037. The forecasts and mitigation in this report have been prepared so they can be used by local agencies and jurisdictions in their own planning efforts as well as a basis for mitigation coordination. The structure of the mitigation agreements between the Port and the jurisdictions and agencies identified in this report will be formalized through a written agreement with each jurisdiction and agency. These agreements will be finalized prior to the issuance of the Finding of No Significant Impact/Record of Decision (FONSI/ROD) and will include the specific terms and mitigation requirements agreed to between the Port and the jurisdiction/agency.

The mitigation identified in this report can be separated into two categories—direct impacts by the NTPs that will be mitigated through capital improvements (shown in red in Figures 7 and 8) referred to as Category 1 locations in Section 4, and indirect or proportional impacts to facilities that are expected to fail mobility standards in the No Action condition prior to additional trips from NTPs (shown in yellow in Figures 7 and 8) referred to as Category 2 locations in Section 4. Details on the Port's proposed mitigation approach for these locations are summarized in Sections 7.1 and 7.2.

Figure 7 and Figure 8 summarize the mitigation type for each surface transportation facility in the 2032 and 2037 analysis years, respectively.

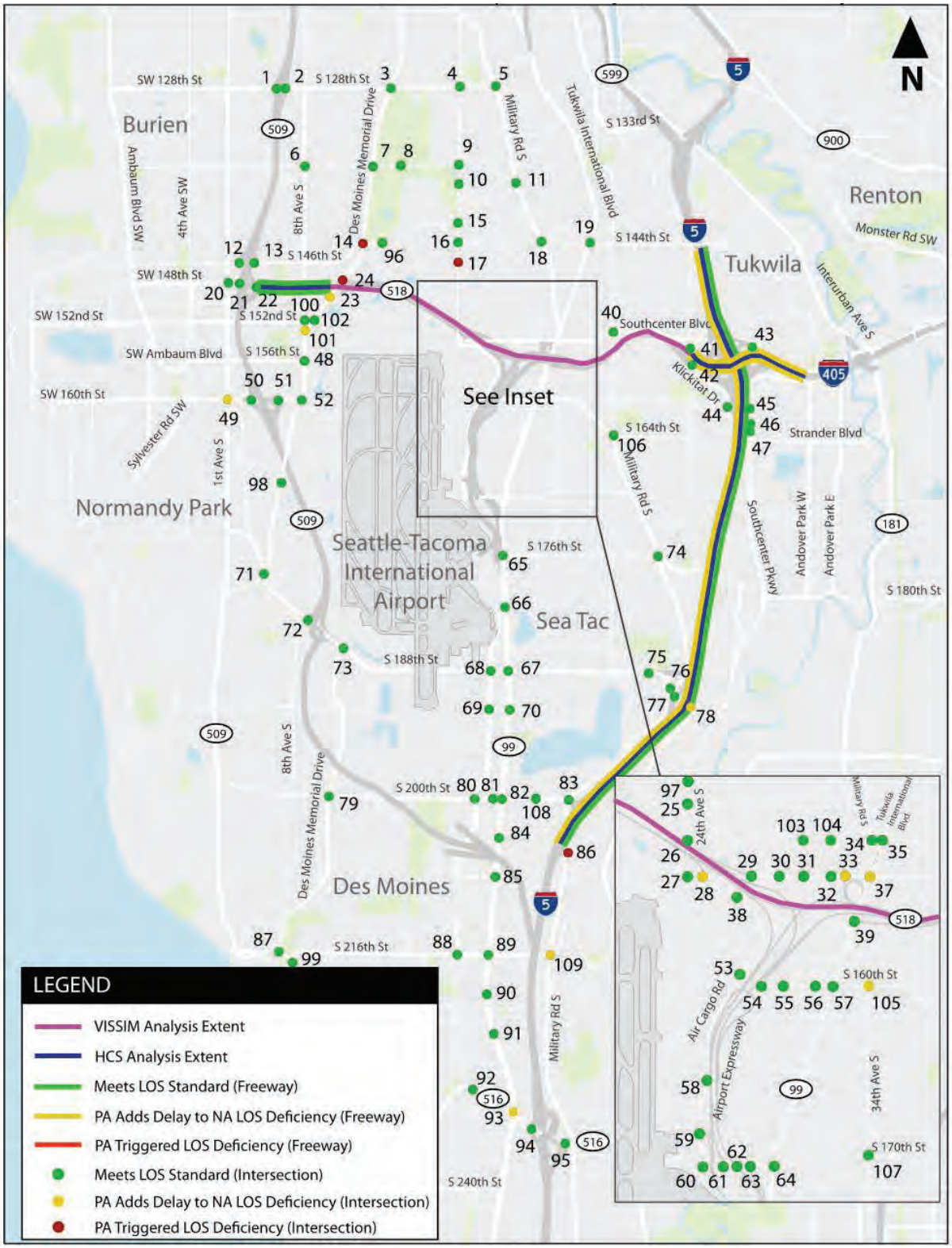


Figure 7: 2032 Surface Transportation LOS Summary

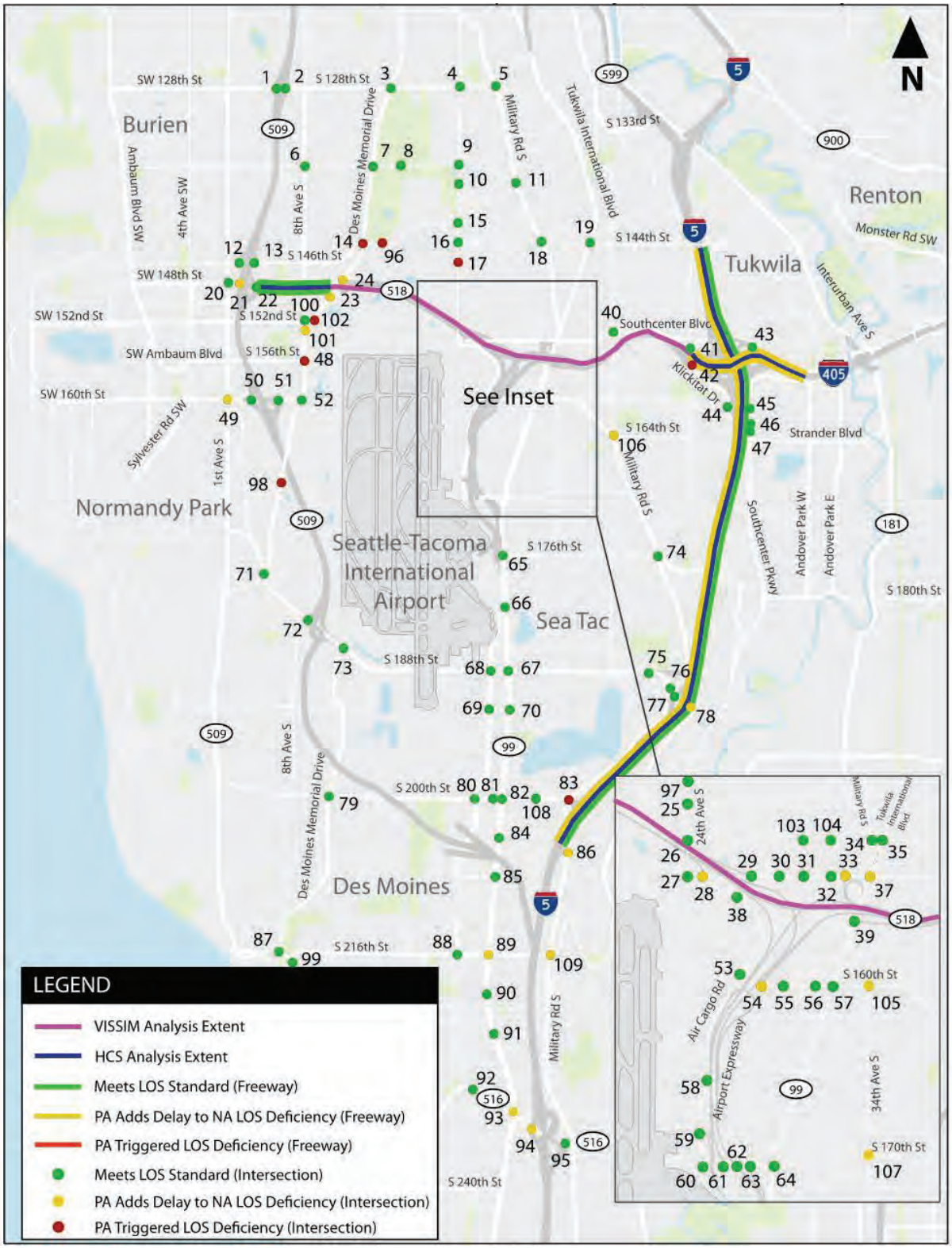


Figure 8: 2037 Surface Transportation LOS Summary

7.1 Category 1 - Direct Impacts

The NTPs have a direct impact on intersections failing local mobility standards at ten locations. The Port's proposed mitigation for each of these intersections are summarized by agency or jurisdiction in the following sections.

7.1.1 City of Burien

98: Des Moines Memorial Dr./S 168th Street – NTPs will add trips to the intersection and will require improvements to maintain a LOS C standard. Preliminary review of potential mitigation options identified signalizing the intersection as the most feasible option. Westbound channelization improvements would include construction of a dedicated left turn lane and a through-right lane. All left turns would be permissive. The Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation.

7.1.2 City of Des Moines

The NTPs do not trigger any Category 1 impacts at City of Des Moines study intersections.

7.1.3 City of SeaTac

14: Des Moines Memorial Dr./S 144th Street – NTPs will add trips to the intersection and will require improvements to the existing signalized intersection to maintain a LOS E standard. Preliminary review of potential mitigation options identified channelization improvements to the existing intersection that would widen east leg to provide a westbound left turn lane and widen the south leg to provide a northbound right turn lane. Additional modifications to the traffic signal to eliminate split phasing are also proposed. The mitigation will be designed to be consistent with the City of SeaTac's long-term improvement plan ST-024 from the City's Transportation Master Plan. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.

17: 24th Avenue S/S 146th Street - NTPs will add trips to the intersection and will require improvements to the existing unsignalized intersection to maintain a LOS D standard. Preliminary review of potential mitigation options identified constructing a new signal as the most feasible mitigation option. The signal would utilize the existing channelization and would include a leading protected northbound left turn phase. Design for the proposed signal will include evaluation of required intersection footprint and sight distances to implement Flashing Yellow Arrows.

48: 8th Avenue S/S 156th Street – NTPs will add trips to the intersection and require improvements to the existing signal to maintain a LOS E standard. Preliminary review of potential mitigation options identified shifting southbound lanes west to add a dedicated southbound left and right turn lanes and a dedicated northbound left turn lane. With the additional turn lanes, the signal timing can be modified to utilize standard NEMA phasing with protected left turns on each approach. Design for the proposed signal will include evaluation of required intersection footprint and sight distances. Mitigation analysis did not include NBL and SBL flashing yellow arrows because of high northbound and southbound volume-to-capacity ratios as a conservative assumption. Inclusion of flashing yellow arrows would allow the intersection to operate more efficiently than what is identified in this report. Feasibility of flashing yellow

arrows can be evaluated prior to design and construction of the signal. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation.

96: 16th Avenue S/S 144th Street – NTPs will add trips to the intersection and will require improvements to the existing unsignalized intersection to maintain a LOS D standard. Preliminary review of potential mitigation options identified constructing an eastbound right turn lane as the most feasible mitigation option. Frontage improvements (including street and pedestrian lighting) will be designed to current City standards and in coordination with the City's planned improvement project ST-024.

102: S 152nd Street/Des Moines Memorial Dr. - NTPs will add trips to the intersection and require improvements to the existing unsignalized intersection to maintain a LOS E standard. The City of Burien has identified a potential roundabout to be constructed at the triangle formed by Des Moines Memorial Drive, 8th Avenue S, and S 152nd Street to consolidate the three intersections. No funding for design or construction was identified in the City of Burien's 2023-2028 TIP. The Port proposes constructing the roundabout that would consolidate the three intersections to mitigate LOS impacts. A single lane roundabout was analyzed for this analysis. The Westside Trail will be maintained or improved and no change in access would occur with the proposed mitigation. Future construction of roundabout will be designed to be compatible with the City of SeaTac's ST-029 improvement project as well. Construction of the roundabout to mitigate Category 1 impacts at intersection #102 would also eliminate the need for proportional mitigation for Category 2 impacts at intersection #101 in the City of Burien.

7.1.4 City of Tukwila

The NTPs do not trigger any Category 1 impacts at City of Tukwila study intersections.

7.1.5 WSDOT

24: SR 518 Westbound Off-Ramp/Des Moines Memorial Dr. – NTPs will add trips to the intersection and require improvements to the existing unsignalized intersection to maintain a LOS D standard. A preliminary ICE identified a roundabout as a feasible mitigation improvement. The roundabout would operate with a conceptual design of a single circulating lane, single lane northbound and southbound approaches, and a two-lane westbound approach. The Westside Trail will be replaced in-kind or improved and no change in access would occur with the proposed mitigation. Final design parameters, including those to accommodate the non-motorized trail on the east side of Des Moines Memorial Drive, will be validated in future analysis (ICE).

42: SR 518 Eastbound Off-Ramp/51st Avenue S – NTPs will add trips to the intersection and cause the intersection to exceed the LOS D standard. A preliminary ICE identified a signal as a feasible mitigation improvement until further analysis regarding the steep slopes near the intersection can confirm the feasibility of a single-lane roundabout. WSDOT declined constructed mitigation at the intersection and requested the cost of improvements be consolidated at other Category 2 intersections with higher delay impacts from NTP trips.

83: I-5 SB Ramps/Military Road S/S 200th Street – NTPs will add trips and increase delay to the intersection. Modifications to the existing signal timings could reduce the added average intersection delay to only 1.9 seconds per vehicle in the 2037 Proposed Actions, however the intersection would still operate at LOS E. Given the relatively small increase in delay from No Action to Proposed Action, WSDOT did not request

constructed mitigation at the intersection and noted signal timings will be optimized on regular intervals by WSDOT staff.

86: I-5 NB Ramps/Military Road S – NTPs will add trips and increase delay to the intersection. Modifications to the existing signal timings could completely mitigate the added delay for the 2032 Proposed Action Category 1 impact. NTPs would only add 1.2 seconds of average intersection delay per vehicle in the 2037 Proposed Action and would be a Category 2 impact. Given the relatively small increase in delay from No Action to Proposed Action, WSDOT did not request constructed mitigation at the intersection and noted signal timings will be optimized on regular intervals by WSDOT staff.

7.2 Category 2 - Proportional Impacts

The NTPs will add trips to many off-site intersections that are expected to fail LOS standards with or without the additional NTP trips. Outreach with local jurisdictions and agencies indicated that the Port would only be responsible for mitigating the delay caused by the NTPs for Category 2 impacts. Table 15 summarizes the Category 2 intersections by jurisdiction/agency and the proportionate share of future PM peak hour intersection volumes the NTP trips represent where a proportionate share payment was calculated. The Port is proposing to pay the equivalent 2037 percentage of design and construction costs for the Category 2 improvements assumed in the intersection analysis unless otherwise noted in the table for the cities of Burien, Des Moines, and SeaTac. The City of Tukwila does not have any Category 2 intersection impacts, therefore no mitigation is proposed. WSDOT requested that delay from NTP trips at intersections #21, 28, 37, 78, and 94 be consolidated through construction of Category 2 mitigation at intersections #23 and #33. The constructed Category 2 improvements will provide additional capacity beyond what is needed only to mitigate NTP trips at each intersection. This additional capacity will also accommodate future growth of volume on the highway system. Final review of proposed improvements at these locations will be reviewed through an ICE consistent with WSDOT Design Manual Chapter 1300 prior to design and construction.

Table 15: Category 2 Proposed Mitigation Summary

Jurisdiction/Agency and Intersection	2032 Port Proportionate Share	2037 Port Proportionate Share	Mitigation Method (Improvement)
City of Burien			
49 – 1st Ave S/SW 160th Street	1%	1%	Proportionate Share Payment of $15,000 (Corridor Improvements, TIP #22)
101 – 8th Ave S/Des Moines Memorial Dr	-	-	Constructed Improvements (Roundabout, See #102 Proposed Mitigation, Section 7.1.3)
City of Des Moines			
89 – Pacific Hwy S/S 216th St.	-	-	Consolidated Payment at Intersection #93
93 – Pacific Hwy S/SR 516	100 PM peak hour trips	135 PM peak hour trips	Per Trip Impact Fee totaling $1,032,940.35
City of SeaTac			
54 – Host Rd./S 160th St./SR 518 EB On-Ramp	-	-	Constructed Improvements (Signal)
101 – 8th Ave S/Des Moines Memorial Dr.	-	-	Constructed Improvements (Roundabout, See #102 Proposed Mitigation, Section 7.1.3)
105 – 34th Ave S/S 160th St	-	-	Constructed Improvements (Roundabout)
106 – Military Rd S/S 164th St/42nd Ave S	4%	4%	Proportionate Share Payment of $594,800 (Roundabout/Corridor, ST 116)
107 – 34th Ave S/S 170th St	-1%	1%	Proportionate Share Payment of $152,000 (Intersection/Corridor, ST 016)
109 – Military Rd S/S 216th St.	2%	2%	Proportionate Share Payment of $51,000 (Channelization, ST 140)
City of Tukwila			
No Category 2 Impacts	-	-	-
WSDOT			
21 – SR 509 SB Ramps/SW 148th St	3%	4%	Consolidated with Constructed Mitigation at Other Cat. 2 Intersections
23 – SR 518 EB Ramps/Des Moines Memorial Dr.	-	-	Constructed Improvements (Roundabout)
28 – SR 518 EB Ramps/S 154th St	1%	1%	Consolidated with Constructed Mitigation at Other Cat. 2 Intersections
33 – SR 518 WB Ramp (Loop)/S 154th St	-	-	Constructed Improvements (Signal)
37 – International Blvd/S 154th St	2%	2%	Consolidated with Constructed Mitigation at Other Cat. 2 Intersections
78 – NB I-5 Ramps/S 188th St	1%	1%	Consolidated with Constructed Mitigation at Other Cat. 2 Intersections
94 – SB I-5 Ramps/SR 516	3%	4%	Consolidated with Constructed Mitigation at Other Cat. 2 Intersections

Attachment A: WSP DTA Methods & Assumptions

SUSTAINABLE AIRPORT MASTER PLAN (SAMP)

Near Term Projects Traffic and Environmental Support

Dynamic Traffic Assignment (DTA) Modeling Documentation Summary

INTRODUCTION

The Port of Seattle is currently preparing an Environmental Review for the Sustainable Airport Master Plan (SAMP) Near Term Projects. The SAMP environmental team has determined that the most suitable traffic volume forecasts for use in the environmental review traffic analysis are those provided by the Dynamic Traffic Assignment (DTA) models developed as part of the recent WSDOT SR 518 Corridor Planning Study.

The DTA models from the SR 518 study were modified and updated to represent five distinct scenarios specific to the purposes of the SAMP environmental process (in order of model development):

- Existing 2019
- Future year 2027, with one airport terminal (No Action)
- Future year 2027, with two airport terminals (Proposed Action)
- Future year 2032, with one airport terminal (No Action)
- Future year 2032, with two airport terminals (Proposed Action)

The one airport terminal options reflect the main terminal only. The two airport terminal options include the main terminal and the proposed second airport terminal. The main terminal is referred to as terminal one (T1) and the proposed north terminal is referred to as terminal two (T2) within this document and preceding materials. The terminals' demand varies according to each scenario which is represented in the Terminal Traffic Forecasts as provided by the airport advance planning team.

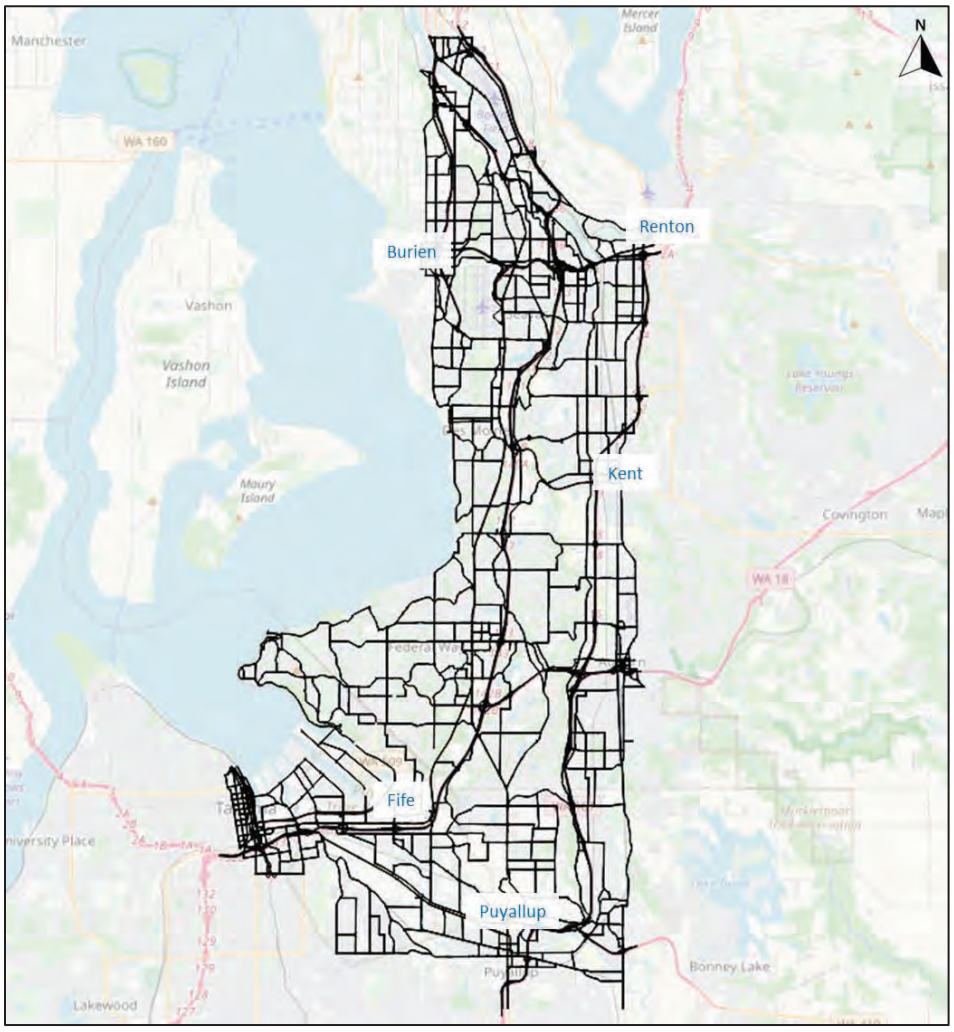
DTA MODEL BACKGROUND - PUGET SOUND GATEWAY PROGRAM

As part of the SR 167 and SR 509 Completion Projects for the Gateway Program, a dynamic traffic assignment (DTA) model based on INRO Dynameq software was developed to assess current and future traffic flow conditions for the I-5 corridor, SR 167 and SR 509 extensions, freeway ramp facilities, and nearby arterial intersections. This mesoscopic modeling platform was deemed suitable for the purposes of investigating corridor-level performance, route and pathway diversion, and the effects of segment-based facility tolling due to its blending of traffic assignment capabilities with the intersection/link operational analysis characteristics of traffic simulation tools thereby bridging the "gap" between the more commonly used macroscopic and microscopic paradigms. This model's base year was calibrated to 2015 traffic conditions. The model's network coverage and key freeway and arterial facilities are shown in Figure 1.

For the purposes of the Puget Sound Gateway Program, the future year models were developed to represent a near term horizon year of 2025 and a longer-range horizon of 2045. These two horizon years

were intended to capture an interim opening of Stage 1 elements and a full completion of Stage 2 elements, respectively.

Figure 1 DTA Model Network Coverage



EXISTING BASE YEAR (2019) MODEL REFINEMENTS

The original Puget Sound Gateway Program base year model was updated to reflect 2019 traffic conditions in the study area as shown in Figure 2. Key updates to the model network included

- Intersection and roadway geometry
- Model input demand
- Signal programs

The key screenlines used for volume comparison are shown in the Figure 3.

Figure 2 Study Area for Airport Traffic Influences

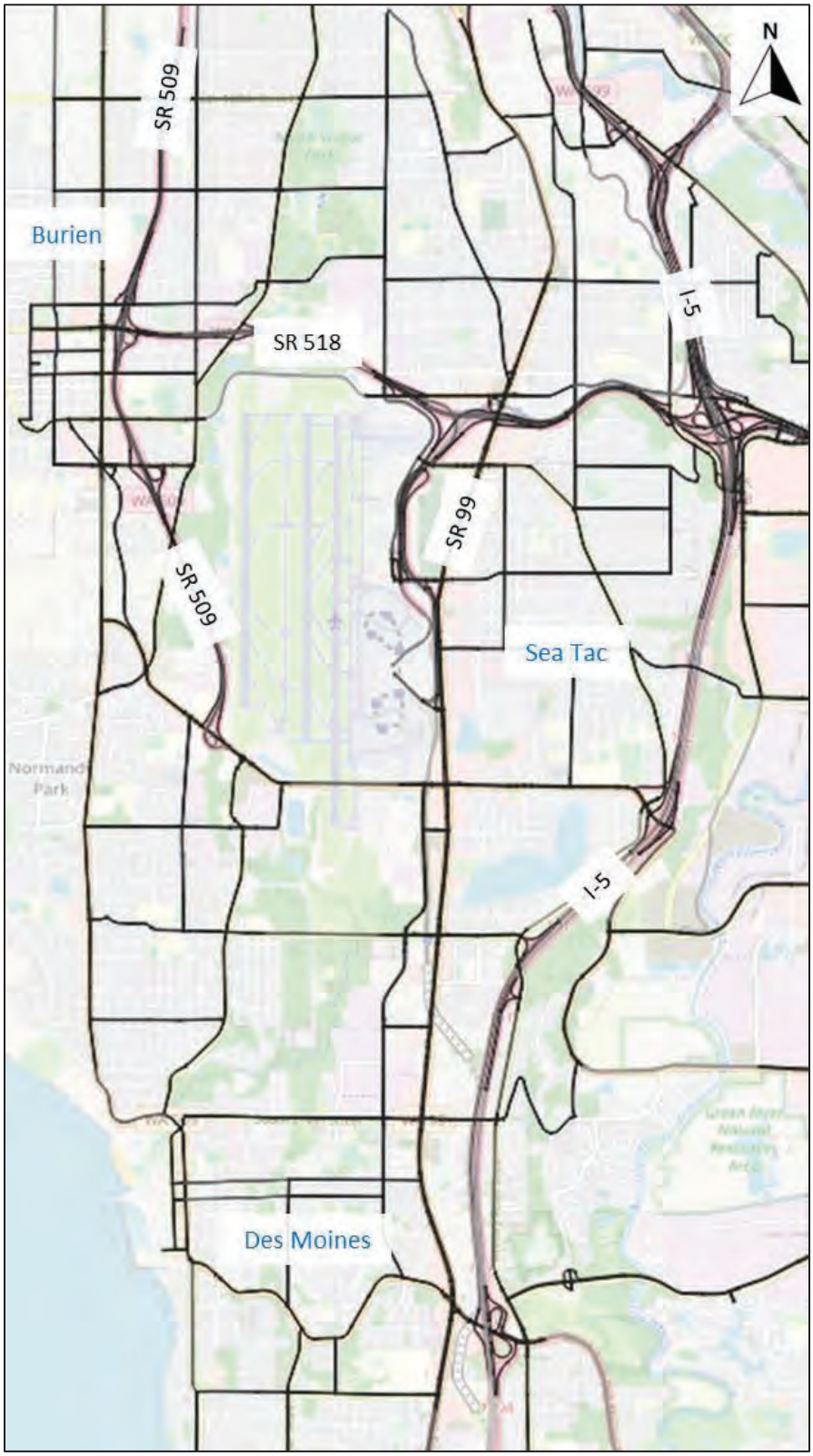
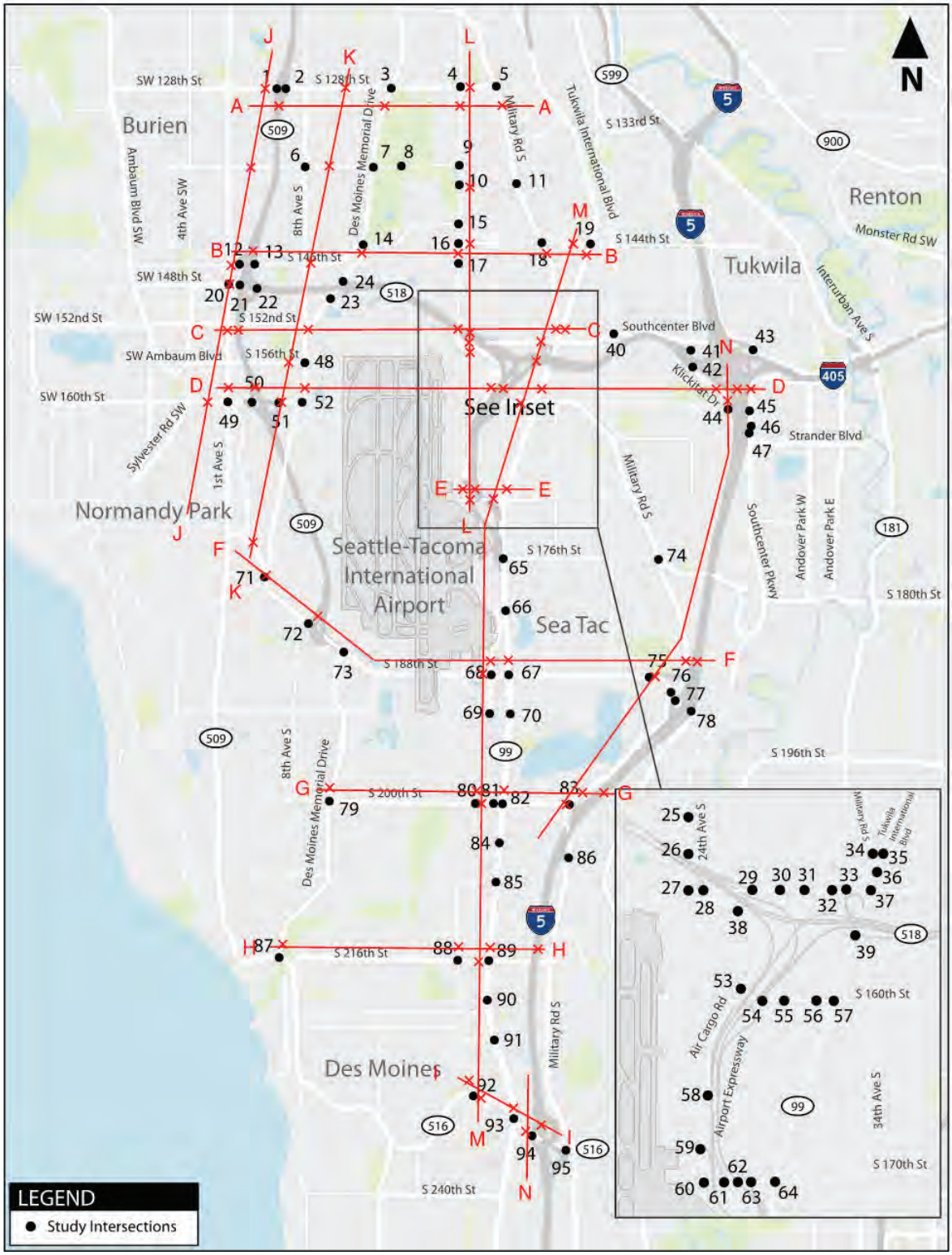


Figure 3 Screenlines and study intersections



DEMAND ADJUSTMENTS

The original DTA base year model reflected traffic demand calibrated to year 2015 conditions and showed lower demand of 50-55% along key screenlines when compared to 2019 traffic counts. In order to reflect more current 2019 traffic levels, the model input demand matrices were scaled by a factor of 1.25. The screenline volume comparison between the DTA model output and traffic counts is shown in Table 1.

Table 1 2019 Screenline PM peak hour volume comparison to 2019 traffic counts

NB/SB Screenlines		WSP's DTA Model	Concord's 2019 Count	Difference (to 2019 counts)	Difference (In Percent)
S of S 128th St	A	1075	1663	-588	-35%
	NB	387	759	-372	-49%
	SB	688	904	-216	-24%
N of S 144th St	B	1840	3366	-1526	-45%
	NB	668	1401	-733	-52%
	SB	1172	1965	-793	-40%
N of S 154th St/SR 518	C	1872	3846	-1974	-51%
	NB	566	1753	-1187	-68%
	SB	1306	2093	-787	-38%
N of S 160th St	D	5547	7658	-2111	-28%
	NB	2192	3488	-1296	-37%
	SB	3355	4170	-815	-20%
N of S 170th St	E	4955	6743	-1788	-27%
	NB	2669	3322	-653	-20%
	SB	2286	3421	-1135	-33%
N of S 188th St	F	4307	4455	-148	-3%
	NB	1393	1483	-90	-6%
	SB	2914	2972	-58	-2%
N of S 200th St	G	4990	4794	196	4%
	NB	988	1421	-433	-30%
	SB	3071	3152	-81	-3%
N of S 216th St	H	4059	4573	-514	-11%
	NB	988	1421	-433	-30%
	SB	3071	3152	-81	-3%
				Average	**-25%**

The above table shows that, on average, the screenline volumes between the updated DTA base year model and 2019 traffic count data were within a target validation threshold of 25 percent. This range is deemed reasonable to represent the scale of the study area, given the complexity and the breadth of the DTA model.

SUSTAINABLE AIRPORT MASTER PLAN (SAMP)

Sea-Tac's Sustainable Airport Master Plan (SAMP) is a long-term blueprint for airport development to meet the needs of the traveling public, while balancing three – often competing – elements: economic/financial, environmental and social impact. Four future year DTA models were created in line with the SAMP Near Term Projects environmental review horizon years and background terminal assumptions. These scenarios included the following:

- Future year 2027, with one airport terminal (No Action)
- Future year 2027, with two airport terminals (Proposed Action)
- Future year 2032, with one airport terminal (No Action)
- Future year 2032, with two airport terminals (Proposed Action)

FUTURE YEAR MODELS

As part of WSDOT's SR 518 Corridor Planning Study which was completed in mid-2020, the 2025 Gateway Program's Dynameq model was updated to represent 2030 traffic conditions. It encompassed the Sustainable Airport Master Plan (SAMP) elements, including the proposed second airport terminal (T2).

The future year regional growth rates were calculated based on Puget Sound Regional Council's (PSRC) Land Use Vision 2 (LUV 2). Table 2 and Table 3 show the future year growth rates for the study area and the entire model extends. For the purposes of demand changes in the DTA models to arrive at 2027- and 2032-year models, the Airport study area growth rate only is used.

Table 2 Future growth rates from PSRC LUV 2

Years	Growth rate per year
	Airport study area
2025 to 2030	2.5%
2030 to 2040	2.2%

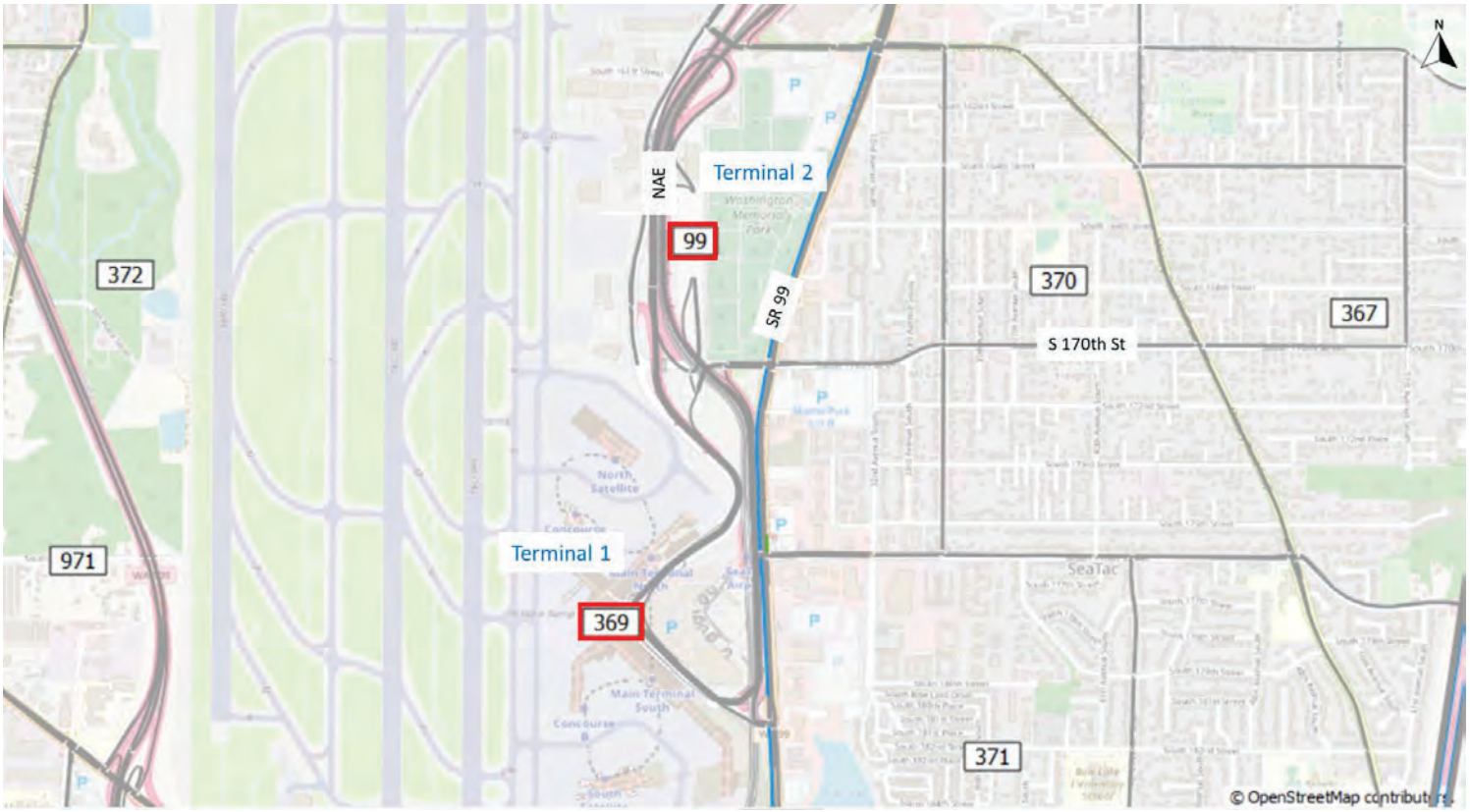
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Table 3 Growth rates from PSRC LUV 2

PSRC's Land Use Vision 2 (LUV.2) Trip Ends - by year, mode and PA format Sea-Tac Aviation Planning Services IDIQ									
	Year 2015						Total		
	Productions			Attractions					
	Passenger	Truck	Total	Passenger	Truck	Total	2015		Growth per year
Airport Study Area	374,393	16,813	391,206	459,550	11,678	471,228	862,434		
DTA Study Area	2,090,607	110,995	2,201,603	2,391,510	108,440	2,499,950	4,701,553		
	Year 2019 (Interpolated)						2019		2015 to 2019
Airport Study Area	408,887	17,783	426,670	501,754	12,493	514,246	940,916	9%	2.3%
DTA Study Area	2,299,104	114,709	2,413,814	2,598,031	111,762	2,709,792	5,123,606	9%	2.2%
	Year 2025						2025		2019 to 2025
Airport Study Area	460,627	19,238	479,865	565,059	13,715	578,775	1,058,639	13%	2.1%
DTA Study Area	2,611,849	120,281	2,732,130	2,907,812	116,743	3,024,556	5,756,686	12%	2.1%
	Year 2030 (Interpolated)						2030		2025 to 2030
Airport Study Area	507,676	22,521	530,197	642,732	15,979	658,711	1,188,908	12%	2.5%
DTA Study Area	2,826,175	130,131	2,956,306	3,144,322	125,957	3,270,279	6,226,585	8%	1.6%
	Year 2040						2040		2030 to 2040
Airport Study Area	601,775	29,087	630,861	798,077	20,507	818,583	1,449,445	22%	2.2%
DTA Study Area	3,254,827	149,831	3,404,659	3,617,341	144,384	3,761,725	7,166,384	15%	1.5%
Source: PSRC's Land Use Vision 2 based Trip Ends without Suppression Factors									

Within the DTA model, the airport zones 369 and 99 represent T1 and T2, respectively. The inbound and outbound demand levels for these zones were adjusted according to the SAMP terminal-level forecasts for each scenario.

Figure 4 Airport Centroids within DTA Model



FUTURE YEAR 2032 – ONE AIRPORT TERMINAL (NO ACTION)

The SR 518 Corridor Planning Study 2030 DTA model was used as a foundation for the Future 2032 SAMP DTA model reflecting terminal one (T1 only). Key assumptions for the 2032 SAMP one-terminal model include the following:

- SR 509 Extension Stage 1 and Stage 2 are complete (between I-5 and S 188th Street)
- The SAMP roadway elements are not included (since only terminal one is assumed)

The response time factor[1] was increased at the following locations in order to balance demand levels on critical arterials and achieve reasonable trip distribution patterns:

- Air Cargo Road southbound (between S 154th Street and S 170th Street)
- S 160th Street in both directions (between Air Cargo Road and NAE)
- S 154th Street eastbound (between SR 99 and 42nd Avenue S)
- NAE northbound off ramp at S 170th Street
- Tukwila International Boulevard in both directions (between Boeing Access Road and S 112th Street)
- East Marginal Way South in both directions (between S 130th Street and WA 599)

The overall 2030 model's demand matrices were increased by a factor of 1.15 to represent 2032 region-wide traffic demand. In addition, the airport zone for terminal one is adjusted to match the SAMP terminal volume projections. Table 4 and Table 5 show the volume comparison between existing year and 2032 (with one terminal) DTA models at the screenlines.

Table 4 2032 – One Terminal East-West screenline volume comparison to 2019 DTA model

EB/WB Screenlines		2019 DTA model	2032 One Terminal DTA model	% Diff to Existing volume (DTA)	
				Volume Difference	Percent
S of S 128th St	A	1075	1746	671	62%
	NB	387	621	234	60%
	SB	688	1125	437	64%
N of S 144th St	B	1840	1796	-44	-2%
	NB	668	845	177	26%
	SB	1172	951	-221	-19%
N of S 154th St/SR 518	C	1872	2056	184	10%
	NB	566	863	297	52%
	SB	1306	1193	-113	-9%
N of S 160th St	D	5547	7151	1604	29%
	NB	2192	2810	618	28%
	SB	3355	4341	986	29%
N of S 170th St	E	4955	6667	1712	35%
	NB	2669	2921	252	9%
	SB	2286	3746	1460	64%

[1] In Dynameq models, Response Time Factor is defined as a multiplication factor that is applied to the driver response time of the vehicle while it is on the link.

N of S 188th St	F	4307	4111	-196	-5%
	NB	1393	1259	-134	-10%
	SB	2914	2852	-62	-2%
N of S 200th St	G	4990	8397	3407	68%
	NB	988	670	-318	-32%
	SB	3071	3164	93	3%
N of S 216th St	H	4059	3834	-225	-6%
	NB	988	670	-318	-32%
	SB	3071	3164	93	3%
				Average	24%

Table 5 2032 – One Terminal North-South Screenline volume comparison to DTA model

NB/SB Screenlines		2019 DTA model	2032 One Terminal DTA model	% Diff to Existing volume (DTA)	
				Volume Difference	Percent
W of SR 509	J	5372	6643	1271	24%
	EB	2989	3103	114	4%
	WB	2383	3540	1157	49%
W of Des Moines Mem Pkwy	K	6372	7492	1120	18%
	EB	2853	3643	790	28%
	WB	3519	3849	330	9%
E of 24th Ave S/Air Cargo Rd	L	6319	6972	653	10%
	EB	2300	3106	806	35%
	WB	4019	3866	-153	-4%
W of SR 99/IB	M	12168	12709	541	4%
	EB	6913	6689	-224	-3%
	WB	5255	6020	765	15%
W of I-5	N	8480	9068	588	7%
	EB	4192	5179	987	24%
	WB	4288	3889	-399	-9%
				Average	13%

The overall average traffic demand growth within the study area for this 2032 DTA model compared to the existing (base year) model is approximately 18 percent. The traffic demand at terminal one is shown in Table 6. The Port of Seattle is conducting advanced planning on certain elements of the Near-Term Projects. As part of that effort, the Port prepared a Terminal Traffic Forecast. The Port's Terminal Traffic Forecast was compared to the DTA model's terminal traffic as a way of demonstrating the reasonableness of the DTA results.

The volumes shown in Table 6 demonstrate a reasonable match between the DTA model demand levels and those developed by the Port's advanced planning team.

Table 6 2032 – One Terminal Airport Demand Comparison

Terminal Entering	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	3455	3363	-93
Terminal Exiting	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	3455	3361	-14

FUTURE YEAR 2032 – TWO AIRPORT TERMINALS (PROPOSED ACTION)

The SR 518 Corridor Planning Study 2030 DTA model was again used to develop the Future 2032 model with two terminals. The key assumptions reflected in this model are:

- SR 509 Extension Stage 2 is complete
- The SAMP roadway elements are included
- The proposed roundabout on S 170th Street (to/from the airport loop roadway) is operational
- North Airport Access realignment and reconfiguration
- Air Cargo hook ramp to SB NAE (north of S 160th Street)

The updates incorporated into the 2032 One Terminal DTA model were carried into the Two Terminal DTA model. Similarly, the overall SR 518 Study 2030 model demand matrices were increased by a factor of 1.15 to achieve 2032 regional traffic demand levels. The airport zone traffic volume (as shown in Figure 4) are adjusted to match the SAMP terminal demand forecast. Table 7 and Table 8 show the volume comparison between existing year and the 2032 DTA model with two terminals at the screenline level.

Table 7 2032 – Two Terminals East-West screenline volume comparison to 2019 DTA model

EB/WB Screenlines		2019 DTA model	2032 Two Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
S of S 128th St	A	1075	1738	663	62%
	NB	387	647	260	67%
	SB	688	1091	403	59%
N of S 144th St	B	1840	1795	-45	-2%
	NB	668	795	127	19%
	SB	1172	1000	-172	-15%
N of S 154th St/SR 518	C	1872	1999	127	7%
	NB	566	786	220	39%
	SB	1306	1213	-93	-7%
N of S 160th St	D	5547	7049	1502	27%
	NB	2192	2911	719	33%
	SB	3355	4138	783	23%
N of S 170th St	E	4955	5614	659	13%
	NB	2669	1915	-754	-28%
	SB	2286	3699	1413	62%
N of S 188th St	F	4307	4271	-36	-1%
	NB	1393	1324	-69	-5%
	SB	2914	2947	33	1%
N of S 200th St	G	4990	8202	3212	64%
	NB	8534	9848	1314	15%
	SB	10460	12387	1927	18%
N of S 216th St	H	4059	3714	-345	-8%

	NB	988	819	-169	-17%
	SB	3071	2895	-176	-6%
				Average	20%

Table 8 2032 – Two Terminals North-South Screenline volume comparison to 2019 DTA model

NB/SB Screenlines		2019 DTA model	2032 Two Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
W of SR 509	J	5372	6897	1525	28%
	EB	2989	3244	255	9%
	WB	2383	3653	1270	53%
W of Des Moines Mem Pkwy	K	6372	7489	1117	18%
	EB	2853	3514	661	23%
	WB	3519	3975	456	13%
E of 24th Ave S/Air Cargo Rd	L	6319	6957	638	10%
	EB	2300	2918	618	27%
	WB	4019	4039	20	0%
W of SR 99/IB	M	12168	12321	153	1%
	EB	6913	6195	-718	-10%
	WB	5255	6126	871	17%
W of I-5	N	8480	9012	532	6%
	EB	4192	4647	455	11%
	WB	4288	4365	77	2%
				Average	13%

The overall average traffic demand growth within the study area for the 2032 Two Terminal DTA compared to the existing (base year) model is approximately 16 percent.

The traffic demand at the two terminals is shown in Table 9 which also shows how the DTA model's traffic demand differs with respect to the Port's Terminal Traffic Forecast.

Table 9 2032 – Two Terminals Airport Demand Comparison

Terminal Entering	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	2161	2124	-37
Terminal 2: From SB/NB NAE, 170th (to T2)	1382	1395	13
Total	3543	3519	-24
Terminal Exiting	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	2161	2175	14
Terminal 2: From SB/NB NAE, 170th (to T2)	1382	1328	-54
Total	3543	3503	-40

The above table shows that the airport's entering traffic volume is lower than the Port's Terminal Traffic Forecast by only 24 vehicles per hour while the exiting volume is lower by roughly 40 vehicles.

FUTURE YEAR 2027 – ONE AIRPORT TERMINAL (NO ACTION)

The 2032 DTA one terminal model was used as the basis for developing the 2027 DTA model with one terminal. Key assumptions for this updated model included the following:

- SR 509 Extension Stage 1 (only to 24th/28th Ave S) is complete
- The airport terminal elements remain the same as in existing year

The 2032 one terminal model demand was reduced by a factor of 0.95 to reflect a 2027 horizon year. The airport zones were further modified to match the SAMP forecasts specifically entering and exiting the terminal. Table 10 and Table 11 show the volume comparison between the existing (base year) DTA model and the 2027 DTA one terminal model at the targeted screenlines.

Table 10 2027 – One Terminal East-West screenline volume comparison to 2019 DTA model

EB/WB Screenlines		2019 DTA model	2027 One Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
S of S 128th St	A	1075	1504	429	40%
	NB	387	487	100	26%
	SB	688	1017	329	48%
N of S 144th St	B	1840	1487	-353	-19%
	NB	668	627	-41	-6%
	SB	1172	860	-312	-27%
N of S 154th St/SR 518	C	1872	1729	-143	-8%
	NB	566	671	105	19%
	SB	1306	1058	-248	-19%
N of S 160th St	D	5547	6311	764	14%
	NB	2192	2464	272	12%
	SB	3355	3847	492	15%
N of S 170th St	E	4955	6625	1670	34%
	NB	2669	3020	351	13%
	SB	2286	3605	1319	58%
N of S 188th St	F	4307	4158	-149	-3%
	NB	1393	1246	-147	-11%
	SB	2914	2912	-2	0%
N of S 200th St	G	4990	5638	648	13%
	NB	988	1082	94	10%
	SB	3071	2789	-282	-9%
N of S 216th St	H	4059	5014	955	24%
	NB	988	1619	631	64%
	SB	3071	3395	324	11%
				Average	12%

Table 11 2027 – One Terminal North-South Screenline volume comparison to 2019 DTA model

NB/SB Screenlines		2019 DTA model	2027 One Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
W of SR 509	J	5372	6340	968	18%
	EB	2989	2898	-91	-3%
	WB	2383	3442	1059	44%
W of Des Moines Mem Pkwy	K	6372	6818	446	7%
	EB	2853	3222	369	13%
	WB	3519	3596	77	2%
E of 24th Ave S/Air Cargo Rd	L	6319	6475	156	2%
	EB	2300	2639	339	15%
	WB	4019	3836	-183	-5%
W of SR 99/IB	M	12168	13805	1637	13%
	EB	6913	7104	191	3%
	WB	5255	6701	1446	28%
W of I-5	N	8480	8339	-141	-2%
	EB	4192	3649	-543	-13%
	WB	4288	4690	402	9%
				Average	8%

The overall average traffic demand growth within the study area for this DTA modeling scenario, as compared to the existing year model, was approximately 10 percent.

The traffic demand at the terminal in the DTA model and the Port's Terminal Traffic Forecast are shown in

Table 12.

Table 12 2027 – One Terminal Airport Demand Comparison

Terminal Entering	Port Terminal Forecast	DTA	Difference
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	3296	3139	-157
Terminal Exiting	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	3296	3239	-57

The above table shows traffic volumes entering the terminal in the DTA model (during the peak period) as slightly lower than the Port's Terminal Traffic Forecast by 157 vehicles with exiting volumes similarly lower by 57 vehicles. These differences were determined to be within a reasonable range of terminal demand targets.

FUTURE YEAR 2027 – TWO AIRPORT TERMINALS (PROPOSED ACTION)

As with the 2027 DTA one terminal model development, the 2032 DTA two terminal model described previously was used as a basis for the 2027 DTA model with two airport terminals. The following key assumptions were reflected in this model:

- SR 509 Extension Stage 1 is complete (only to 24th/28th Ave S) and no Stage 2 segment
- The SAMP roadway elements are included

The 2032 DTA two terminal model demand was reduced by a factor of 0.95 in order to represent 2027 traffic demand levels. The airport zones were further adjusted/modified to match the inbound and outbound SAMP terminal forecasts. Table 13 and Table 14 show the screenline volume comparison between the existing (base) year DTA model and 2027 DTA two terminal model.

Table 13 2027 – Two Terminals East-West screenline volume comparison to 2019 DTA model

EB/WB Screenlines		2019 DTA model	2027 Two Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
S of S 128th St	A	1075	1431	356	33%
	NB	387	489	102	26%
	SB	688	942	254	37%
N of S 144th St	B	1840	1490	-350	-19%
	NB	668	534	-134	-20%
	SB	1172	956	-216	-18%
N of S 154th St/SR 518	C	1872	1767	-105	-6%
	NB	566	586	20	4%
	SB	1306	1181	-125	-10%
N of S 160th St	D	5547	6560	1013	18%
	NB	2192	2651	459	21%
	SB	3355	3909	554	17%
N of S 170th St	E	4955	5737	782	16%
	NB	2669	1955	-714	-27%
	SB	2286	3782	1496	65%
N of S 188th St	F	4307	4053	-254	-6%
	NB	1393	1305	-88	-6%
	SB	2914	2748	-166	-6%
N of S 200th St	G	4990	5616	626	13%
	NB	988	1036	48	5%
	SB	3071	2807	-264	-9%
N of S 216th St	H	4059	4987	928	23%
	NB	988	1551	563	57%
	SB	3071	3436	365	12%

				Average	9%

Table 14 2027 – Two Terminals North-South Screenline volume comparison to 2019 DTA model

NB/SB Screenlines		2019 DTA model	2027 Two Terminal DTA model	% Diff to Existing volume (DTA)	
				Percent	Percent
W of SR 509	J	5372	6222	850	16%
	EB	2989	2907	-82	-3%
	WB	2383	3315	932	39%
W of Des Moines Mem Pkwy	K	6372	6778	406	6%
	EB	2853	2951	98	3%
	WB	3519	3827	308	9%
E of 24th Ave S/Air Cargo Rd	L	6319	6806	487	8%
	EB	2300	2782	482	21%
	WB	4019	4024	5	0%
W of SR 99/IB	M	12168	13302	1134	9%
	EB	6913	6463	-450	-7%
	WB	5255	6839	1584	30%
W of I-5	N	8480	8432	-48	-1%
	EB	4192	4518	326	8%
	WB	4288	3914	-374	-9%
				Average	8%

The overall average traffic demand growth reflected in the 2027 DTA two terminal model (network wide) compared to the existing year model was approximately 8 percent.

The traffic demand at the two terminals is shown in Table 15 and shows the difference between the DTA model traffic demand (inbound and outbound) and the Port's Terminal Traffic Forecast.

Table 15 2027 – Two Terminals Airport Demand Comparison

Terminal Entering	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	2071	2096	25
Terminal 2: From SB/NB NAE, 170th (to T2)	1324	1371	47
Total	3395	3467	72
Terminal Exiting	**Port Terminal Forecast**	**DTA**	**Difference**
Terminal 1: From SB/NB NAE (to T1, GT, Parking)	2071	2082	11
Terminal 2: From SB/NB NAE, 170th (to T2)	1324	1302	-22
Total	3395	3384	-11

The above table shows that the airport's entering traffic volume in the DTA model is higher than the Port's Terminal Traffic forecast by 72 vehicles and the exiting volume is lower by 11 vehicles. Both the entering and

exiting traffic levels reflected in the DTA model were considered well within a reasonable range of projected terminal demand.

Attachment B: Future Forecasting Methods & Assumptions

Memorandum

Client:	Port of Seattle
Project:	Sustainable Airport Master Plan (SAMP)
Subject:	2032/2037 Future Forecasting Methods & Assumptions
Submit to:	Steve Rybolt, Nic Longo, Tom Hooper; Port of Seattle
Copied to:	Sarah Potter, Landrum & Brown
Submitted by:	Steve Diebol, Tony Woody, Zach Wieben; Concord Engineering
Date:	June 21, 2023

1. Introduction and Overview

As part of the Sustainable Airport Master Plan (SAMP) environmental review for proposed Near-Term Projects (NTP), the Port of Seattle (Port) will be conducting traffic forecasting and operational analysis for future year scenarios. The Near-Term Projects (NTPs) being evaluated in the SAMP Environmental Assessment (EA) are expected to be constructed and occupied by 2032. Future analysis scenarios include the opening year (2032) and an additional horizon year five years after opening (2037). The purpose of this memo is to summarize the methods and assumptions used to develop the 2032 and 2037 traffic forecasts. Information about the Dynamic Traffic Assignment (DTA) models used (Section 2), local intersection improvements (Section 3), the post processing steps and procedures used to translate link data from the DTA models to turning movement forecasts (Section 4), the four-step process to determine additional trips from NTPs on the road network (Section 5), and the calculation of 2032 and 2037 turning movement forecasts (Section 6) are documented in the following sections.

2. Base DTA Models

INRO Dynameq DTA models were adapted from their original use as part of WSDOT's Gateway Program by the consulting firm WSP. The DTA model extends from Tacoma to south Seattle and includes major regional freeways and local arterial routes. DTA models are a mesoscopic modeling tool that attempt to predict future shifts in travel patterns based on congestion/delay without the detailed analysis required for microscopic simulation or deterministic operational analysis models. Figure 1 shows the transportation analysis zones (TAZs) included in the DTA model study area. The darker purple area shaded represents the Airport Study Area where more granular updates to the model were made to account for future roadway improvements constructed by the Port. WSP completed DTA modeling in 2020 using a 2019 base year, and their results will be reused for the updated analysis using 2022 traffic counts.

WSP updated the 2015 existing Gateway Program DTA model to 2019 through modifications to existing freeway and arterial facilities as well as increasing overall travel demand to calibrate to 2019 traffic counts conducted in the Airport Study Area. Calibration of the model was completed using North-South and East-West traffic demand screenlines within the Airport Study Area. The Port has since changed the opening year of the NTPs and 2nd Terminal from 2027 to 2032. Furthermore, since the previous analysis was completed a determination was made between the Port, WSDOT, and Concord to change the existing analysis year to 2022 as well to capture more recent roadway volumes and travel patterns which may have changed from pre-COVID conditions. Capacity of major freeway facilities on I-5, SR-509 and SR-518 remained the same between 2019 and 2022 except for the addition of an eastbound off-ramp from SR-518 to Des Moines Memorial Drive. The 2022 PM peak hour count at Des Moines Memorial Drive and the EB SR 518 ramps showed less than 40 eastbound off-ramp trips—or about 2% of total eastbound SR 518 volume. The opening of this low volume ramp is not expected to have had a significant impact on travel patterns between 2019 and 2022. Therefore, no changes to the previous 2019 DTA model were required.

The 2025 Gateway Program's DTA model was adapted for use by WSDOT's SR 518 Corridor Planning Study for the year 2030. WSP then increased the travel demand within the model by a 2.2% annual growth rate within the Airport Study Area derived from Puget Sound Regional Council's (PSRC) Land Use Vision 2 (LUV2) to arrive at a 2032 base model. A previous 2027 run of the DTA analysis will not be used for forecasting as the new opening year will be 2032. Forecasting for 2037 will use straight growth from the 2032 forecast, as DTA modeling for the 2032 conditions is representative of 2037 conditions with no major background improvement projects expected to be completed between 2032 and 2037 and regional and intercity travel patterns expected to remain the same. Previous DTA modeling of a 2027 scenario will be disregarded, as the new year of completion for NTPs is 2032. These updates as well as the calibration efforts and additional details are documented in WSP's *DTA Modeling Documentation Summary*. Improvement projects in the DTA models beyond the original existing year of 2019 are shown in Table 1. The study area of the DTA model is shown in Figure 1.

Table 1: DTA Model Improvement Projects

Improvement	2032 No Action	2032 Proposed Action
SR 518 EB Off Ramp to Des Moines Memorial Drive	X	X
SR 509 Extension Stage 1 and 2	X	X
SR 167 Extension	X	X
SR 18 Triangle Stage B	X	X
Second Terminal and Roadway Realignment/Reconfiguration Elements		X
Roundabout at S 170th Street to/from Airport Loop Roadway		X
Air Cargo Road Hook Ramp to SB North Airport Expressway		X

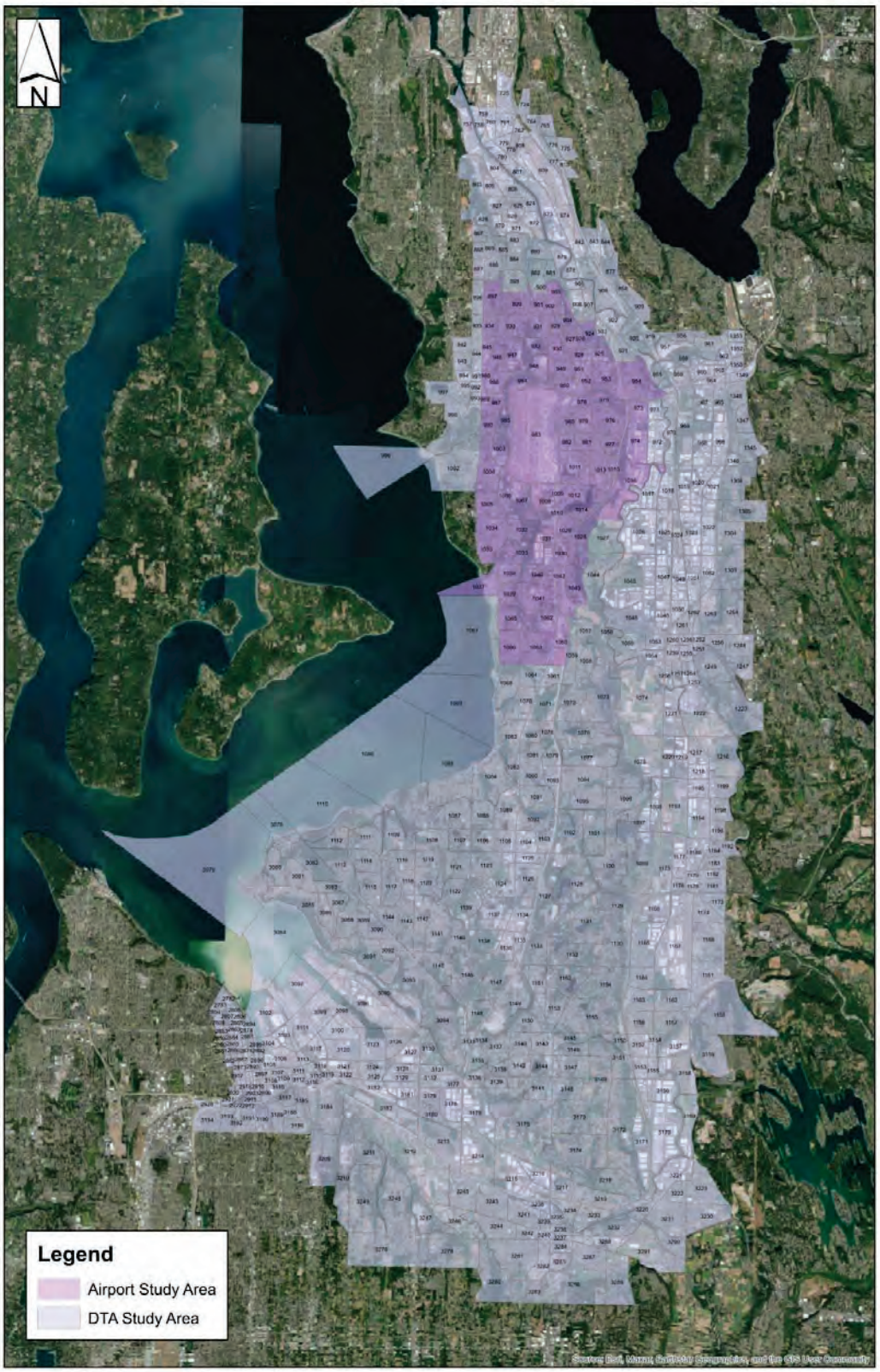


Figure 1: DTA Model Study Area

3. Local Intersection Improvements

Local intersection improvements were observed between the previous 2019 network and the 2022 existing field conditions. None of these local intersection improvements are expected to change travel patterns or DTA modeling parameters. These improvements are only expected to have marginal improvements to vehicle delay for minor approaches. Vehicle travel patterns from 2019 to 2022 are therefore expected to remain consistent. The local intersection improvements were reflected in updated Synchro models only. The local intersection improvements are identified in Table 2.

Table 2. Local Intersection Improvements (2019-2022)

Intersection		Intersection Improvement
9	24th Ave S @ S 136th St	Minor-leg stop control converted to all-way stop control
15	24th Ave S @ S 142nd St	Minor-leg stop control converted to all-way stop control
34	Military Rd S @ S 152nd St	Intersection converted from all-way stop control to signal. South leg of intersection removed.
35	Tukwila International Blvd @ S 152nd St	Added eastbound right turn lane.
36	Tukwila International Blvd @ Military Rd	East leg removed (shared link with south leg of Int #34). Intersection removed from analysis.
59	Air Cargo Rd @ SB NAE On-Ramp	Converted from uncontrolled to signalized.
60	Air Cargo Rd @ S 170th St	Added additional westbound right turn lane. Combined all southbound movements to single lane.
61	S 170th St @ Cell Phone Lot Entrance	Southbound bypass from NAE to cell-phone lot added. Southbound through movement at signal removed.
63	S 170th St @ NB NAE Off-Ramp	Minor-leg stop control converted to signal.
79	S 200th St @ Des Moines Memorial Dr	Added left turn pockets on all approaches. Added westbound right turn pocket.

4. Post-Processing Procedure

Direct link volume output from the 2032 No Action DTA model will be post-processed to develop 2032 future turning movement forecasts at the study intersections. Post-processing will follow procedures

identified in the National Cooperative Highway Research Program (NCHRP) Report 765. The general procedure of the NCHRP 765 methodology is outlined below:

- Nominal and percentage differences between the 2032 No Action and 2019 Existing DTA models are calculated. Manual adjustments previously made to the Existing DTA link volumes will be maintained. Manual adjustments were also made to the 2032 No Action DTA link volumes where unexpected decreases in volume occurred between the 2019 and 2032 DTA models and will be maintained.
- The delta (difference) or annual growth rate between 2032 No Action and 2019 Existing DTA link volumes are added to the 2022 Existing count link volumes to calculate target 2032 No Action link volumes for the intersection turning movements. Deltas between the 2032 No Action and 2019 Existing DTA link volumes are assumed to have a floor of -25% and a ceiling of +1500% of the 2022 existing count volume. New target link volumes for 2032 No Action are expected to be lower than the previously developed 2032 No Action volumes because of the decrease in traffic volumes documented in the 2022 intersection counts and due to growth added for only 10 years instead of 13.
- Estimates for future 2032 No Action turning movements will be developed using the Iterative Procedure – Directional Method (i.e. Furness Method) outlined in NCHRP 765. Iterations will occur until the total entering and exiting link volumes of the intersection turning movements are within 10% of the target link volumes unless otherwise agreed to by WSDOT.
- Turning movement volumes developed by the NCHRP 765 procedure will be exported to Synchro where any necessary intersection balancing adjustments will occur.
- Turning movement forecasts from the post processing procedure will be compared to other corridor studies (SR 509 Gateway, SR 518 Corridor, etc.) for any necessary manual adjustments based on previous comments from WSDOT.
- Final 2032 No Action balanced intersection turning movement volumes will be provided to WSDOT for concurrence.

Turning movement forecast calculations for the additional 2032 Proposed Action, 2037 No Action, and 2037 Proposed Action scenarios will not follow the NCHRP 765 procedure and are outlined in Section 6 of this memo.

5. NTP Four-Step Forecasting Procedure

Near-Term Projects (NTPs) with the exception of the Second Terminal were not included in the original 2032 Proposed Action DTA model. It was determined land use functions within the model were not finite enough to accurately determine changes in turning movement volumes associated with the NTPs. Instead, forecasting for the NTPs was done using the traditional 4-step process—Trip Generation, Trip Distribution, Mode Choice, and Route Assignment. General processes for each of the four steps are outlined below:

- *Trip Generation* – Trip generation for each of the NTPs will come from one or a combination of the following sources: Institute of Transportation Engineers Trip Generation Manual, existing driveway counts, Port of Seattle airport passenger forecast, and/or Port of Seattle employee forecasts. These sources will be used to calculate the total number of trips entering and exiting the NTPs. Specific trip generation calculations for each NTP will be documented in the SAMP NTP

Trip Generation Memo. Uses based on airport activity forecasts may have different trip generation in 2032 and 2037.

- *Trip Distribution* – Trip origins and destinations for trips to and from the NTPs will be determined based on the proposed land use of each NTP and the location of supporting land uses, as well as general travel patterns entering and exiting the study area. Input will be provided by the Port as to what services each NTP will support and where those services will be located in the Airport Study Area. Part of the trip distribution process will be identifying the number of local (to/from land uses associated with the airport) or regional (to/from freeway/arterial facilities) trips expected for each NTP.
- *Mode Choice* – Trip generation and distribution for the NTPs is focused on vehicle trips. All trips are assumed to be vehicle or truck. Access for pedestrian and non-motorized trips from existing and future facilities to the NTPs will be included in the final report but is not included in this traffic forecasting methods and assumptions.
- *Route Assignment* – Route assignment will be based on the future road network after construction of the Second Terminal is complete. It is assumed vehicle trips will travel the most efficient route between origin and destinations with respect to distance traveled and delay and will adhere to restrictions on local roads (i.e. weight, height, etc.) if applicable. Route assignments for NTP trips will be based on whether trips are local (to/from land uses near the airport) or regional (to/from freeway/arterial facilities) and will account for the relocation of any existing trips.

A complete set of turning movement forecasts for each NTP will be developed and will be layered onto the future No Action turning movement forecasts. The four-step process will be completed for each NTP for the 2032 and 2037 analysis years. Calculations and assumptions for the NTP 4-step process will be documented in the NTP Trip Generation Memo to be submitted for review and concurrence to WSDOT/FAA.

6. 2032 and 2037 Forecasting Calculations

WSDOT has agreed that updating the 2032 No Action and Proposed Action DTA models for the new 2037 horizon year would not provide substantially different travel patterns than those already established in the 2032 DTA models. This is because previous DTA models were created to model travel patterns before and after Phase 2 of the SR 509 extension was complete. Both analysis years will now include completion of the SR 509 Phase 2 Extension as a background improvement project negating the need for separate analysis year DTA models. Review of local agency comprehensive plans did not indicate any other large scale funded infrastructure improvement projects would be completed between 2032 and 2037 that would likely change regional or intercity travel patterns within the Airport Study Area. As a result, the 2037 intersection forecasts will be calculated using the 2032 No Action turning movement forecasts that were post-processed with output from the 2032 No Action DTA model. Methodology for calculating 2032 No Action, 2032 Proposed Action, 2037 No Action, and 2037 Proposed Action intersection turning movement forecasts are described below:

- *2032 No Action* – Intersection turning movement forecasts for the 2032 No Action scenario will be developed using the NCHRP Report 765 procedure identified in Section 4 of this memo.
- *2032 Proposed Action* – Trips associated with the airport terminal zones from the previous 2032 Proposed Action DTA model have been isolated to show the origins and destinations for the terminal uses. These trip values will be scaled proportionately to the updated airport passenger

forecasts provided by the Port and for the 2nd terminal project. These trips will be added to the 2032 No Action turning movement forecasts. Additionally, trips from the four-step NTP forecasting procedure for non-terminal NTPs will also be added to the 2032 No Action turning movement forecasts. The summation of these additional trips to the 2032 No Action intersection turning movements will represent the 2032 Proposed Action turning movement forecasts.

- *2037 No Action* – The final 2032 No Action turning movements will be increased by a 2.2% annual growth rate to 2037 to calculate the 2037 No Action turning movement forecasts. The 2.2% annual growth rate is derived from growth in total passenger and truck trip ends from PSRC's LUV2 model for TAZs within the Airport Study Area between 2030 and 2040, which is documented in the *DTA Modeling Documentation Summary*.
- *2037 Proposed Action* – The same methodology used to develop the 2032 Proposed Action turning movement forecasts will be used to develop the 2037 Proposed Action turning movement forecasts. Trip generation for the NTPs as well as travel demand for the airport terminal zones will be updated to reflect 2037 passenger volumes. Trips associated with the airport terminals and NTPs will be added to the 2037 No Action turning movements to calculate 2037 Proposed Action turning movements.

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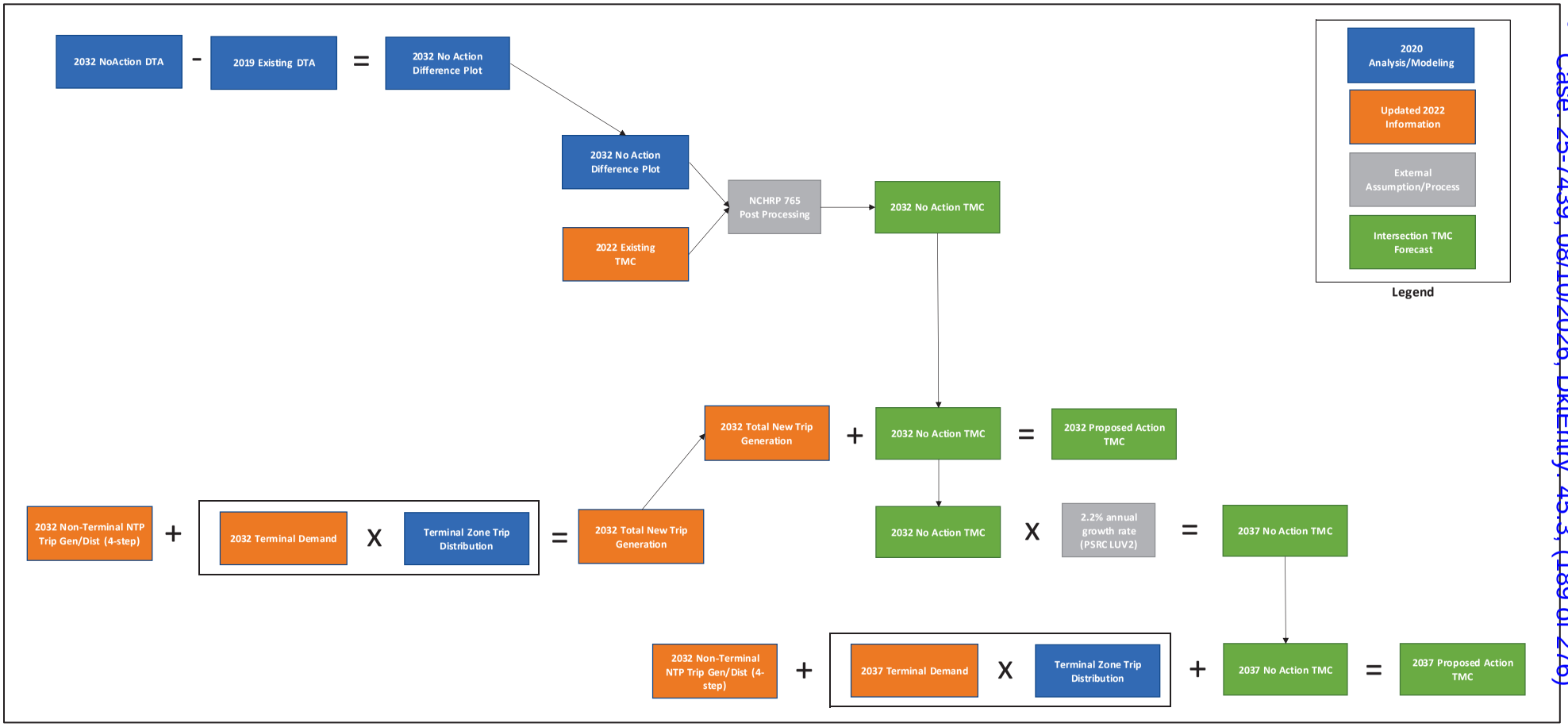


Figure 2: SAMP Future Volume Forecasting Flow Chart

Attachment C: NTP Trip Generation Memo

SAMP Near-Term Projects Trip Generation Assumptions

This document summarizes the trip generation, distribution, mode split, and assignment assumptions for the proposed Non-Terminal Near-Term Projects evaluated in SAMP.

1 Second Terminal and Parking – T01/T02

This project involves construction of a new multi-level approximately 836,200 square foot parking garage, with a footprint of approximately 120,000 square feet adjacent to the new terminal. The garage would provide approximately 1,350 parking spaces. Ancillary projects not expected to generate additional trips include the NAE relocation of southbound lanes (L01), elevated busway and stations (L02), and main terminal north GT lot (L04).

A Dynamic Traffic Assignment (DTA) transportation demand model was developed by WSP for use in assigning the vehicular trips associated with the new second terminal and adjustments to flight departures and arrivals between the two terminals in the future. The model included second terminal roads and curbside (L03) improvements and are therefore excluded from the analysis included in this memo. See the Model Documentation Summary report for more information.

2 Aircraft Rescue and Fire Fighting (ARFF) – S02 & S03

The existing Aircraft Rescue and Fire Fighting (ARFF) facility located at the western terminus of S 170th St. (approximately 28,800 sf) will be displaced due to construction of the North Gates Concourse (T01). The function of the existing facility will be shared by two future sites, one (S02) located near the southwest corner of the airfield with access from Starling Dr serving as the primary ARFF facility, and the other (S03) located near the present location of the Cell Phone Lot with access from the future S 170th St on the west leg of the future roundabout serving as the secondary ARFF facility.

2.1 Existing Use and Project Assumptions

1. An existing PM peak hour count was collected at S 170th St & Air Cargo Rd on Tuesday September 9, 2022 from 4:00-5:00 PM and observed 20 ARFF trips (5 inbound, 15 outbound).
2. To be conservative, it is assumed each future facility (S02 and S03) generates the same number of trips as the existing facility.
3. The existing ARFF trips were relocated to the new facility that is nearby (S03), while new trips were generated for the new facility (S02) located on Starling Dr.

Table 1 shows the existing and future ARFF trips by location.

Table 1. ARFF PM Trips

Scenario	Existing Site			S02 Site			S03 Site		
	In	Out	Total	In	Out	Total	In	Out	Total
2022 Existing	**5**	**15**	**20**	**0**	**0**	**0**	**0**	**0**	**0**
Relocated Trips	-5	-15	-20	5	15	20	0	0	0
New Trips	0	0	0	0	0	0	5	15	20
2032/2037 Total Trips	**0**	**0**	**0**	**5**	**15**	**20**	**5**	**15**	**20**

2.2 Trip Distribution and Assignment Assumptions

Trips to and from the existing ARFF were reassigned to S03, with the only considerable change in routing being for trips to/from the north on Air Cargo Road, which was redirected to International Blvd. Other trips on S 170th St will remain on that roadway.

For new trips assigned to S02, the small number of local trips were assumed to be to/from all study area routes using a **network trip distribution model,** shown in Table 2 that is weighted by volume from existing counts.

Table 2. Network Trip Distribution Model

Direction	Roadway	Inbound	Outbound
North	Surface Streets	5%	4%
	SR 509	8%	5%
	I-5	23%	18%
East	Surface Streets	14%	13%
	SR 518	11%	9%
South	Surface Streets	10%	15%
	I-5	16%	21%
West	Surface Streets	13%	15%
Total		**100%**	**100%**

3 S07 - Westside Maintenance Campus

Existing maintenance uses located in the North Air Cargo area (bound by S 154th St to the north, Air Cargo Road to the east, S 170th St to the south, and the airfield to the west) will be demolished to make way for the North Gates Concourse (T01). These uses will be consolidated at the new Westside Maintenance Campus, which will be built on land on the west side of the airport that currently accommodates construction trailers and is otherwise vacant land. The facility would co-locate the maintenance facilities with other related functions, including a vehicle fuel rack, airfield deicer storage, and an approximately 400,000 square foot multi-bay building.

3.1 Existing Use and Growth Assumptions:

1. Existing employment for maintenance operations, primarily housed in Cargo 4, consists of 163 total staff (64 day-shift) in 2022.
2. WSDOT data indicates 88% of airport employees travel via passenger vehicles, thus 56 exiting vehicular trips are assumed to be generated by the existing day shift staff.
3. Interviews with staff indicate 47 day-shift employees park at Cargo 4, and the remaining 9 park at the main terminal garage, with their shift terminating at 4:30 pm. This is the only shift that produces PM peak hour traffic.
4. Based on ITE Trip Generation Manual 11th Edition Land Use Code 170 (Utilities), it is assumed 18 percent of total PM peak hour trips are inbound. Assuming these are pick up/drop off or chained trips not requiring parking additional inbound and outbound trips were added to the expected employee shift trips to achieve the 18% identified by ITE.

5. Future (2040) employment is described in Volume 2, Appendix C as having 355 total staff (142 day-shift) in 2040. Interpolating the day shift value to 2032 and 2037 yields 108 and 129 staff, respectively.
6. With 88% traveling by passenger vehicles, this equates to 149 trips in 2032. As a conservative assumption, the percentage of employee trips traveling by passenger vehicles was increased to 100% for the 2037 analysis and resulted in201 trips in 2037.
7. Therefore, future trips at the Westside Maintenance Center included the 79 trips relocated from the Cargo 4 parking area, 9 relocated from the main garage, and 61 and 113 additional new trips in 2032 and 2037, respectively.

Table 3 shows the existing and future maintenance employee trips by location.

Table 3. Maintenance Employee PM Trips

Scenario	North Cargo Area			Main Terminal Garage			Westside Maintenance Campus		
	In	Out	Total	In	Out	Total	In	Out	Total
2022 Existing Trips	**16**	**63**	**79**	**0**	**9**	**9**	**0**	**0**	**0**
2032 Relocated Trips	-16	-63	-79	0	-9	-9	16	72	88
2032 New Trips	0	0	0	0	0	0	11	50	61
2032 Total Trips	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**122**	**149**
2037 Relocated Trips	-16	-63	-79	0	-9	-9	16	72	88
2037 New Trips	0	0	0	0	0	0	20	93	113
2037 Total Trips	**0**	**0**	**0**	**0**	**0**	**0**	**36**	**165**	**201**

3.2 Trip Distribution and Assignment Assumptions

The 2022 existing trips would be relocated from the area of S 161st St & Air Cargo Rd and the Main Terminal garage to the new location on Des Moines Memorial Drive at S 168th Street. A maintenance driveway for trucks will be located off S 160th Street east of Des Moines Memorial Drive, however a nominal number of PM peak hour trips would be expected at this location. The relocated trips were subtracted from the network using the **network trip distribution model**. Future total employee trips, including relocated trips and new trips, were distributed based on the **network trip distribution model**.

4 North Air Cargo Area Projects – C01, S04, S05, S06, S08, S09 & A08

Several existing uses located in the North Air Cargo Area (bound by S 154th St to the north, Air Cargo Road to the east, S 170th St to the south, and the airfield to the west) will be demolished to construct the North Gates Terminal (T01), new air cargo hardstands and airline support facilities. One new cargo warehouse will be constructed in this area.

4.1 Existing Use and Project Assumptions:

1. Facilities to be demolished in the North Cargo area (See Figure 1):
    a. Swissport building
    b. Cargo 4 building
    c. POS airport maintenance
    d. United Airlines maintenance building
    e. Two air cargo hardstands

f. Existing fuel rack and de-icing tanks (to be relocated)

2. Projects to be constructed in the North Cargo area:
   a. Cargo 4 South Redevelopment (C01) building (80,000 sf)
   b. Fuel Rack Relocation (S04)
   c. Triculator (S05)
   d. Consolidated De-Icing Tanks (S06)
   e. Airline Support (north, S08 and west, S09) buildings (~40,000 sf total)
   f. Air Cargo Hardstand North (A08)
3. Net change in total building area approximately ~73,000 sf decrease

4.2 Trip Generation Calculations

Existing trip generation rates for the North Cargo Area and maintenance facilities was calculated by using PM peak hour driveway counts along Air Cargo Road and gross building square footages available through King County property records. Figure 1 and Table 4 summarize the building and driveway information.



Figure 1: Existing North Cargo Area Buildings and Driveways

Table 4. Existing North Cargo Area Building and Driveway Trip Generation Rate Summary

Building	Size (SF)	Driveway ID(s)	PM Peak Hour Trips In	PM Peak Hour Trips Out	Driveway TG Rate (per 1,000 SF)
A	48500	38	86	70	0.77
B	79950				
C	25000				
D	25000				
E	25000				
F	80500	101	18	25	0.48
I	9700				
G	45200	102	51	56	0.50
H	36410				
J	61250				
K	48818				
L	24000				
M	25565	103	10	17	1.06
N	67150	104, 105, 106, 107	29	31	0.89
O	41900	58	46	41	1.43
P	18850				
Q	52210	108	32	37	1.32
Total	**715,003**		**272**	**277**	**0.77**

The driveway data showed the North Cargo Area generating 549 total PM peak hour trips, equivalent to 0.77 vehicle trips per 1,000 SF of building area. The existing North Cargo Area contains uses including cargo shipments, aircraft services/maintenance, offices, and general airport support services. The calculated average trip generation rate is comparable to ITE trip generation rates for a mix of similar land uses that are included in the North Cargo Area. Table 5 summarizes the comparison of these trip generation rates.

Table 5. Comparable ITE Trip Generation Rates

ITE Land Use Code (LUC), 11th Edition	PM Peak Hour TG Rate (per 1,000 SF)
LUC 030 – Intermodal Truck Terminal	1.87
LUC 110 – General Light Industrial	1.10
LUC 130 – Industrial Park	0.34
LUC 150 - Warehousing	0.18
LUC 710 – General Office Building	1.44
Average	*0.99*
Existing North Cargo Area	*0.77*

Trip generation calculations for the future North Cargo Area were completed by using the rates observed at the existing driveways. Buildings G, J, D, and Q will be removed with construction of the Second Terminal and new structures in the North Cargo Area. Trips from the existing driveways that serve Buildings G, J, D, and Q today were removed based on the proportion of building area each of

them comprised of the total building area served by the respective driveways. Trips for the proposed Cargo 4 South Redevelopment (C01) building (80,000 sf) and Airline Support (north, S08 and west, S09) buildings (~40,000 sf total) were calculated using the estimated building square footages and average trip generation rate for the North Cargo Area. A summary of the existing and future trips associated with the North Cargo Area are summarized in Table 6:

Table 6. North Cargo Area PM Trips

Land Use	Description	Inbound	Outbound	Total
Existing Count Data	Existing North Air Cargo Area:	272	277	549
	Future North Air Cargo Area:	228	231	459
	North Air Cargo Area Reduction:	-44	-46	-90

4.3 Trip Distribution and Assignment Assumptions

Note that the total trips for the reduction in North Air Cargo Area (-90) is approximately equal to the number of trips relocated for the westside maintenance campus (-79).

Existing trips associated with maintenance uses in the North Cargo Area were relocated per Section 2. No further adjustments were applied to trips generated within the North Cargo Area.

5 L-Shape Lot Off-Site Cargo – C02 & C03

This project involves constructing a new approximately 330,000 square foot cargo warehouse building (C02) on the Port's 'L-shaped' parcel located north of SR 518. The development would include warehouse, office space, truck terminals, and parking for visitors and employees.

This project involves constructing a new approximately 90,000 square foot cargo warehouse building (C03) on the Port's 'L-shaped' parcel located north of SR 518. The development would include warehouse, office space, truck terminals, and parking for visitors and employees.

The analysis evaluates the total impact of Phase 1 (C02) and Phase 2 (C03) combined since both are expected to be constructed by 2032. The L-Shape Lot parcels combined are approximately 30.5 acres per TM-6.

5.1 Trip Generation Assumptions:

Table 7 shows the trip generation estimates for the L-Shape Lot.

Table 7. L-Shape Lot PM Trips

Land Use	Description	Inbound	Outbound	Total
Existing North Cargo Area TG Data (0.77 / 1,000 SF)	C02, 330,00 SF	127	127	254
	C03, 90,000 SF	34	35	69
	Total	161	162	323

Table 8 shows the future total trips for the North Cargo Area and the L-Shape Lot. No growth is expected for the North Cargo Area because excess cargo capacity was assumed to be leased in 2032 so the buildings would still operate at 100% capacity.

Table 8. Existing and Future North Air Cargo Area and L-Shape Lot PM Trips

Scenario	North Cargo Area			L-Shape Lot			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
2022 Existing (Estimated)	**272**	**277**	**549**	**0**	**0**	**0**	**272**	**277**	**549**
Maintenance Relocated	-16	-63	-79	0	0	0	-16	-63	-79
New Trips	0	0	0	161	162	323	161	162	323
2032/2037 Future	**256**	**214**	**470**	**161**	**162**	**323**	**417**	**376**	**793**

5.2 Trip Distribution and Assignment Assumptions

Existing count data for the North Cargo Area showed 25% of PM peak hour vehicle trips were truck trips with the other 75 percent being staff, visitor, and other trips via passenger vehicles. Mode split for staff, visitor, others is unknown, therefore no mode reduction is assumed.

Of truck trips, 50 percent are assumed to be to/from the North Cargo Area, and 50 percent are assumed to be to and from regional major roads (SR 509, I-405, I-5, SR 99) using a **regional trip distribution model,** shown in Table 9 below, that is weighted by volume from existing counts. Passenger vehicle trips (30 percent of site trips) are assumed to be to/from all study area routes using a **network trip distribution model** from Table 2 that is weighted by volume from existing counts.

Table 9. Regional Trip Distribution Model

Direction	Roadway	Inbound	Outbound
North	SR 509	14%	9%
	I-5	40%	35%
East	SR 518	19%	17%
South	I-5	27%	39%
Total		100%	100%

6 L05 - North Ground Transportation Holding Lot

This project involves construction of three surface parking lots and associated amenities to accommodate the displaced existing lots and future growth. The three lots will total approximately 180,000 square feet and will be located on property north and east of the intersection of S 146th St and 16th Ave S. The lot will serve demand from the North Ground Transportation Lot on S 160th St. displaced by construction of the new Elevated Busway and Stations (L02) and the South Ground Transportation Lot on S 190th St displaced by the fuel farm expansion (S01). The new lots would be used for ground transportation holding of taxis, transportation network company vehicles, and other chartered vehicles as they await trip requests or passenger arrival.

6.1 Existing Use and Growth Assumptions

1. An existing PM peak hour count was collected at S 160th St & the Ground Transportation Holding Lot on Thursday September 22, 2022 from 4:15-5:15 PM and observed 449 GT lot trips

(215 inbound, 234 outbound). An existing PM peak hour count was collected at S 190th St & 28th Ave S, which is the access point for the South Ground Transportation Holding Lot, on Thursday October 27, 2022 from 4:30-5:30 PM and observed 11 bus trips (5 inbound, 6 outbound).

2. Future forecasted ground transportation needs were provided in the POS memo "Long-Term Ground Transportation Facility Needs" dated July 8, 2016. The memo included calculations of future arriving and departing trips by mode. The existing (2014) and future/PAL 4 (2034) trips by taxi, limo, and airporter/charter vehicles were scaled based on the Million Annual Passenger demand to the future SAMP years. The future ground transportation parking lot trips were projected based on the ratio of increase for the forecasted trips from the memo.

Table 10 shows the future Ground Transportation Lot trips by location.

Table 10. Ground Transportation PM Trips

Scenario	S 160th St Lot			S 190th St Lot			S 146th St Lot		
	In	Out	Total	In	Out	Total	In	Out	Total
2022 Existing	**215**	**234**	**449**	**5**	**6**	**11**	**0**	**0**	**0**
Existing Relocated	-215	-234	-449	-5	-6	-11	220	240	460
New Trips	0	0	0	0	0	0	65	71	136
2032 Future	**0**	**0**	**0**	**0**	**0**	**0**	**285**	**311**	**596**
Existing Relocated	-215	-234	-449	-5	-6	-11	220	240	460
New Trips	0	0	0	0	0	0	96	104	200
2037 Future	**0**	**0**	**0**	**0**	**0**	**0**	**316**	**344**	**660**

6.2 Trip Distribution and Assignment Assumptions

Trips are expected to be distributed evenly between inbound from the terminals, inbound from region, outbound to terminals, and outbound to region. It is assumed trips are split evenly between trips to and from the terminal and trips to and from the region using the **regional trip distribution model** for both inbound and outbound trips.

All existing trips at the S 160th St lot and the S 190th St lot were removed from the network based on the above methodology. All future trips were assigned to the new lot on S 146th St.

7 L07 - Employee parking

The previously proposed 1,500 stall Employee Parking Surface Lot (L06) and the proposed 2,000 stall Employee Parking Structure (L07) projects are combined to an expanded 3,500 stall parking structure at the L07 site north of SR 518 and south of S 146th St. adjacent to and west of the existing North Employee Parking Lot (NEPL). The purpose of the project is to provide additional capacity to accommodate increased demand for employee parking.

7.1 Existing Use and Growth Assumptions

1. Historical gate counts at the North Employee Parking Lot (NEPL) were averaged from dates of adjacent intersection peak hour counts in March 2018, June 2019, and October 2019 when the NEPL was 100% utilized.
2. The existing NEPL provides 4,122 parking stalls.

3. Parking requirements were scaled based on the ratio of increase of the remote parking requirements and the Million Annual Passenger demand.
4. Employee lot parking trips were calculated based on the existing trip rate per parking stall (4,122 stalls and 380 trips, or 0.09 trips per occupied stall in the PM peak hour). The parking requirements in the future years were then multiplied by this ratio to obtain the future trips at the new parking structure.
5. Parking demand was calculated based on a linear relationship between million annual passengers and employee parking demand. PM peak hour trips were then increased proportionally based on the increase in total parking demand.

Table 11 shows the future trips at the NEPL and the new parking structure.

Table 11. Remote Employee Parking PM Trips

Scenario	NEPL			New S 146th St Deck			Total		
	In	Out	Total	In	Out	Total	In	Out	Total
2019 Data (100% Occupancy)	**156**	**224**	**380**	**0**	**0**	**0**	**156**	**224**	**380**
2032 Future	156	224	380	50	73	123	206	297	503
2037 Future	156	224	380	70	101	171	226	325	551

7.2 Trip Distribution and Assignment Assumptions

Existing trips at NEPL to remain and all new trips were assigned to the new parking structure. Trips to the new parking structure were distributed according to the **network trip distribution model**.

8 S10 - Centralized Receiving and Distribution Center (CRDC)

This project involves constructing a new 55,000 square foot Centralized Receiving & Distribution Center on Port-owned property north of SR 518, and south of S. 144th Street to improve security and more efficiently screen and move supplies to Airport dining and retail concessionaires in the current and proposed future passenger terminals. The new CRDC would include a warehouse and office space, truck terminals and parking for visitors and employees.

8.1 Traffic Characteristics

The facility is expected to have 40-50 employees and will operate between the hours of 3 a.m. and 11 a.m. A nominal number of trips may occur during the PM peak hour for building maintenance, but the facility would not normally generate any PM peak hour trips. Based on the CRDC Needs Assessment Study, the facility will reallocate 8 existing PM peak hour delivery trips (4 inbound, 4 outbound) to the central terminal to the morning hours. No other changes are expected during the PM peak hour.

9 Summary of Near-Term Project Trip Generation

A summary of NTP trip development methodology is provided in Table 12. NTPs indicated as included in the DTA in Table 12 were included in forecasting Step 1 identified in the Future Conditions Report (Section 3.2.1). NTPs not included in the DTA model and instead were included with an individual or specific trip generation identified in this report were included in forecasting Step 3 identified in the Future Conditions Report (3.3.1)

Table 12. Summary NTP Trip Generation Methodology and Assumptions

Project		Included in DTA Model?	NTP Trip Generation Assumptions			
			Existing Trips Removed or Relocated?	New Trips in 2032?	New Trips in 2037?	Trip Generation Notes
C02/C03 – Off-Site Cargo PH 1 & 2 (L-Shape)		N	N	Y	Y	Cargo facility expansion located north of SR 518. New facilities expected to operate at 100% capacity in both 2032 and 2037.
L02 – Elevated Busway and Stations		N	Y	N	N	Construction of the elevated bus way will displace the current North GT Holding Lot on S 160th Street. These existing trips were relocated as part of L05.
L03 – Second Terminal Roads/Curbside		Y	-	-	-	New road linkages included in DTA model.
L04 – Main Terminal North GT Lot		Y	-	-	-	Main terminal trips included in DTA model.
L05 – North GT Holding Lot		N	Y	Y	Y	Trips from existing North and South GT Holding Lots relocated. Anticipated growth in trips for 2032 and 2037 as well.
L07 – Employee Parking Structure		N	N	Y	Y	Additional parking for airport employees based on anticipated growth in passenger demand.
T01 – North Gates, T02 – Second Terminal & Parking		Y	-	-	-	Second Terminal trips for North Gates accounted for in DTA model.
S01 – Fuel Farm Expansion		N	Y	N	N	Fuel farm will relocate existing South GT Holding Lot facilities. These existing trips are consolidated with the new trips generated in L05.
S02 – Primary (South) ARFF		N	Y	N	N	Primary ARFF facility relocated to south end of airfield to accommodate construction of North Gates (T01). Relocated trips based on count of existing ARFF facility.
S03 – Secondary (North) ARFF		N	N	Y	Y	New secondary ARFF facility. Assumed the same trip generation as primary ARFF facility as conservative assumption.
S07 – Westside Maintenance Campus		N	Y	Y	Y	Existing maintenance facilities relocated from North Cargo Area. Increase in employee and chained trips from 2032 to 2037 as a result of increased flight operations.
S10 – Centralized Rec. & Dist. Center		N	Y	Y	Y	Less then 10 existing PM peak hour trips to/from main terminal reassigned to AM peak hour. Small number of PM peak hour trips assumed for building maintenance. Employee shift occurring from 3 AM to 11 AM.
North Cargo Area Projects	A08 – North Cargo Hardstand	N	Y	N	N	Overall reduction in net building square footage for the North Cargo Area to accommodate A08, C01, S04, S05, S06, S08, and S09. Relocated trips from existing maintenance facility (S07) accounts for overall net reduction in trips generated within the North Cargo Area.
	C01 – Cargo 4 South Redevelopment					
	S04 – Fuel Rack Relocation					
	S05 – Triculator					
	S06 – De-Icing Tanks					
	S08 – North Airline Support					
	S09 – West Airline Support					

"Y" = Yes, "N" = No

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Table 13 summarizes the NTP trip totals for each of the NTPs not included in the DTA modeling. Combined Future Trips in 2032 and 2037 for each NTP are calculated by adding Existing Trips and Relocated Existing Trips to the expected New Trip Generation for the respective year. Note that the C02/C03 project is expected to generate the same number of total trips in 2032 as in 2037. This is because the study assumes the full buildout of the L-Shape lot in 2032, despite the demand for cargo handling floor area not requiring the full use of the space. The remainder of the floor space is expected to be leased by the Port to private operators for similar uses, thus the total trips will be the same in both years. By 2037, the Port will occupy a larger footprint within the L-Shape lot and their portion of the total site trips shown in the table will increase, but total trips will not change. Also note that ARFF trips are expected to remain constant between 2032 and 2037, as fire and rescue staff are not expected to increase in that time frame.

Table 13. Summary of Non-DTA Model Near-Term Projects Trip Relocation and Generation

Project ID	Project/Site Name & Description	Existing Trips			Existing Trips to be Relocated			New Trip Generation for 2032			Combined Future Trips (2032) [Existing + New]			New Trip Generation for 2037			Combined Future Trips (2037) [Existing + New]		
		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
C02/ C03[1]	Off-Site Cargo (L-Shape)	0	0	0	0	0	0	161	162	323	161	162	323	161	162	323	161	162	323
L02	Elevated Busway (Existing North GT Lot To Be Relocated)	215	234	449	-215	-234	-449	0	0	0	0	0	0	0	0	0	0	0	0
L05	New GT Lot S 146th St (Relocated North & South GT Lots Trips)	0	0	0	220	240	460	65	71	136	285	311	596	96	104	200	316	344	660
L07	New Employee Parking Structure	0	0	0	0	0	0	50	73	123	50	73	123	70	101	171	70	101	171
S01	Fuel Farm Expansion (Existing South GT Lot To Be Relocated)	5	6	11	-5	-6	-11	0	0	0	0	0	0	0	0	0	0	0	0
S02	Existing ARFF Site (Removed with construction of T01)	5	15	20	-5	-15	-20	0	0	0	0	0	0	0	0	0	0	0	0
S02	Primary (South) ARFF Site	0	0	0	5	15	20	0	0	0	5	15	20	0	0	0	5	15	20
S03	Secondary (North) ARFF	0	0	0	0	0	0	5	15	20	5	15	20	5	15	20	5	15	20
S07	Westside Maintenance Campus	0	0	0	16	72	88	11	50	61	27	122	149	20	93	113	36	165	201
S10	Main Terminal Deliveries / CRDC (To Be Eliminated in PM Peak)	4	4	8	-4	-4	-8	0	0	0	0	0	0	0	0	0	0	0	0
Total		**229**	**259**	**488**	**12**	**68**	**80**	**292**	**371**	**663**	**533**	**698**	**1,231**	**352**	**475**	**827**	**593**	**802**	**1,395**

1. No future growth was included for the North Air Cargo area as it is expected that the Port of Seattle will lease excess space in 2032 and 2037, maintaining 100% capacity for both analysis years.

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Attachment F: NTP Descriptions

Near-Term Project Summary

A total of thirty-two near-term projects are included in the proposed action conditions. 10 of the 32 NTPs are not expected to have any impact on the surface transportation analysis. The remaining 22 NTPs have some sort of impact on surface transportation and were accounted for in the analysis. Trip generation information for NTPs impacting the surface transportation analysis is documented in Attachment C.

The following NTPs do not generate, relocate, or reduce any vehicle trips and were therefore excluded from the surface transportation analysis:

- **A01 – Taxiway A/B Extension**. Extension of parallel Taxiways A and B by approximately 1,800 feet to provide access to the south end of Runway 16L/34R. Includes construction of parallel taxiway connectors from Taxiway B to Runway 16L/34R and the relocation of Taxiway S 310 feet south. Taxiways would have in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, elevated runway guard lights, and signage. Also includes the relocation of the Runway 34R glideslope antenna and shelter to the southeast, adjustment of the Runway 34R glideslope angle, adjustment of the PAPI to match the glideslope, amendments to flight procedures to accommodate the change in glideslope angle, and the construction of a new vehicle service road bridge over S. 188th St. No trips are expected to be generated by the project.
- **A02 – Runway 16R/34L Blast Pads**. Expansion of Runway 16R/34L blast pads from 200 feet by 200 feet to 220 feet by 400 feet to meet current FAA standards. No trips are expected to be generated by the project.
- **A03 – Taxiway C/D Reconfiguration and Runway Incursion Mitigation (RIM).** Modification of existing taxiway geometry of Taxiways C and D to correct non-standard intersection angles and reconfigure non-standard intersections. Also included is the extension of Taxiways C and D by approximately 500 feet to intersect with Taxilane A and removal of pavement north of Taxiway C to mitigate the existing RIM location. No trips are expected to be generated by the project.
- **A04 - Taxiway B 500' Separation.** Relocation of Taxiways A and B 100 feet east between Taxiways C and L to provide the required 500 feet runway/taxiway separation. Includes extending Taxiways C, D, E, H, and K to the relocated Taxiway B. Taxiways would have in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, elevated runway guard lights, and signage. No trips are expected to be generated by the project.
- **A05 – North Hold Pad.** Construction of a new approximately 90,000 square foot hold pad for four aircraft to reduce congestion on the taxiways and at the terminal. No trips are expected to be generated by the project.
- **A06 – Runway 34L High-Speed Exit.** Construction of a new high-speed exit for Runway 34L arrivals between Taxiways J and E to allow for more efficient use of the runway by arriving aircraft. The high-speed exit would be equipped with in-pavement centerline lights, elevated taxiway edge lights, hold position markings with in-pavement lights, and taxiway signage. No trips are expected to be generated by the project.
- **A07 – Taxiway D Extension.** Extension of Taxiway D by approximately 500 feet from Runway 16C/34C west to Taxiway T. Includes in-pavement centerline lights, elevated taxiway edge lights, hold position marking with in-pavement lights, elevated runway guard lights, and signage. No trips are expected to be generated by the project.

- **A09 – Central Hardstand.** Construction of a new approximately 292,000 square foot hardstand for seven aircraft north of Concourse D and east of the North Satellite to accommodate increased demand for passenger hardstand operations and overnight parking of passenger aircraft. Buses would bring passengers to/from aircraft on the hardstand. Construction of A09 requires relocating portions of the North Airport Expressway (L01). No trips are expected to be generated by the project.
- **A10 – Taxiway Fillets.** Construction of new full strength pavement panels and shoulders, and the installation of edge lighting and signage to bring taxiway fillets up to current FAA standards. No trips are expected to be generated by the project.
- **L06** – As a result of comments received during scoping, the Port integrated Project L06 (a proposed surface lot for employee parking) into Project L07. Therefore, this NTP is not being carried forward.

The following NTPs in some way alter vehicle trips and are accounted for in the surface transportation analysis:

- **A08 – North Cargo Hardstand.** Construction of a new approximately 360,000 square foot (1,200 feet by 300 feet) cargo aircraft hardstand in the North Cargo area east of Taxiway A. The hardstand would accommodate five aircraft for loading and unloading of cargo freight and parking of cargo aircraft. Construction of A08 will require the relocation of the existing United maintenance hangar and Swissport cargo facility (S08), relocation of the Port's aviation maintenance facility (S07), and relocation of ground service equipment maintenance (S09). Trip generation for the project is included in the North Cargo Area calculations.
- **T01 – North Gates.** Construction of a new multi-level terminal concourse and aircraft apron to accommodate up to 19 gates. The new terminal concourse would have a footprint of approximately 203,000 square feet and contain three levels (approximately 609,000 square feet total). The new concourse would include a ramp level for baggage handling and aircraft support functions; a concourse level with passenger holdrooms, concessions, restrooms, and other passenger and airline support functions; a mezzanine level with office space; and an above-ground elevated pedestrian walkway to the passenger terminal. The new facility would be located north of the North Satellite Concourse and would displace the Aircraft Rescue and Firefighting (ARFF) station (S02), Cargo 6 warehouse (C01), deicing tanks (S06), North Airport Expressway (L01) and fuel rack (S04). The new concourse would also include an elevated pedestrian walkway to connect to the existing north satellite concourse.
- **T02 – Second Terminal and Parking.** Construction of a new multi-level passenger terminal. The new terminal would be approximately 575,000 square feet in size, with a footprint of approximately 166,000 square feet. The new terminal would include a basement level for baggage handling and screening; a baggage claim level for arriving passengers; an interstitial (or open) level connected to a new garage that provides commercial curbside space; and a departures level with passenger check-in and security screening facilities. This would be located across the Airport Expressway from the proposed terminal concourse, connected via an elevated pedestrian walkway. A new multi-level parking garage would also be provided. The garage would provide approximately 1,350 parking spaces. The new facilities would displace the Doug Fox Parking Lot.

- **C01 – Cargo 4 South Redevelopment.** Construction of a new approximately 80,000 square foot building (warehouse and office space, truck terminals, and parking) on the Cargo 4 South site located in the existing central cargo area of the Airport.
- **C02 – Offsite Cargo Phase 1.** Construction of a new approximately 330,000 square foot cargo warehouse building (warehouse, office space, truck terminals, and parking) on the Port's L-shaped parcel located north of State Route (SR) 518.
- **C03 – Offsite Cargo Phase 2.** Construction of a new approximately 90,000 square foot cargo warehouse building (warehouse and office space, truck terminals, and parking) on the Port's L-shaped parcel located north of SR 518.
- **L01 – North Airport Expressway (NAE) Relocation (southbound lanes).** Construction of approximately 7,300-linear-feet of new airport roadways to access the second terminal and to alleviate congestion on existing roadways. The new roadway would replace a section of the existing roadways eliminated for the construction of A09 and T01. The relocated portion of the NAE would also be widened from three lanes to four lanes.
- **L02 – Elevated Busway and Stations.** Construction of approximately 6,000-linear-feet of elevated busway and three stations to connect the main terminal, new second terminal, and Rental Car Facility. The busway and stations would be located along the eastern edge of airport property and would tie into existing bus routes. Construction would displace the ground transportation holding lot (L05).
- **L03 – Second Terminal Roads and Curbside.** Construction of a loop ramp from the southbound lanes of the NAE to provide access to the new passenger terminal. The ramp would connect to the existing S. 160th St. Loop, westbound SR 518 on-ramp at S. 160th St., or the existing northbound lanes of the NAE. Split-level curbsides would also be constructed for arriving vehicles, departing vehicles, and commercial vehicles such as shuttles, taxis, and ride-share companies. No trips are expected to be generated by the project.
- **L04 – Northeast Ground Transportation Center (NE GTC).** Construction of a NE GTC on the north side of the existing parking garage. The NE GTC facility would be approximately 255,000 square feet and would include: 1) expansion of the existing charter and cruise bus lot below the new building on the ground floor level, 2) a shuttle bus platform on level two serving as the southern terminus of the elevated busway (approximately 87,000 square feet), 3) passenger circulation and check-in facilities on level three providing terminal-quality space for passengers arriving/departing on the elevated busway and Link Light Rail at the Airport Station to transition to/from the main terminal (approximately 64,000 square feet), and 4) office space on levels four and five (approximately 52,000 square feet per level).
- **L05 – North Ground Transportation (GT) Holding Lot.** Relocation of the GT holding lot on Port property north of SR 518 and south of S. 144th St. to replace the existing North GT Holding Lot displaced by L02 and South Ground Transportation Holding Lot on S 190th St displaced by S01. The new lots located north and east of the intersection of S 146th St and 16th Ave S would be used for ground transportation holding of taxis, transportation network company vehicles, and other chartered vehicles as they await trip requests or passenger arrival.
- **L07 – Employee Parking Structure.** Construction of a new eight-story (i.e., one below grade and seven above grade) parking structure that would provide approximately 3,500 parking stalls on

Port property north of SR 518 and south of S. 144th St. adjacent to and west of the existing North Employee Parking Lot (NEPL) to accommodate employee parking demand.

- **S01 – Fuel Farm Expansion.** Expansion of the existing fuel farm onto the existing South GT Holding Lot. This would include four new settling tanks, adding approximately 10-million-gallons storage capacity; an approximately 500,000-gallon blending tank and approximately 100,000-gallon Sustainable Aviation Fuels (SAF) receipt tank; additional piping; expanded spill containment dike; and a new truck fuel rack to support the delivery of SAF for blending.
- **S02 – Primary ARFF Facility.** Relocation of the Primary ARFF station for construction of T01. The new ARFF would be approximately 50,000 square feet and would be located on the south airfield between Runway 16R/34L and Runway 16C/34C.
- **S03 – Secondary ARFF Facility.** Construction of an approximately 10,000 square foot Secondary ARFF to provide ambulatory response to the terminals and concourses, fuel spill and fire response to the concourse ramp areas, and back-up emergency response to the airfield. The Secondary ARFF facility would be integrated within the new Concourse (T01) at the southeast end of the concourse and would have both airside and landside access.
- **S04 – Fuel Rack Relocation.** Relocation of the fuel rack from the Cargo 6 area to the Cargo 3 area for construction of T01. The fuel rack is part of the existing fuel distribution system at SEA, where fuel trucks refill.
- **S05 – Triculator.** Relocation of the triculator building from east of the existing ARFF station to the north cargo area to clear the site for A09. The triculator transfers aircraft waste to the sewer system.
- **S06 –De-icing Tanks.** Relocation of de-icing fluid tanks currently located at Cargo 6 and Cargo 7 to a northern location and southern location to clear the site for the new concourse. Each site would have a containment system and two tanks, one for Type I de-icing fluid (for shorter-term protection) and the second for Type IV de-icing fluid (for longer-term protection). Each set of tanks would also have a blending station.
- **S07 – Westside Maintenance Campus.** Relocation of the Port's aviation maintenance facility (AMF) for construction of A08 and T01. The AMF would be located on vacant land on the west side of the Airport in the Westside Maintenance Campus, co-locating it with other related functions. The AMF facilities would include a vehicle fuel rack, airfield deicer storage, snow equipment storage, multi-bay buildings and associated maintenance facilities. The existing S. 168th St. access would be reconstructed, and a new access road would also be constructed from S. 157th Place to the new facility.
- **S08 – North Airline Support.** Construction of an approximately 15,000 square foot airline support building in the northeast corner of the North Cargo area to accommodate displaced aircraft maintenance functions from the United Airlines maintenance building and Swissport cargo facility. Both facilities are located in the area proposed for the construction of A08.
- **S09 – West Airline Support.** An approximately 12,500 square foot expansion of the existing (approximately 25,700 square foot) AMB/AFCO III building used for cargo operations to the west. The expanded building would accommodate displaced Ground Service Equipment maintenance functions for construction of A08.
- **S10 – Centralized Receiving and Distribution Center (CRDC).** Construction of a new approximately 55,000 square foot CRDC on Port property north of SR 518 and south of S. 144th St. to improve

security and efficiency in moving supplies to SEA dining and retail concessionaires in the passenger terminals. The new CRDC would include a warehouse, office space, truck terminals, and parking for visitors and employees.

APPENDIX L

Surface Transportation

Local Jurisdiction Coordination Summary

Surface Transportation Meeting Summary

Meetings were held with local jurisdictions (WSDOT, City of SeaTac, City of Burien, City of Des Moines, and the City of Tukwila), presenting the SAMP NTP Environmental Review traffic analysis results and the Port's proposed mitigation.

WSDOT

- Weekly meetings were held throughout the preparation of the analysis.
- A meeting presenting the results and proposed mitigation occurred on March 26, 2024 with follow-up discussions on April 16, 24, and 30, 2024.
- On April 30, 2024, WSDOT presented the Port and FAA mitigation requirements for impacts to WSDOT controlled intersections.
- The Future Conditions Report was provided to WSDOT on May 14, 2024.
- WSDOT reviewed the Future Conditions Report and provided comments back on June 6, 2024.
- The Future Conditions Report was updated and provided back to WSDOT on June 19, 2024.
- WSDOT responded on June 25, 2024 they had no further comments on the Future Conditions Report at this time.

Des Moines

- A meeting presenting the results and proposed mitigation occurred on April 1, 2024.
- A meeting summary was sent on April 2, 2024.
- On April 15, 2024, the City of Des Moines provided an email containing the City mitigation requirements.

Burien

- A meeting presenting the results and proposed mitigation occurred on April 10, 2024.
- A meeting summary was sent on April 11, 2024.
- On April 26, 2024, the City of Burien provided an email indicating the City had no additional comments on the analysis or proposed mitigation.

Tukwila

- A meeting presenting the results and proposed mitigation occurred on April 10, 2024.
- A meeting summary was sent on April 11, 2024.
- On April 26, 2024 the City of Tukwila provided an email indicating the City had no additional comments on the analysis or proposed mitigation.

City of SeaTac

- A meeting presenting the results and proposed mitigation occurred on April 1, 2024.
- A meeting summary was sent on April 2, 2024.
- On April 23, 2024, the City of SeaTac provided an email with comments.
- A follow-up meeting was held on May 10, 2024 to address comments.
- A meeting summary was sent on May 14, 2024.

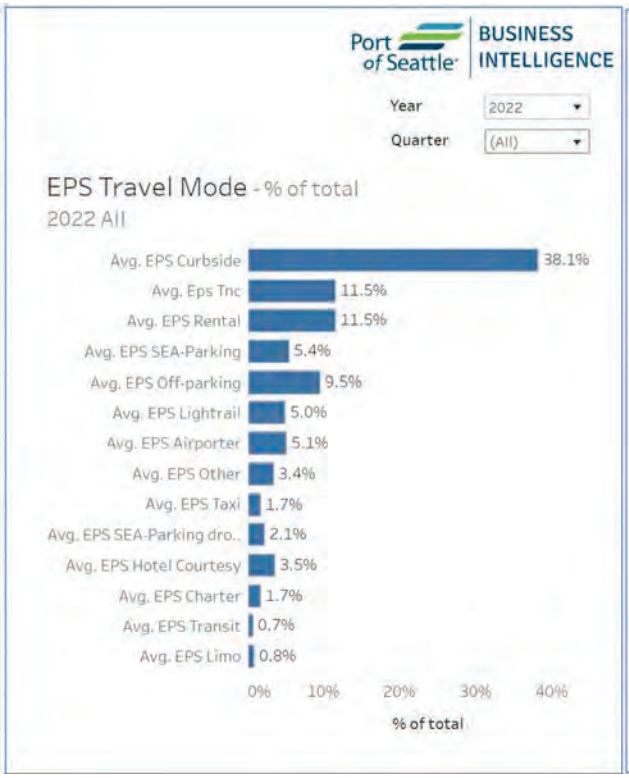
APPENDIX L

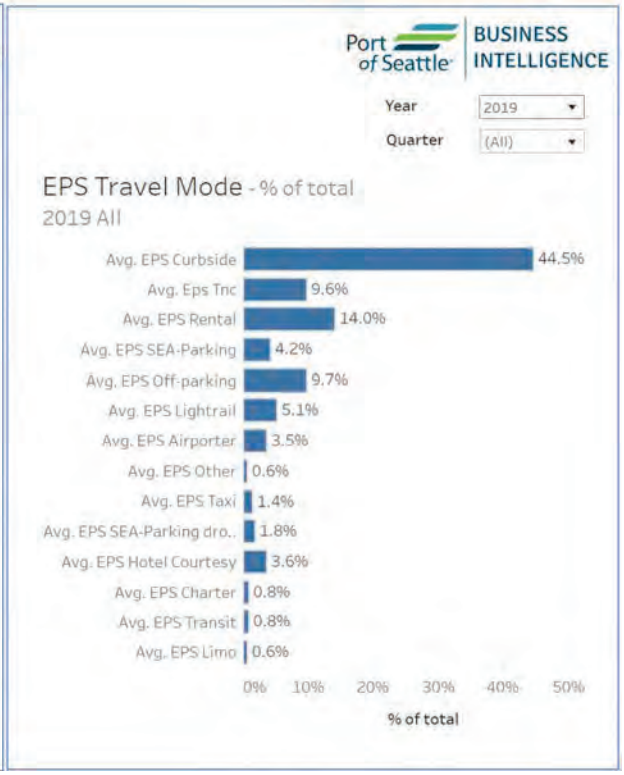
Surface Transportation

References

Transportation Modes at SEA
Puget Sound Regional Council Adopted LOS for Regionally Significant State Highways

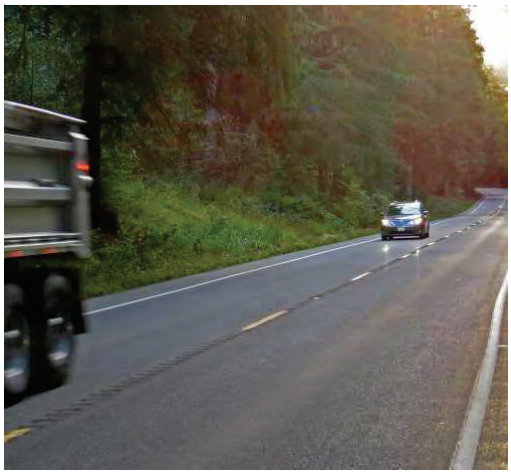
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Puget Sound Regional Council



Adopted Level of Service Standards for Regionally Significant State Highways

In compliance with 1998 amendments (HB 1487, the "Level of Service Bill") to the Growth Management Act (GMA) the Puget Sound Regional Council Executive Board adopted level of service (LOS) standards for regionally significant state highways in the central Puget Sound region. Regionally significant state highways are state transportation facilities that are not designated as being of statewide significance (also called non-HSS).

Level of Service Standards

This table (along with the map) explains the level of service standards.

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Tier	LOS Standard	Description
1	LOS "E/mitigated"	Tier 1: For this process, the "inner" urban area is generally defined as a 3-mile buffer around the most heavily traveled freeways (I-5, I-405, SR 167, SR 520, and I-90), plus all designated urban centers (most are located in the freeway buffer already). The standard for Tier 1 routes is LOS "E/mitigated," meaning that congestion should be mitigated (such as transit) when p.m. peak hour LOS falls below LOS "E."
2	LOS "D"	Tier 2: These routes serve the "outer" urban area - those outside the 3-mile buffer - and connect the "main" urban growth area (UGA) to the first set of "satellite" UGA's (e.g., SR 410 to Enumclaw). These urban and rural areas are generally farther from transit alternatives, have fewer alternative roadway routes, and locally adopted LOS standards in these areas are generally LOS "D" or better. The standard for Tier 2 routes is LOS "D."
3	LOS "C"	Tier 3: Rural routes are regionally significant state routes in rural areas that are not in Tier 2. The standard for rural routes is LOS "C," consistent with the rural standard in effect for those routes once they leave the four counties in the PSRC region, such as SR 530 entering Skagit County.

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The LOS will be measured consistent with the latest edition (preferred) of the Highway Capacity Manual and based on a one-hour p.m. peak period.

- Maps +
- Level of Service Standards for State Ferry Routes +
- How Level of Service Standards Will Be Used +
- Local Compliance With Requirements +
- Mitigation Strategies +
- Level of Service Standards for Highways of Statewide Significance +
- System Updates and Amendments +
- Local Concurrency +

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APPENDIX O

Agency & Public Engagement

The following Appendix provides a summary of the agency and public engagement activities that occurred during the Environmental Assessment (EA). Additional information on Scoping is provided in Appendix N.

Engagement Summary

Comments and Responses

Submitted Studies and Materials

APPENDIX O

Agency & Public Engagement

Engagement Summary

Regulatory changes since the publication of the Draft EA includes the revocation of the following Executive Orders (EO): EO 11991, EO 12898, EO 13985, EO 13990, EO 14007, EO 14008, EO 14027, EO 14030, EO 14031, EO 14045, EO 14049, EO 14050, EO 14057, EO 14072, EO 14082, EO 14089, EO 14091, EO 14094, EO 14096, EO 14112, and EO 14124. In addition, Council on Environmental Quality (CEQ) revoked its regulations (40 Code of Federal Regulations [CFR] parts 1500-1508) implementing NEPA, 42 United States Code (U.S.C.) 4321 *et seq*., as amended, in response to EO 14154, *Unleashing American Energy*. This Engagement Summary reflects the public involvement process completed for the Draft EA, which relied upon the NEPA statute (42 U.S.C. 4321 et seq., as amended) and FAA Orders 1050.1F and 5050.4B as well as now-rescinded regulations. FAA's final decision will rely upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. _ (2025).

AR008163
Sustainable Airport Master Plan (SAMP)
FAA's NEPA Draft Environmental Assessment (EA)
Engagement Summary

Overview

This document summarizes the public engagement for the Federal Aviation Administration's (FAA) National Environmental Policy Act (NEPA) Draft Environmental Assessment (EA) for SAMP, organized by communications/engagement materials, public meetings, briefings, and media coverage.

Coordination and Public Involvement

This summary discusses coordination and public involvement associated with the EA process. The FAA is the lead federal agency to ensure compliance with NEPA for this project and has the discretion to determine the appropriate level of public involvement. The coordination and public involvement for this project comply with public involvement requirements and policies including NEPA, as amended, Council on Environmental Quality (CEQ), Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] §§ 1503.1(a) and 1506.6), FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4B, NEPA Implementing Instructions for Airport Actions.

NEPA and the CEQ Regulations, in describing the public involvement process, require federal agencies to: consider environmental information in their decision-making process; solicit appropriate information from the public; fully assess and disclose potential environmental impacts resulting from the proposed action and alternatives; and provide the public with this information and allow it to comment on these findings. While community involvement does not always lead to fully supported decisions, especially where there is a wide diversity of community views, decisions informed by community concerns can better serve the collective public interest and build trust in the FAA by establishing regular communications and involvement with the community throughout a project that has raised community concerns.

The following sections describe the public involvement activities that have been done to consult effectively with the public about their views, concerns, and ideas regarding the EA, the NEPA process and, ultimately, the adequacy of the EA environmental analyses.

The EA process has had several opportunities for public outreach activities that are described in this chapter. The public outreach efforts for this EA have been developed to solicit input from, and provide information to the following groups:

- Community partners
- Tenants/Operators
- Airport users/traveling public
- Agencies and other partners
- Port employees
- Business community
- Elected officials/GR stakeholders
- Underrepresented Communities
- General public

A comprehensive audience breakdown can be found in Appendix A.

Public Website

At the beginning of the EA process, a public website was developed to keep the general public informed about the EA, the NEPA process, and opportunities for public participation during the EA process. The Project website is linked to the Port of Seattle website and was updated throughout the NEPA process with high-level, easy-to-understand information about the process, the documents (when published), and how to comment.

The Project website was available to translate via Google Translate and all linked materials were translated in the following languages: English, Spanish, Vietnamese, Chinese (simplified), Somali, Amharic and Korean. These materials include an Environmental Review and Airport Master Plan factsheet, FAQs, and a 30-day notice SAMP factsheet. For more details on the Project website's materials, see Appendix B.

Scoping Outreach

- Public Scoping
- Agency Scoping
- Scoping Comments

Outreach Prior to Release of the Draft EA

Several outreach efforts were conducted prior to and following the public release of the Draft EA. A comprehensive list of materials mentioned in the section and related metrics can be found in Appendix B.

30 Day Notice Materials

The SAMP Project website was updated on September 20, 2024 with FAQs, an Environmental Process Factsheet, SAMP Factsheet, and a video highlighting the project and noting that NEPA documents would be released on October 21, 2024. A short write-up about SAMP, the NEPA process, and how the pubic could engage was included in the Port of Seattle's existing newsletters. A press release was published including the NEPA release date, how to comment, and key information about the NEPA process. Information about the NEPA public comment process and upcoming release date was shared across Port social media pages, including LinkedIn, X, Facebook, and Instagram.

Throughout September 2024, Port staff briefed Port of Seattle Commissioners, local city councils (Burien, Federal Way, Normandy Park, Tukwila, Des Moines, and Federal Way), local transportation boards, and other local stakeholders. For a complete list of briefings, see Appendix C.

Outreach to General EJ Population

As part of the overall community engagement and outreach program for the environmental review of SEA's Sustainable Airport Master Plan Near-Term Projects, the team defined a project goal of engaging underrepresented communities within South King County. To achieve this goal, the team developed strategies to reach underrepresented communities, including multicultural media and partnerships with trusted community-based organizations.

Multicultural media: The Port ran ads in NW Asian Weekly, South Seattle Emerald, Runtanews.com (Somali), Se Habla Media (formerly Univision), and Larazanw.com (Spanish) for 3.5 weeks after the NEPA documents were published.

Community Partnerships: The Port enlisted The Vida Agency to help engage and provide community organizations with resources to understand the NEPA process and in turn engage with their community about the NEPA EA process. This involved:

- Facilitating meetings between community partners and Port representatives as an opportunity to ask questions, learn about project purpose and confirm partnership with Port.
- Sharing FAA approved outreach materials with community
- Sharing project information with communities where they already are
- Providing resources and support from the Port, including technical support and ongoing relationship development

Availability of the Draft EA

On October 21, 2024 the Notice of Availability of the Draft EA and Notice of Intent to Hold a Public Hearing / Workshop was published, announcing the start of a 45-day public comment period. A press release announcing the availability of the draft was published on October 21, 2024. A notice was also placed on the EA project website. The Port also published the notice through their social media accounts.

The comment period was scheduled to end on December 5, 2024, but was later extended by the FAA to December 13, 2024. Public comment period extension notices were posted on the SAMP Project website, added to all materials posted on the Project website including FAQs, the 30-Day Notice SAMP Factsheet, the Environmental Review and Airport Master Plan Factsheet, and the Community Process Factsheet. These materials were posted in English, Spanish, Vietnamese, Chinese (simplified), Somali, Amharic and Korean. Additionally, notices were sent out to the Port of Seattle's existing newsletters, a press release was published, and the public comment period extension was shared across Port social media pages. A media advisory was sent out on November 11, 2024 and a legal notice was shared on November 14, 2024.

After the public comment period extension, comments were due by Friday, December 13, 2024. Paper copies of the Draft EA were made available for public review at each of the following locations during normal business hours:

- Sea-Tac Airport Office
  Mezzanine Level
- Burien Library
  400 SW 152nd Street, Burien, WA 98166
- Des Moines Library
  21620 11th Avenue S, Des Moines, WA 98198
- Federal Way 320th Library
  848 S 320th St., Federal Way, WA 98003
- SeaTac Valley View Library
  17850 Military Road S, SeaTac, WA 98188
- Seattle White Center Library
  1409 SW 107th St, Seattle, WA 98146
- Tukwila Library
  14380 Tukwila International Blvd, Tukwila, WA 98168
- Vashon Library
  17210 Vashon Hwy SW, Vashon, WA 98070

Additional overview materials with QR codes to the SAMP Project website with NEPA documents were also available at Pier 69, 2711 Alaskan Way, Seattle, WA 98121.

Public Meetings

The Port of Seattle hosted four in-person public meetings to share information about the NEPA draft document and receive official public comments. Meetings were designed for members of the public to attend and ask technical team members questions and also provide public comments.

At each meeting, hard copies of all website materials were available. Additionally, each meeting featured over 30 informational boards explaining the EA findings, the NEPA process, and opportunities for public participation during the EA process. These boards were made available on the Project website. Each meeting provided all these materials in English, Spanish, Vietnamese, Chinese (simplified), Somali, Amharic and Korean. Translation services were available upon request.

A video played throughout each public meeting introducing SAMP, explaining the environmental review process, and provided a high-level overview of key findings from the EA.

A comprehensive list of materials available during the public meetings and comment and attendance metrics can be found in Appendix B.

Date	Location
November 12, 2024 6:00–8:00 PM	Wildwood Elementary Federal Way, WA
November 13, 2024 6:00–8:00 PM	Mount Rainier High School Des Moines, WA
November 14, 2024 6:00–8:00 PM	Highline High School Burien, WA
November 16, 2024 10:00 AM–12:00 PM	McMicken Heights Elementary SeaTac, WA

Comments on the Draft EA

Agencies and the public had the following four ways to provide comments on the Draft EA:

- Submit written comments on a comment form at a public meeting;
- Provide comments orally to a court reporter at a public meeting;
- Submit comments electronically during the comment period to samp@portseattle.org; or
- Mail written comments during the comment period to:

  Mr. Steve Rybolt
  Port of Seattle, Aviation Environment and Sustainability
  P.O. Box 68727, Seattle, WA 98168

Responses to Comments on the Draft EA

Comments were reviewed, and responses are provided in Appendix O, Agency and Public Engagement of the Final EA

Appendix A—Audiences

The audience list below captures a high-level overview of audience groups that were engaged during this process.

Audience category	Individual audiences
Community partners	• Congolese Integration Network • Para Los Ninos • Serve Ethiopians • Somali Health Board • SHAG Tukwila • SHAG Federal Way • Environmental Science Center • Duwamish Valley • SR3 – Sealife Response, Rehabilitation, and Research • STACC • Friends of Normandy Park
Tenants/Operators	• Taxi drivers • Uber/Lyft drivers • Food service providers
Airport users/traveling public	
Agencies and other partners	• Neighboring cities • StART • Highline Forum • School District (Highline, Federal Way, Tukwila, etc.)
Port employees	• Via newsletters (This Week @ SEA, Lyttle Update, ED Update)
Business community	• Boeing • Microsoft • Amazon
Elected officials/GR stakeholders	• Gov. Inslee • Washington State Legislature • King County Executive Dow Constantine • King County Council • Port of Seattle Commission • City Councils (Burien, Des Moines, Federal Way, Normandy Park, SeaTac, and Tukwila)
Underrepresented Communities	• Communities of color • Native communities • Immigrant and refugee populations • Low-income communities • English Language Learners • Elders • Persons with disabilities
General public	

Appendix B—Digital and Printed Materials

Date	Material & Metric
July 25, 2024 Pre-notice Preparations *The website was translated via a Google Translate tool.*	Project website
September 20, 2024, 30-Day Notice	Project website update (9/21-10/21: 457 website views) Post to the Port's Temp website • Under the "Environmental –SEPA/NEPA" section • Temp site hosted by WPPA Email newsletters • SAMP Email (1,961 sent) • NEPA Email (1,961 sent) Environmental Review and Airport Master Plan factsheet* FAQs* 30-day notice SAMP factsheet* Press release (3,418 sent) Social media posts • Port LinkedIn, Port X, Port Facebook
October 21, 2024 NEPA Documents Published; public comment period begins	Project website(10/21-12/13: 14,300 views) Email newsletters • SAMP Email (1,955 sent) • NEPA Email (1,955 sent) • Connections Email (6,861 sent) Press release (3,403 sent) Social media posts • Port LinkedIn, Port Twitter (X), Port Facebook Community Process Fact Sheet* Updated FAQs* Legal notice Postcard – Mailer (Sent to 126,000+ residences in near-airport communities) • Translated in six (6) additional languages • Most received in mailbox either 10/25 or week of 10/28

AR008169

Sustainable Airport Master Plan (SAMP)
FAA's NEPA Draft Environmental Assessment (EA)
Engagement Summary

Date	Material & Metric
October 23, 2024 Ads ran between 10/23 to 11/15 A revised second round of social media ads with updated messaging ran from 11/20 to 12/4	Multicultural media ads launch • Sound Publishing • South King Media • Westside Seattle • NW Asian Weekly • South Seattle Emerald • Runtanews.com • International Examiner • El Siete Dias SAMP shorter video -3:36 (1,175 views as of 12/10) • Six additional translations added to closed captioning Port channel social media ads
November 1, 2024	Narrated PowerPoint video - 35:13 (445 views as of 12/10
November 6, 2024	Social Media • Port LinkedIn, Port Twitter (X), SEA Twitter (X), Port Facebook, SEA Facebook
November 11, 2024	Social Media • Port LinkedIn, Port X, Port Facebook
November 12 – 15, 2024 Public Comment Period Extension	Project website * Materials update • FAQs* • 30-day notice SAMP factsheet* • Environmental Review and Airport Master Plan factsheet* • Community process factsheet* Email newsletters • SAMP Email: 11/12 (Public Mtgs – 1,957 sent) and 11/13 (Notice of Extension – 1,958 sent) • NEPA Email: 11/12 (Public Mtgs – 1,952 sent) and 11/13 (Notice of Extension - 1,952 sent) Media advisory 11/12 Legal notice 11/14 Social media 11/15 • Port LinkedIn, Port X, Port Facebook
November 19 – 20, 2024	Email and/or call 11/12 and 11/13 public meeting attendees to inform of comment period extension date

Note: *Starred materials were translated into Amharic, Chinese, Korean, Somali, Spanish, Vietnamese in addition to email blurb noting translations online*

Public Meetings

Date	Material	Metrics
November 12, 2024 *Photos – password: portpress*	Public meeting • 6–8 PM at Wildwood Elementary, Federal Way, WA	28 attendees • 6 written comments • 5 verbal comments
November 13, 2024	Public meeting • 6–8 PM at Mount Rainier High School, Des Moines, WA	83 attendees • 9 written comments • 7 verbal comments
November 14, 2024	Public meeting • 6–8 PM at Highline High School, Burien, WA	65 attendees • 13 written comments • 14 verbal comments
November 16, 2024	Public meeting • 10 AM–12 PM at McMicken Heights Elementary, SeaTac, WA	55 attendees • 12 written comments • 10 verbal comments

Public meeting outreach materials:

- FAQs
- 30-day notice SAMP factsheet
- Environmental Review and Airport Master Plan factsheet
- Community process factsheet
- Boards
- Open House Station Guide

All of the above materials available in English, Amharic, Chinese (Simplified), Korean, Somali, Spanish, Vietnamese, translation and accessibility services available upon request

Appendix C—Briefings

Date	Briefing	Type
September 5, 2024	Port of Seattle Commission Special Meeting	
September 9, 2024	Port of Seattle Commission 2:2:1	In-person
September 23, 2024	Burien City Council Federal Way City Council Normandy Park City Council Tukwila City Council SCATBd (South County Area Transportation Board) ETP (Eastside Transportation Board) SeaShore (Seattle-Shoreline Transportation Board) SCA (Sound Cities Association) StART Committee	In-person Email Email In-person Email Email Email Email Email
September 24, 2024	SeaTac City Council	In-person
September 25, 2024	Highline Forum	In-person
September 26, 2024	Des Moines City Council	In-person
October 1, 2024	Federal Way City Council	In-person
October 2, 2024	Serve Ethiopians	In-person
October 3, 2024	Congolese Integration Network	In-person
October 4, 2024	Para Los Ninos Commissioner 2:2:1	In-person In-person
October 7, 2024	Commissioner 2:2:1	In-person
October 10, 2024	Kent Black Action Committee (KBAC)	In-person
October 11, 2024	STACC Meeting	In-person
October 15, 2024	ECOSS Training	In-person
October 17, 2024	SHAG Housing - FW	In-person
October 21, 2024	PSRC (Puget Sound Regional Council)	Online
October 23, 2024	StART Committee Meeting	In-person
October 24, 2024	Des Moines City Council Seattle Chamber's Regional Leadership Conference hosted dinner Seattle Chamber's Regional Leadership Conference panel with Alaska Airlines and Expedia	In-person In-person In-person
October 25, 2024	Tukwila City Council - email	Email
October 28, 2024	Burien City Council	In-person
October 29, 2024	Congressional Staff Virtual Meeting (set up by Eric Schinfeld)	Online
November 1, 2024	SeaShore (Seattle-Shoreline Transportation Board)	In-person
November 6, 2024	Federal Way City Council	In-person
November 7, 2024	Somali Health Board	In-person
November 8, 2024	ETP (Eastside Transportation Partnership)	In-person

Date	Briefing	Type
November 12, 2024	Normandy Park City Council	In-person
November 15, 2024	Leadership Eastside Group	In-person
November 19, 2024	SCATBd (South County Area Transportation Board) SeaTac City Council	In-person In-person
November 20, 2024	Highline Forum Puget Sound Regional Council Regional Staff Meeting	In-person Online
December 6, 2024	Wesley Homes in Des Moines	In-person

Media Coverage

Date	Story	Outlet
October 21, 2024	Public Comment Period Opens for Port of Seattle's Draft Environmental Assessment on Sustainable Airport Master Plan	SeaTac Blog
October 25, 2024	New terminal, 19 gates eyed for Seattle Tacoma International Airport	Daily Journal of Commerce
November 11, 2024	Share your thoughts on SEA's plans for future development	KIRO 7
November 2, 2024	Airport noise is back on Federal Way's radar	Federal Way Mirror
November 12, 2024	Morning newsclip	KOMO 4
November 13, 2024	SEA's future development: You have more time to share your thoughts	KIRO 7
November 13, 2024	Evening newsclip	KIRO 7
November 21, 2024	Fixing Sea-Tac: Much-Needed Airport Expansion is a Long Way Off	Post Alley
November 30, 2024	Busway for SeaTac Airport	Seattle Transit Blog
December 2, 2024	Evening newsclip	KOMO 4
December 12, 2024	REMINDER: Deadline for Public Comment regarding Sea-Tac Airport SAMP is this Friday, Dec. 13	BTown Blog
December 12, 2024	Sea-Tac Airport says major expansion will do little harm. Neighbors don't buy it	KUOW
Event Page	Deadline for Public Comment regarding Sea-Tac Airport SAMP is Dec. 13	White Center Blog

APPENDIX O

Agency & Public Engagement

Comments and Responses

Introduction

The public comment period ran from October 21st to December 13th, 2024, and included four public meetings held in the Cities of Federal Way, Des Moines, SeaTac, and Burien, Washington. The public comment period for the Draft Environmental Assessment (EA) began on October 21, 2024, with publication of the Draft EA legal notice. The Federal Aviation Administration (FAA) initially planned to circulate the Draft EA for a 30-day public comment period upon release on October 21, 2024, but extended the comment period to 45-days prior to the release of the Draft EA at the request of the Port based on the complexity of the analysis. On November 8, 2024, the FAA then extended the comment period to Friday, December 13th after taking into consideration community interest and the placement of Thanksgiving within the comment period. Notice of this extension was provided at the public meetings, posted on the project website, and provided to the people who requested the extension.

Comments collected during the Draft EA public comment period were provided through one or more of the following comment-submittal methods:

- In writing, while attending one of the Draft EA public meetings
- Orally to the stenographer, while attending one of the Draft EA public meetings
- Electronically, via the project website
- Electronically, via email
- In writing, by mail

During the review of the comments, the FAA and the Port recognized recurring comments that were raised by numerous people. Consequently, this Appendix begins with General Responses that address the recurring comments and then moves to the individual responses. The FAA and the Port considered and addressed each individual comment provided; however, individual responses are not required as part of the EA process.

This Appendix includes comment letters, e-mails, and public hearing transcripts with individual comments bracketed and numbered. A response to each numbered comment is provided on the right-hand side of the page where the comment appears. When one of the General Responses is applicable, the response will reference the appropriate General Response number (i.e., General Response #1). The FAA and Port encourage readers to review the General Responses along with the FAA's response to specific comments as a reader may find that one or more General Responses not specifically listed are nevertheless responsive to a particular comment. To assist the reader in finding responses to their specific comments, **Table 1** provides an alphabetical list of commenters with the respective assigned comment number.

The public comments received on the Draft EA have resulted in minor edits that improved the accuracy and thoroughness of the Final EA analysis. A list of the edits made can be found in the Errata located at the beginning of the Final EA. The ultimate conclusions of the Draft EA remain the same in the Final EA.

General Response #1 – Preparation of an Environmental Impact Statement (EIS)

Several commenters argued that the FAA should have prepared an environmental impact Statement (EIS) rather than an EA. The National Environmental Policy Act (NEPA) provides three levels of environmental review and documentation: categorical exclusion (CATEX), EA, or EIS. For FAA funded or approved projects, the appropriate level of NEPA review is determined in accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions.*

Chapter 5 of FAA Order 1050.1F includes a list of categorically excluded actions. The list identifies actions that the FAA has found do not normally require an EA or EIS except in the case of extraordinary circumstances (Section 5-2). If the proposed airport project is not included in Section 5-6 of FAA Order 1050.1F, an EA or EIS must be prepared. A few components of the NTPs are included in the list of categorically excluded actions. However, some are not and, therefore, an EA or EIS was required.

Chapter 3 of FAA Order 1050.1F states the purpose of an EA is to determine whether a proposed action has the potential to significantly affect the human environment. An EA is a concise public document that briefly provides sufficient evidence and analysis for determining whether to prepare an EIS or issue a finding of no significant impact (FONSI) or finding of no significant impact/record or decision (FONSI/ROD). An EIS is required when any of the impacts of the proposed action, after incorporating any mitigation commitments, remain significant to the human environment. While the regulatory requirements for an EIS are more rigorous than the requirements for an EA, the impact analysis for each resource category is essentially the same for both an EIS and an EA.

The FAA considered the expected project impacts and public comments when determining whether to issue a FONSI/ROD or to prepare an EIS. As documented in the Draft EA and in these responses to comments, the Action Alternatives would not result in any significant impacts that cannot be mitigated below levels of significance in accordance with the thresholds established in FAA Orders 1050.1F and 5050.4B. An EIS, therefore, is not required.

General Response #2 – Study Area

Several commenters argued that the General Study Area (GSA) should have been broader. Section 3.2 of the EA provides information on how the GSA was established. The GSA was developed considering areas of physical disturbance and potential direct or indirect impacts. It encompasses the area containing all components of the Action Alternatives for purposes of assessing potential effects of the Proposed Action on environmental resources in accordance with FAA Orders 1050.1F and 5050.4B. For some resources, the GSA was expanded after the initial analysis identified impacts may extend outside the GSA (such as biological and surface transportation). The air quality analysis used the mixing height (determined in coordination with the Puget Sound Clean Air Agency (PSCAA) to be 3084 feet above field elevation) as the study area.[1] The noise analysis relied on the 65+ Day Night Average Sound Level (DNL or Ldn) contour to determine noise impacts (See General Response #12).

The analysis did not identify impacts that exceeded the significance threshold within the GSA. Impacts outside of the GSA (or relevant resource specific study area) would be further attenuated or reduced compared to those occurring within the GSA. Therefore, extending the study areas would not result in the identification of additional impacts that would likely be significant.

[1] See Appendix C, Air Quality Protocol, Section 1.5.2, footnote 17.

General Response #3 – Public Outreach

Several commenters indicated that more public outreach was required. The public outreach associated with this EA exceeded the requirements established by the FAA in FAA Order 1050.1F. Appendix O includes more detailed information on all the public outreach efforts. In summary, the outreach efforts included a variety of steps.

At the beginning of the EA process, an external public website was developed to keep the public informed on the NEPA process. Updates on the development of the EA were posted to the website periodically during the NEPA process. The website had approximately 14,300 views and over 5,600 active users during the public comment period.

Thirty (30) days prior to the release of the Draft EA:

- The project website was updated to include a notice of the upcoming release of the Draft EA, responses to frequently asked questions (FAQs), an Environmental Process Factsheet, and a video highlighting the project and noting that the Draft EA would be released on October 21, 2024. Materials on the website were available in English, Spanish, Vietnamese, Chinese (simplified), Somali, Amharic and Korean.
- A short write-up about the Sustainable Airport Master Plan (SAMP), the NEPA process, and how the public could engage was included in the Port of Seattle's existing newsletters.
- A press release was published that included the Draft EA release date, how to comment, and key information about the NEPA process.
- Information about the Draft EA public comment process and upcoming release date was shared across Port social media pages.

Throughout September 2024, Port staff briefed Port of Seattle Commissioners, local city councils, local transportation boards, and local stakeholders on the upcoming release of the Draft EA.

Once the Draft EA was published on October 21, 2024:

- A notice was published in the Seattle Times and Daily Journal Commerce which described the Proposed Action, provided the public meeting dates, times, and locations, informed the public on how to obtain a copy of the Draft EA, and initiated the public comment period.
- Port Staff made a presentation at a Port Commissioners meeting on October 22, 2024, that included a summary of the analysis included in the Draft EA. The meeting had a virtual option as well as the option to attend in person.
- Ads in NW Asian Weekly, South Seattle Emerald, Runtanews.com (Somali), Se Habla Media (formerly Univision), and Larazanw.com (Spanish) ran for 3.5 weeks after the Draft EA was published.
- Postcards were sent to over 126,000 residences near the Airport that were translated into six (6) languages and included information on the release of the Draft EA and public meetings.
- The Port hosted four in-person public meetings. At each meeting there were over 30 informational boards explaining the NEPA process, the EA findings, and how to submit comments. These boards were posted on the project website. Translation services were available upon request at each meeting. Hard copies of all website materials were also available at each meeting. Over 230 people attended the public meetings, and 76 written/verbal comments were submitted.

- Materials on the website and at each meeting were available in English, Spanish, Vietnamese, Chinese (simplified), Somali, Amharic and Korean.

A hardcopy of the Draft EA was available at seven libraries and the Seattle Tacoma International Airport Conference Center. The seven libraries included the Burien Library, Des Moines Library, Valley View Library, Federal Way 320th Library, White Center Library, Tukwila Library, and the Vashon Library.

For these reasons, the FAA has determined that the public engagement was sufficient.

General Response #4 – Public Comment Period

Several commenters asserted that the comment period was insufficient. The FAA provided a public comment process in accordance with NEPA and FAA Orders 1050.1F and 5050.4B that exceeded minimum regulatory requirements. The FAA received requests to extend the public comment period prior to and after the release of the Draft EA. The FAA considered the rationale and need for each request when determining the appropriateness of an extension. The FAA granted two extensions of the public comment period for the Draft EA.

The FAA initially planned to circulate the Draft EA for a 30-day public comment period upon release on October 21, 2024, which is typical when a Draft EA is circulated for public comment (FAA Orders 1050.1F and 5050.4B). The FAA extended the comment period to 45-days prior to the release of the Draft EA at the request of the Port based on the complexity of the analysis, which was consistent with the FAA Reauthorization Act of 2024. On November 8, 2024, the FAA then extended the comment period to Friday, December 13th after taking into consideration community interest and the placement of Thanksgiving within the comment period.

The Port of Seattle provided notice of the release of the Draft EA on September 20, 2024, 31 days before the release of the Draft EA, to give the public time to prepare for the public comment period. In addition to the extended public comment period, the Port held four public meetings. The extended comment period aimed to balance providing the opportunity for public engagement with the need to move the project forward. The FAA and Port values all the comments received and carefully considered them during the decision-making process.

General Response #5 – Purpose of the National Environmental Policy Act (NEPA)

Several comments were premised on an incorrect understanding of the purpose of the NEPA. NEPA is a procedural, rather than substantive law, that requires federal agencies to assess the potential environmental effects of their proposed actions prior to making decisions.

While input and comments on the merits of the proposal, itself, are welcome and noted, the purpose of the EA is to disclose the potential impacts of the proposal to inform the decision-maker. Therefore, while the FAA notes comments that express an opinion about the merits of the proposals, the FAA's review of comments is focused on those that identify issues related to the adequacy of the environmental review.

Additionally, NEPA does not trigger a requirement to conduct analysis of previously completed actions or to provide mitigation for impacts not resulting from the current Proposed Action. The Draft EA was prepared following the policies, procedures, and guidelines outlined in FAA Orders 1050.1F and 5050.4B. These Orders outline FAA-accepted methodologies, models, techniques, and thresholds of significance for the impact assessment and preparation of environmental documents.

The analysis completed in the Draft EA compared the future Proposed Action and Hybrid Terminal Alternative to the No Action to identify the expected environmental consequences of implementing the Proposed Action or Hybrid Terminal Alternative. NEPA does not require the selection of the alternative with the least impacts. NEPA does require the FAA to consider the potential environmental impacts and public concerns when making a decision about proposed airport actions. The analysis in the EA relied on the best data available at the time the study was completed and the information presented in the EA is sufficient for the FAA to assess the impacts of each alternative.

The FAA considered the expected project impacts and public comments when determining whether to issue a FONSI/ROD or to prepare an EIS. As documented in the Draft EA and in these responses to comments, the Action Alternatives would not result in any significant impacts that cannot be mitigated below levels of significance in accordance with the thresholds established in FAA Orders 1050.1F and 5050.4B.

The Washington State Environmental Policy Act (SEPA) is a separate state environmental law independent of NEPA. SEPA regulations provide for a public agency to serve as the lead agency when they are the project proponent (WAC 197-11-926). The lead agency for SEPA for this project will be the Port. The FAA does not have a role in the SEPA process. When a proposal is subject to both NEPA and SEPA regulation, the lead agencies can choose to integrate their approach but are not required to do so. At the conclusion of Scoping, the FAA and Port elected to conduct separate reviews, which is allowed under SEPA regulations. This decision was included in the Final Scoping Report (Section III.), dated February 19, 2019.

General Response #6 – Mitigation

Several commenters argued for the identification of additional mitigation. As defined in FAA Order 1050.1F, mitigation includes “avoiding the impact; minimizing the impact; rectifying the impact by repairing, rehabilitating, or restoring the environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and compensating for the impact by replacing or providing substitute resources”. Impacts were avoided whenever possible. When impacts were unavoidable, the impacts were minimized to the greatest extent possible. Mitigation was used when avoidance and minimization was not enough to reduce the impacts below levels of significance.

The effectiveness of a mitigation measure was determined by evaluating the impact remaining after the application of the mitigation and determining either: (1) the mitigation reduced the impact to a less-than-significant level, or (2) no feasible mitigation exists to reduce the impact to a less-than-significant level, and, therefore, the impact was determined to be significant and unavoidable. No mitigation measures were needed or proposed when an impact was determined to be less-than-significant. Implementation of more than one mitigation measure may be needed to reduce an impact below level of significance.

The EA identifies mitigation to reduce impacts below levels of significance and minimization measures that are voluntarily included to further reduce impacts, in accordance with FAA Orders 1050.1F and 5050.4B. In addition, best management practices are included to reduce impacts during construction. A summary of all mitigation measures is included in Table 4-2.

General Response #7 – Alternative Analysis

Several commenters argued for the consideration of additional alternatives. Neither NEPA, nor FAA Orders 1050.1F or 5050.4B dictate the number of alternatives that must be carried forward for analysis in an EA. FAA Order 1050.1F states that alternatives "must meet the basic criteria for any alternative: it must be reasonable, feasible, and achieve the project's purpose." FAA is under no obligation to consider all conceivable alternatives. For alternatives considered but eliminated from further study, the EA briefly explains why these were eliminated.

The extensive alternative evaluation process is detailed in the Alternatives Technical Report in Appendix B. Alternatives from the SAMP process and received during Scoping were evaluated using a two-step screening process. The first level screening examined whether the alternative met the Purpose and Need, while the second level screening evaluated if the alternative was reasonable and feasible based on a qualitative evaluation of factors related to operational impacts and cost. Alternatives that made it past both screening levels were carried forward for detailed review in the EA.

General Response #7a – New Regional Airport

Several of the commenters requested that the FAA consider a new regional airport as an alternative in the EA. As discussed in the Alternatives Evaluation Technical Report in Appendix B, a new commercial service airport to serve the Puget Sound region has been studied for decades and is still currently being studied with no success in identifying an alternate site. Highlights of the process include:

- In 1994, the Puget Sound Regional Council Executive Board (PSRCE) adopted Resolution EB-94-01, which concluded that no feasible sites for a major supplemental airport could be found in the four-county region. The PSRC prepared the Regional Aviation Baseline Study to provide a clear picture of the aviation activities and needs in the region and set the stage for future planning efforts.
- The Commercial Aviation Coordinating Commission (CACC), established by the state of Washington in 2019, was tasked to identify a single preferred location for a new primary aviation facility. The final report submitted on June 15, 2023, identified three greenfield sites with no recommended site.
- In April 2023, Engrossed Substitute House Bill 1791 was signed creating a new working group (Commercial Aviation Work Group) to replace the CACC. This goal of this group is to evaluate the long-range commercial aviation and transportation needs of the state, including alternatives for additional aviation capacity which includes expanding use of existing airports and multi-modal opportunities.

Given that a site for a new regional airport has not been selected and the amount of time it would take to open a new regional airport, this option was not a reasonable or feasible alternative to address the near-term needs at SEA. Therefore, this alternative was eliminated from further consideration.

General Response #7b – Use of Other Airports

Several of the commenters requested that the FAA consider the use of other airports as an alternative in the EA. Since the deregulation of the airline industry in 1978, certificated U.S. air carriers are free to fly routes of their choice and serve airports of their choice. Airports that receive federal funding are considered public-use airports and must be made available for use on reasonable terms for all aeronautical uses, including when a carrier seeks to start service. 49 U.S.C. § 47107(a)(1). Moreover, airports cannot regulate or otherwise control airlines' routes; airlines are entitled to choose the airports they serve. 49 U.S.C. § 41713(b)(1).

Neither the Port nor the FAA can direct or place influence upon commercial service providers to provide commercial air carrier services at a particular airport or to require them to shift services from one airport to another. *Id.* Operators of public use airports, such as SEA, cannot deny access to an airline if the aircraft they propose to use can safely operate at that facility. Airport access restrictions must be preapproved by the FAA in accordance with 14 CFR Part 161- Notice and Approval of Airport Noise and Access Restrictions (Part 161). 49 U.S.C. § 47521(2)-(3); 14 C.F.R. Part 161. To date, the FAA has never approved an access restriction under Part 161.

Further, even if activity could be diverted to other local airports or other modes of transportation, there would still be the need to modernize and expand facilities at SEA that have reached their useful life. Therefore, this alternative was eliminated from further consideration.

General Response #7c – Limited Growth

Several of the commenters requested that the FAA consider limiting growth as an alternative in the EA. The volume of air service at an airport is a direct reflection of the population, incomes, economic activity, geographic location of communities using an airport and gate/hardstand availability. SEA, like most hub airports, engages in air service development to accommodate new routes. Regardless of marketing efforts, the new air service needs to have both a sufficient consumer base and gate/hardstand availability to be sustained. The unconstrained forecast is based on predictions of Seattle's socioeconomic trends and incorporates the expectation that new routes will be added in future years. Similarly, the constrained growth scenario also assumes that some new routes could be added in the future if gates or hardstands are available.

Both the Port and FAA have a limited ability to enact growth reduction strategies due to airline deregulation, which allows airlines to set their own routes, service frequency, and type (or size) of aircraft. 49 U.S.C. § 41713(b)(1). The Port has agreed to keep the Airport to be available for public use on "reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport." 49 U.S.C. § 47107(a)(1). In severe circumstances where there is systemic overscheduling of available hourly runway and airspace capacity, the FAA (but not the Port) has the authority to impose a cap on the number of flights at an airport; however, the FAA does not support flight caps as a long-term solution that is in the public interest. *See* 49 U.S.C. § 40103. Failure to provide the necessary facilities could effectively constrain air service as well as result in poor overall customer experience and failure to meet industry-established Level of Service (LOS) standards. For these reasons, this alternative was eliminated from further consideration.

General Response #7d – Utilization of Other Modes of Transportation

Several of the commenters requested that the FAA consider utilization of other modes of transportation as an alternative in the EA. Research has shown that other modes of transportation such as rail are viable alternatives to air travel up to approximately 300 to 475 miles depending on the speed of the rail. Beyond this point the use of rail or other modes of transportation either does not connect to the desired destinations or does so inefficiently. Based on this conclusion, the use of other modes of transportation would only address a small portion of the demand for short-distance trips. Of the top 20 markets being served, all but two (Boise and Spokane) are more than 475 air miles from SEA. Therefore, supplementing or replacing aircraft operations with other modes of transportation would not provide the efficient long-distance connections that customers expect from SEA and this alternative was eliminated from further consideration.

Utilization of other modes of transportation was also considered as an alternative to additional parking facilities. The ability of the Port to incentivize the use of mass transit exists, and the Port is actively exploring initiatives to reduce employee and passenger use of single-occupancy vehicles. The Port of Seattle Commission authorized five new employee commute trip reduction programs for 2025. However, it is unlikely to eliminate the need for additional parking. Therefore, the reliance on incentives on its own was not feasible as an alternative to building additional parking.

General Response #8 – Air Quality Analysis

Several commenters challenged the sufficiency of the air quality analysis. The PSCAA is the agency responsible for monitoring and maintaining air quality for King, Kitsap, Pierce, and Snohomish counties, including compliance with National Ambient Air Quality Standards (NAAQS). Under the Clean Air Act (CAA), the Environmental Protection Agency (EPA) sets NAAQS standards to be protective of sensitive populations (e.g., asthmatics, children, and the elderly).

The FAA and the Port worked extensively with the PSCAA to develop an Air Quality Assessment Protocol (Protocol) to identify the technical assumptions, methodologies, databases, and models that would be used to develop the air pollutant emission inventories and conduct the air quality impact analyses (Appendix C). The Protocol included the best scientific data and methods available to the FAA at the time the Protocol was developed and relied on FAA Orders 1050.1F and 5050.4B, and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1.[2]

The air quality assessment included an evaluation of the Existing (2022) Conditions; the Action Alternatives and No Action Alternative for the projected future conditions in 2032 and 2037; and construction activities for 2025 to 2032. The analysis included carbon monoxide (CO), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), and ozone precursor pollutants (nitrogen oxides (NO_x) and volatile organic compounds (VOCs). Lead (Pb) was not included because SEA ceased leaded avgas sales in 2018, and the project does not include any new sources of lead emissions.

The air quality assessment did not include the use of Sustainable Aviation Fuel or other biofuels. It also did not include electric ground support equipment or new technology such as electric aircraft. These items were not included due to modeling limitations and/or the speculative nature of the technology. The use of auxiliary power units was based on the current policies in place at the Airport.

After extensive coordination with the PSCAA, the FAA shared the initial air quality modeling results with the PSCAA on December 7, 2023, to get feedback on the potential for the project to cause an exceedance of the NAAQS (Appendix C). Of the projected pollutant increases, CO and NOx have the biggest change due to the increase in aircraft operations and motor vehicle trips. The PSCAA reviewed the results of the air quality analysis and determined that the Proposed Action would not cause an exceedance of the NAAQS (Section 4.3.1 of the EA). After submitting the preliminary results using Aviation Environmental Design Tool (AEDT) version 3e, the FAA released AEDT version 3f, which introduced several improvements and refinements to air emissions calculations. The air quality modeling was updated utilizing AEDT version 3f and the results showed a decrease in all emissions except for SOx. Based on the guidance provided by the PSCAA and the reduced emissions calculated by the updated model, the FAA determined that the Action Alternatives would not result in a significant impact on air quality in accordance with the thresholds established in FAA Order 1050.1F. Therefore, and in accordance with the

[2] The FAA released the Aviation Emissions and Air Quality Handbook, Version 4 in July 2024, after the analysis was completed for the draft EA.

FAA Orders 1050.1F and 5050.4B and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1, neither dispersion modeling nor mitigation is required. The PSCAA will continue to monitor ambient air emission levels to confirm continued compliance with NAAQS.

General Response #9a – Hazardous Air Pollutants

Several of the commenters requested that the FAA consider emissions of hazardous air pollutants (HAPs) in the air quality analysis. HAPs were not included as part of the air quality analysis. Per FAA guidance provided in the Aviation Emissions and Air Quality Handbook, Version 3, Update 1, a HAPs emissions inventory should be considered if the Proposed Action is considered "major" (e.g., new airport, new runway, major runway extension, etc.); if the Proposed Action is in a nonattainment or maintenance area; and/or if a criteria air pollutant emissions inventory is also prepared. A HAPs inventory analysis was not conducted as part of the air quality analysis because the Proposed Action is not considered a "major" action and is not located in a nonattainment or maintenance area.

General Response #9b – Ultrafine Particles

Several of the commenters requested that the FAA consider emissions of ultrafine particles (UFPs) in the air quality analysis. UFPs were not included as part of the air quality analysis given the existing science on UFPs (including the University of Washington Mobile Observations of Ultrafine Particles (MOV-UP) study) is not fully mature, and the measurement and understanding of UFPs and their related health risks has not been clearly defined. Currently UFPs are not regulated by the EPA or the State of Washington either through rate of emissions or concentrations (other than being a subset component of $PM_{2.5}$) and are therefore not typically considered in NEPA reviews. Furthermore, since UFPs are not specifically listed as a criteria pollutant, air toxic, or HAP, an analysis of UFPs is not a requirement of NEPA, the CAA, or FAA Order 1050.1F. Therefore, no analysis or discussion of UFPs was included in the air quality analysis.

General Response #9c – Soot or Black Carbon

Several of the commenters requested that the FAA consider soot as part of the air quality analysis. Soot is a black substance produced by the incomplete combustion of wood, oil, coal, etc. Sources of soot include mobile sources (especially diesel engines), open burning (including wildfires), and residential heating (including fireplaces/woodstoves). In response to public concern, studies regarding soot/particle deposition have been conducted at several airports across the country, with the uniform result that samples collected on and/or near the Airport bore little chemical resemblance to either unburned jet fuel or soot from jet exhaust.[3] Instead, the collected material was found to be chemically similar to general urban pollution, particles from burning heavy fuels, diesel, and motor vehicle exhaust. The FAA is currently studying how to measure and predict non-volatile particulate matter emissions (a.k.a. soot or black carbon) from sustainable and conventional aviation fuels.

[3] O'Hare International Airport (Findings Regarding Source Contributions to Soot Deposition: O'Hare International Airport and Surrounding Communities, 1999); T.F. Green Airport (Chemical Fingerprinting Analysis completed for the Airport Improvement Program EIS, 2006); and studies associated with environmental reviews for Boca Raton Airport (2011); Fort Lauderdale International Airport (2006); and Los Angeles International Airport (2013).

General Response #10 – Air Quality and Health Effects

Several commenters requested that the FAA consider including an analysis of health effects as part of the air quality analysis. Some specifically argued for a Health Risk Assessment (HRA). In accordance with FAA Orders 1050.1F and 5050.4B and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1, a HRA is not required as part of NEPA. In addition, an HRA is not required under federal statute or regulation. Moreover, the cause of health issues is complicated because multiple factors often contribute to a person's health including genetics, lifestyle, environmental exposures, socioeconomic status, etc., making it challenging to isolate a single cause for a particular health outcome. This is especially true for chronic diseases where the effects may develop over a long period, making it hard to pinpoint the exact trigger.

Many variables can influence health, so separating the impacts of one specific exposure from other potential contributing factors can be challenging. Relationships between environmental exposures and health outcomes can only be established through well designed epidemiological, toxicological, and clinical studies.

The variability of the airport environment contributes to the difficulty of identifying potential health risks. The operating conditions of the turbine engine, the composition of the fuel, and the structure of the generated particles are just some of the examples of the variability that complicates health studies. In addition, many common air pollutants may have more than one source (e.g., wood-burning stoves, forest fires, cars and other forms of transportation).

Some commenters referenced the 2020 King County Report to the Washington State legislature and the University of Washington study on Ultrafine Particulates. Though these studies provide initial data that can help guide future studies, they do not provide enough data to demonstrate the potential impacts of aviation emissions on public health and fail to account for the effects of the numerous non-aviation emission sources that surround the Airport and other factors that contribute to public health outcomes. In addition, related to UFPs, the science is not fully mature and health impacts due specifically to aviation have not yet been demonstrated.

General Response #11 – Greenhouse Gas Analysis

Several commenters asserted that the assessment of greenhouse gas (GHG) emissions was insufficient. The FAA and the Port worked closely with the PSCAA to develop a Climate Assessment Protocol (Protocol) to identify the technical assumptions, methodologies, databases, and models that would be used to develop the greenhouse gas emission inventories and conduct the climate impact analyses (Appendix C). The Protocol included the best scientific data and methods available to the FAA at the time the Protocol was developed and relied on FAA Orders 1050.1F and 5050.4B, FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1, and the January 2023 Council on Environmental Quality (CEQ) draft GHG guidance.

After the publication of the Draft EA, Executive Order (EO) 13990, which was relied upon for the January 2023 CEQ draft GHG guidance, was revoked. In addition, CEQ revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 *et seq.,* as amended, in response to EO 14154. As a result of these changes, all references to climate and the qualitative climate evaluation that discussed the level of preparedness with respect to the impacts of climate change, the extent to which the alternatives could be affected by future climate conditions, and if the alternatives are consistent with national, state, and local climate goals have been removed from the Final EA.

The GHG assessment included an evaluation of the Existing (2022) Conditions; projected future conditions in 2032 and 2037 for the Action Alternatives and No Action Alternative; and construction activities for 2025 to 2032. The GHG assessment used the Global Warming Potential (GWP) based on a 100-year period in accordance with the FAA Aviation Emissions and Air Quality Handbook, Version 3, Update 1. Scope 1, 2, and 3 emissions were modeled. Fuel dispensed was used to capture full flight emissions in place of the operations, taxi times, and aircraft run-ups utilized for the air quality analysis.

The GHG assessment did not include the use of Sustainable Aviation Fuel (SAF) or other biofuels. It also did not include electric ground support equipment or new technology such as electric aircraft. These items were not included due to modeling limitations and/or the speculative nature of the development of the technology. The use of auxiliary power units was based on the current policies in place at SEA.

It is noteworthy that the GHG emission inventory results are not compared to the NAAQS nor any other significance criteria. For NEPA-related GHG emission inventories, the emphasis is on “disclosing” the change in GHG emissions with the proposed project (and alternatives) compared to the No Action.

There are no significance criteria for GHG. Mitigation is not required in accordance with FAA Order 1050.1F and the FAA’s Aviation Emissions and Air Quality Handbook, Version 3, Update 1. Minimization measures are identified in Section 4.3.3.3 of the EA. Separately the Port is undertaking a wide variety of efforts such as the procurement of Renewable Natural Gas and facilitating the adoption of SAF by airline partners to reduce GHG emissions.

General Response #12 – Day Night Average Sound Level (DNL or Ldn)

Several commenters contested the reliance on the DNL and 65 DNL threshold for assessing noise impacts. The DNL noise metric is used to reflect a person's cumulative exposure to sound over a 24-hour period. DNL considers both the amount of noise from each aircraft operation as well as the total number of operations flying throughout the day and applies an additional 10dB weighting for nighttime flights between 10 p.m. and 7 a.m. The DNL is the FAA's required noise metric for the assessment of aircraft noise and was adopted through 14 Code of Federal Regulations Part 150 as required to meet the provisions of the Aviation Safety and Noise Abatement Act of 1979.

The FAA was conducting a Noise Policy Review of its noise policy, but the process is now on hold due to the passage of the FAA Reauthorization Act of 2024 by Congress. Pursuant to Section 792 of the Act, the FAA is required to form an Aircraft Noise Advisory Committee (ANAC). The ANAC will advise the FAA on issues facing the aviation community that are related to aircraft noise exposure and existing FAA noise policies and regulations. To follow this direction from Congress, the FAA has revised the Noise Policy Review approach and timelines to allow the ANAC to complete its work and issue its report before FAA makes any decisions on possible noise policy updates (use of DNL as the primary noise metric and DNL 65 dB as the threshold for determining significant impact). The FAA intends to complete the Noise Policy Review once the ANAC has submitted a report to the FAA with any recommended policy changes.

Until the review is completed, the DNL will continue to be the official metric and DNL 65 dB will continue to be the threshold used for determining significant noise impacts in environmental reviews.

General Response #13 – Noise Analysis and Part 150 Update

Many comments focused on noise associated with the Airport generally and requested changes to flight procedures and other operational issues. The purpose of the noise analysis in this NEPA document is to compare the future Proposed Action and Hybrid Terminal Alternative to the No Action to identify the potential noise impacts with the implementation of either alternative.

A Noise Modeling Protocol was developed as part of the NEPA process to identify the technical assumptions, methodologies, databases, and models that would be used to conduct the aviation noise analysis, which can be found in Appendix J. The Protocol was developed in accordance with FAA Order 1050.1F. The aviation noise analysis included an evaluation of the Existing (2022) Conditions; and the Action Alternatives and No Action Alternative for the projected future conditions in 2032 and 2037.

FAA regulations require that the prediction of aircraft-related noise exposure be generated using the AEDT. Additionally, noise monitoring cannot be used as a substitute for AEDT, nor can it be used to calibrate AEDT. Appendix B of FAA Order 1050.1F provides more details.

FAA Order 1050.1F defines a significant noise impact as an increase of 1.5 dB or more in the 65 DNL. Though the Action Alternatives include an increase in operations, including nighttime operations, there would only be a slight increase in the size of the DNL 65+ dB contour in 2032 and 2037 when you compare the Action Alternatives to the No Action Alternative. There was not an increase of 1.5 dB or more in the 65 DNL. The overall size of the DNL 65+ dB contour for the No Action and Action Alternatives is smaller in 2037 compared to 2032 due to the introduction of quieter aircraft.

The FAA determined there would be no significant noise impacts in 2032 or 2037 with the implementation of either Action Alternative compared to the No Action Alternative. In accordance with the FAA Orders 1050.1F and 5050.4B, mitigation is not required.

Separate from the analysis of noise impacts in the EA, the Port is currently in the process of updating its Part 150 study. Part 150 is a voluntary program that allows airport operators to prepare noise exposure maps and to recommend measures in a Noise Compatibility Program (NCP) to reduce noise and noncompatible land uses. The Part 150 update is a separate program from this EA. For more information on the Part 150 update see: https://seapart150.com/

The NCP for SEA was developed in 1985 and updated in 1993, 2002, and 2013. The NCP includes abatement, mitigation, and program management measures designed to reduce or mitigate the impact of aircraft noise upon the surrounding community and enhance the administration of the overall program. Land acquisition, sound insulation, and modifications to flight tracks are just some of the measures considered during the development of the NCP. The Part 150 update process includes numerous opportunities for public involvement and input.

General Response #14 – Noise and Health Effects

Several commenters requested that the FAA consider including an analysis of health effects as part of the noise analysis. The aviation noise analysis included the best scientific data and methods available to the FAA at the time the analysis was completed and relied on FAA Orders 1050.1F and 5050.4B. The Future Action Alternatives would not increase noise by 1.5 DNL or more for a noise sensitive area at or above the 65 DNL when compared to the No Action for either 2032 or 2037. Therefore, no significant noise impact would occur because of implementing either Action Alternatives. The analysis of health effects related to noise is not a requirement of FAA Order 1050.1F nor is it required as part of NEPA. In addition, a noise health effects analysis is not required under federal statute or regulation.

To the extent that it is argued that the FAA should have analyzed the health effects of noise, the science does not support the conclusion that aviation noise causes reasonably foreseeable adverse health effects. In general, the cause of health issues is complicated because multiple factors often contribute to a person's health including genetics, lifestyle, environmental exposures, socioeconomic status, etc., making it challenging to isolate a single cause for a particular health outcome. The variability of the airport environment contributes to the difficulty of identifying potential health risks.

The Federal Interagency Committee on Aviation Noise (FICAN) published a Research Review of Selected Aviation Noise Issues in April 2018, which notes that learning and health impacts related to aviation noise remain unresolved and that extensive research is needed. The report noted that "while there is evidence to suggest that aircraft noise has adverse learning effects, FICAN concludes there is not sufficient information to quantify the effect in terms of a recommended noise metric or dose-response relationship." As for health impacts, the 2018 report notes "before adopting policies and methodologies for predicting health outcomes, research needs to be conducted to quantify relationships between aircraft noise level (dose) and the health outcome in question (effect). FICAN believes it is premature to adopt quantification methods for computing burden of disease from environmental noise until this fundamental research has been developed and validated." The FAA is currently conducting additional research to further the scientific understanding between aviation noise and cardiovascular disease and sleep disturbance.

The FAA determined they have enough information to determine the reasonable and foreseeable effects from noise exposure in accordance with FAA Order 1050.1F and NEPA.

General Response #15 – Environmental Justice

Since the publication of the Draft EA, EOs 12898, 13985, 14091, and 14096 were revoked on January 20, 2025. On January 21, 2025, President Trump issued EO 14173, Ending Illegal Discrimination and Restoring Merit-Based Opportunity. In addition, CEQ revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 *et seq.,* as amended, in response to EO 14154. Consequently, it is no longer a legal requirement or policy of the federal government to conduct environmental justice analyses. As a result, this Final EA has removed the prior discussion of, and data/analysis related to, environmental justice (EJ).

Since there were questions about the adequacy of the EJ analysis in the Draft EA, it is worth noting that if the EJ analysis had been retained, the FAA's determinations and decisions would not have changed. The environmental justice analysis determined that neither of the Action Alternatives would result in disproportionate and adverse effects nor significant impacts to minority and/or low-income populations.

The analysis completed included an Environmental Justice Protocol that was developed as part of the NEPA process to identify the technical assumptions, methodologies, and databases that was used to conduct the EJ analysis, which can be found in Appendix K of the Draft EA. The EJ analysis used the study area specific to the resource category being evaluated. All relevant and available socioeconomic and population data for the study area was collected to determine the percentages of minority or low-income populations within each study area, identify potential concentrations of minority or low-income communities, and EJ resources (such as community centers, churches, or areas of cultural significance). Once EJ populations and/or communities were identified, the next step was to determine if any disproportionate and adverse impacts would result from changes in impacts caused by the Action Alternatives compared to the No Action Alternative.

All resource categories were evaluated for potential disproportionate and adverse impacts to EJ communities. Further analysis was completed for air quality, climate, noise, socioeconomic, and surface transportation to determine if the impacts identified would be disproportionate and adverse. The analysis determined that neither Action Alternative would result in disproportionate and adverse effects nor significant impacts to minority and/or low-income populations.

General Response #16 – Children's Health and Safety Risks Analysis

Several commenters asserted that the Children's Health and Safety Risks analysis should have been conducted differently. FAA 1050.1F Order does not define a significance threshold for Children's Environmental Health and Safety Risks, but it does require that the FAA consider whether the action would lead to a disproportionate health or safety risk to children. There are also no separate noise impact standards for children. The Children's Environmental Health and Safety Risk analysis documented in Section 4.3.11.3 and the Noise and Noise-Compatible Land Use analysis documented in Section 4.3.10 were completed in accordance with FAA Orders 1050.1F and 5050.4B. Neither analysis identify significant impacts that would warrant mitigation.

The FICAN published a Research Review of Selected Aviation Noise Issues in April 2018, which noted that "while there is evidence to suggest that aircraft noise has adverse learning effects, FICAN concludes there is not sufficient information to quantify the effect in terms of a recommended noise metric or dose-response relationship." The cause of health issues is complicated because multiple factors often contribute to a person's health including genetics, lifestyle, environmental exposures, socioeconomic status, etc., making it challenging to isolate a single cause for a particular health outcome. In addition, and in accordance with the FAA Orders 1050.1F and 5050.4B and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1, a HRA is not required as part of NEPA. In addition, no federal statute or regulation requires an HRA.

General Response #17 – Cumulative Impact

Historically, CEQ regulations required the consideration of cumulative impacts. In 2023, Congress passed the Fiscal Responsibility Act, which directed agencies to consider "the reasonably foreseeable environmental effects of proposed agency actions" (42 USC 4332(2)(C)). Since the publication of the Draft EA, the CEQ revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 USC. 4321 *et seq.,* as amended, in response to EO 14154, *Unleashing American Energy.* In addition, the Supreme Court issued the Seven County Infrastructure Coalition v. Eagle County, 605 U. S. 975 (2025) ruling on May 29, 2025. As a result of these actions, it is no longer a legal requirement or the policy of the federal government to conduct cumulative impact analyses. In addition, the Seven County ruling reinforced the limited scope of NEPA reviews, holding that NEPA does not require an agency to consider environmental effects of other activities and projects "separate in time or place" from the proposed action. Therefore, this Final EA has removed the prior discussion of, and data/analysis related to, cumulative impacts.

Since there were questions about the adequacy of the cumulative impact analysis in the Draft EA, it is worth noting that if the cumulative impact analysis had been retained in the Final EA, the FAA's determinations and decisions would not have changed. The cumulative impact analysis determined that Proposed Action would not result in significant cumulative impacts.

A cumulative impacts analysis ensures that the incremental impacts of a proposed action are considered in the context of potential impacts from past, present, and reasonably foreseeable future projects on a particular resource. Federal agencies had the responsibility of determining how and the extent to which cumulative impacts were assessed in NEPA documents. The analysis of cumulative impacts in the Draft

EA followed FAA Orders 1050.1F and 5050.4B and the objectives of the NEPA, at the time of preparation. The FAA considered the available sources of information and the appropriate analytical techniques to predict the cumulative effects of actions on the environment. The ultimate goal was to provide meaningful information to decision makers to allow them to make informed decisions.

The cumulative impact analysis, in the Draft EA, started with the consideration of the direct and indirect effects of the Proposed Action with a focus on those resources impacted by the implementation of the Proposed Action. Next, the geographic scope and timeframe were established. The geographic scope (study area) is resource specific and is defined in Chapter 3. The resource specific study areas adequately captured the impacts associated with the implementation of the Proposed Action, which is why they were selected for the cumulative impact analysis. The timeframe centers on the timing of the Proposed Action and included projects where enough information was readily available to provide a meaningful analysis.

Cumulative impacts also relied on the existing conditions described in Chapter 3 of the EA. The existing conditions refer to the baseline environmental state of a project area and include a description of the current physical environment and any relevant environmental characteristics. The baseline helps one to understand the present effects of past actions and the historical context of the physical, biological, and human environment. The existing conditions accounted for the past growth that has occurred and the projects that have been constructed at SEA through 2022 and the effects of that growth and construction. This included the effects associated with the Third Runway and Stage 1a of the SR 509 project as well as other development that has occurred up until 2022. Stages 1b and 2 of the SR 509 project were included as a future project in the air quality analysis, GHG analysis, surface transportation study, and the cumulative impact analysis.

The analysis focused on if the Proposed Action would incrementally contribute to the cumulative impact for air quality, biological resources, GHG, hazardous materials, solid waste, natural resources and energy supply, noise and noise-compatible land use, socioeconomics, EJ, surface transportation, and water resources. Based on the analysis conducted in the Draft EA, the FAA determined there would be no significant cumulative impacts with the implementation of Proposed Action.

General Response #18 – Tree and Vegetation Removal

Several commenters asserted that the analysis of tree removal associated with several projects was insufficient. Projects C02, C03, L05, L07, S07, and S10 require the removal of approximately 56.4 acres of trees, shrubs, and maintained grassy areas. The total acreage of vegetation removal was reduced with the elimination of project L06 (Employee Parking Surface Lot). To mitigate the loss of vegetation, the Port will meet the requirements identified in the Land Stewardship Plan and Tree Replacement Standards as well as the Airport's Landscape Vision, Design Guidelines, and Standards and any other state and/or local requirements.

The Draft EA was prepared following the policies, procedures, and guidelines outlined in FAA Orders 1050.1F and 5050.4B. These Orders outline FAA-accepted methodologies, models, techniques, and thresholds of significance for the assessment of impacts. Tree and vegetation removal is not listed as a separate environmental impact category in FAA Orders 1050.1F and 5050.4B but is evaluated within the scope of biological and visual analyses.

The FAA determined that the Action Alternatives would not have a significant impact on biological resources in accordance with the thresholds established in FAA Order 1050.1F (Section 4.3.2). Though Project S07 is on the edge of the Airport Activity Area (AAA), it is approximately ¼ mile from residential

properties and the dense tree cover would remain. Therefore, no significant changes to the visual character of the area, noticeable contrasts with existing visual character, or obstructions of important visual resources are expected to occur (Table 4-43). Projects C02, C03, L05, L07, and S10 are outside the AAA and would be subject to the measures within the Interlocal Agreement and City of SeaTac Municipal Code to reduce visual impacts of the development, including setbacks, signage and lighting restrictions, screening for parking, and landscaping. Therefore, the changes would not result in significant changes in the visual character of the area, noticeable contrasts with existing visual character, or obstructions of important visual resources (Table 4-44).

Vegetation may reduce noise by absorbing, deflecting, and scattering sound waves. The effectiveness of trees in noise reduction depends on several factors, including the species, density, and height of the trees/vegetation, as well as their placement relative to the noise source. A 61-meter width of dense vegetation can reduce noise by 10 decibels if the placement of the dense vegetation is appropriate (the vegetation needs to be placed between the receiver and the noise source and block the view of the noise source). The proposed tree and vegetation removal is not expected to alter noise contours given the location of the proposed tree and vegetation removal and density.

Tree and vegetation removal is not considered as part of the air or climate analysis in accordance with FAA Orders 1050.1F and 5050.4B and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1. In addition, tree and vegetation removal is not required under federal statute or regulation to be considered as part of the air or climate analysis. Though tree and vegetation removal could result in the temporary loss of carbon storage and reduced sequestration, not all trees and vegetation store or sequester carbon at the same rate. The FAA currently does not have an approved method of calculating carbon storage loss.

General Response 19 – Connected Actions

Several commenters argued that the Third Runway and projects that have occurred since the construction of the Third Runway should have been evaluated as "connected actions" in the EA. According to FAA Order 1050.1F, connected actions are closely related actions that: (a) automatically trigger other actions; (b) cannot or will not proceed unless other actions are taken previously or simultaneously; or (c) are interdependent parts of a larger action and depend on the larger action for their justification. Connected actions and other proposed actions or parts of proposed actions that are related to each other closely enough to be, in effect, a single course of action must be evaluated in the same NEPA document.

The Third Runway and other development projects that have occurred since the construction of Third Runway, such as the International Arrivals Facility, are not connected actions to the current project and were therefore not required to be evaluated in the same NEPA document. NEPA does not require that all unconnected development proposed in one area be analyzed under one environmental document. These prior and unconnected development projects underwent separate NEPA/SEPA processes. Projects that have been completed outside of the current project were either included as part of the existing conditions or as part of the future conditions analysis in this EA.

General Response #19a – Third Runway

Some commenters suggested that the environmental impacts of the Third Runway should have been evaluated in this EA, including characterizing the third runway as a connected action. The need for an additional runway for bad-weather operations was first recognized in 1988. The Puget Sound Regional Council and Port launched a "Flight Plan" study in 1989 to analyze regional airport needs, and the Washington State Air Transportation Commission later examined the problem from a statewide perspective. After a public involvement program of unprecedented scale, regional planners ultimately concluded that development of a new regional airport and other alternatives were infeasible and that the addition of a Third Runway was necessary to alleviate delays and congestion at SEA, as documented in the administrative record for the July 3, 1997 ROD. The ROD did not include limitations on how the Third Runway would be utilized. Impacts resulting from the Third Runway are included as part of Existing Conditions in the EA.

General Response #19b – SR 509 Project

Several commenters suggested that the SR 509 Project should have been evaluated in the EA as a connected action. The SR 509 Completion Project is a Washington State Department of Transportation and Federal Highway Administration project that builds a new four-lane expressway between I-5 and SR 509's current end near SEA, builds new I-5 ramps, improves I-5 interchanges in south King County and constructs new bridges. The project is being constructed over three stages. Stage 1a was completed in 2022. Stage 1b is under construction and Stage 2 is expected to be completed in 2029. The SR 509 Completion Project underwent its own NEPA process, which was completed in early 2003. There have been numerous re-evaluations approved since the issuance of the ROD.

The SR 509 Completion Project has independent utility and is not connected to the SEA SAMP NTPs. The purpose of the SR 509 Completion Project is to improve regional highway connections and serve future transportation needs in southwest King County. The SR 509 Completion Project is included in this EA. Stage 1a is included as part of the existing conditions. Stages 1b and 2 are included as a future project in the air quality analysis, GHG analysis, and surface transportation study.

Note that, while the Final EIS for the SR-509 Completion Project studied the construction of a southern access road to and from SEA, that portion of the project is not currently moving forward. The concept of the South Access Expressway (South Access) has been considered in regional transportation planning efforts for over a decade, with discussions involving Washington Department of Transportation (WSDOT), the Port of Seattle, and the City of SeaTac. The SAMP Long-Term Vision incorporates the South Access improvements as a conceptual future project (beyond 2034). Therefore, the South Access is not included as part of the Near-Term Projects and is considered as outside the scope of this EA. Additional planning, environmental review, and coordination would be required if this project moved forward.

General Response #19c – Long-Term Plan

Several commenters argued that projects identified in the Long-Term Projects should have been evaluated in the EA as connected actions. Facility requirements are generally identified during the planning process. When the Port initiated the SAMP planning process in 2013, it identified three goals for the Plan (Tech Memo #1):

- Identify the facility requirements that would enable the Airport to satisfy air transportation demand through the next 20 years in a safe and efficient manner.
- Identify a long-term plan to achieve the Century Agenda and complement the Aviation Division Business Plan.

- Identify measures that enable the Port to build, manage, and operate facilities in ways that meet sustainability goals and objectives.

Planning Technical Memo No. 6, Alternatives, and Planning Technical Memo No. 7, Facilities Implementation and Financial Feasibility, distinguish between the Near-Term Projects (NTPs) and the Long-Term Projects.[4] The Long-Term Projects could include additional airside, cargo, landside, terminal, and airport/airline support projects to accommodate future demand beyond the planning horizon used for the NTPs. The Planning Technical Memos can be found on the Sustainable Master Plan website at https://www.portseattle.org/plans/sustainable-airport-master-plan-samp

NEPA review is not initiated by FAA until projects are ready to move forward. Projects that are not ready to move forward, either due to lack of funding or the need for additional planning, do not go through NEPA review until they are ready to move forward.

The NTPs were ready to move forward in 2018 and therefore the FAA prepared a NEPA EA for the NTPs. As explained in Section 1.2.1 of the EA, additional studies and planning work must be completed before the Long-Term Projects can be implemented. Therefore, the Long-Term Projects are not ready for NEPA review and they are not included in the EA.

General Response #20 – Property Values

Several commenters requested that the FAA consider including an analysis on how the project would impact property values. Property values are dynamic and influenced by many different factors, including market conditions, neighborhood characteristics, and individual property characteristics (age of the property, size, and amenities). The degree to which a particular factor may affect property values is influenced by many other circumstances that fluctuate widely with time and market conditions. In addition, there are personal reasons for why people purchase a certain home.

The effect of airports on nearby property values is nuanced. Increased job opportunities, improved transportation links, and economic growth can increase demand for housing while the frequency of flights and increased traffic may impact property values. Therefore, since many non-noise-related factors can affect property values, the analysis does not attempt to quantify changes in property values because of the Action Alternatives. In addition, the assessment of property values is not an environmental impact category outlined in FAA Order 1050.1F.

[4] The Planning Technical Memos can be found on the Sustainable Master Plan website at https://www.portseattle.org/plans/sustainable-airport-master-plan-samp

City of Burien – Received via email and website

City of Burien
400 SW 152nd Street
Suite 300
Burien, WA 98166-1911

P 206.241.4647
F 206.248.5539

burienwa.gov

December 11, 2024

Via Email to samp@portseattle.org & Online Comment Form

Mr. Steve Rybolt
Port of Seattle, Aviation Environment and Sustainability
P.O. Box 68727
Seattle, WA 98168

Dear Mr. Rybolt:

The City of Burien believes there are significant defects in the Sustainable Airport Master Plan (SAMP) currently under review for Seattle-Tacoma International Airport. It is the City's position that these deficiencies may only properly be resolved through development of an Environmental Impact Statement and not the Environmental Assessment currently in process for the Port of Seattle. 1

Given the short time frame allowed for study and comment (Oct. 21-Dec. 13, 2024), the objections raised here are not comprehensive but nonetheless reflect our concerns about the SAMP's impact on residents of the City of Burien.

Unrealistically small study boundary

The General Study Area—the Port's boundaries for its Area of Potential Effect—is drawn very tightly around the airport campus. The Port is attempting to force evaluation of the 31 "Near Term Projects" (NTPs) that make up the SAMP largely for impacts that will occur while those projects are under construction. This tactic ignores the impact—noise and other forms of pollution—that would occur in surrounding communities once additional aircraft and vehicles accommodated as a result of the SAMP projects leave the airport grounds. 2

Tables 4.6[1] and 4.8[2] of the SAMP document show the NTPs will result in a significant increase in carbon monoxide and nitrogen dioxide emissions. These estimates include approaching and climbing aircraft, whose altitudes are low enough to create emissions issues on the ground below for miles beyond the airport boundaries. Yet the Port's consultants, Landrum and Brown, conclude that "no significant impacts to air quality were identified (and) no mitigation would be necessary."[3]

[1] Sustainable Airport Master Plan (SAMP), Port of Seattle, October 2024, p. 4-13
[2] Ibid, p. 4-14
[3] Ibid, p. 4-16

001-1. General Response #1

001-2. General Response #2
General Response #8

001. City of Burien –Received via email and website

Cumulative impact: SR-509

This is especially alarming when taken with one of the most critical omissions from the SAMP: Consideration of cumulative impact from the impending connection of SR-509, which runs through Burien for approximately four miles, southward to Interstate 5. This SR-509 Gateway project will make 509 the primary truck route between the maritime ports of Tacoma and Seattle and bring tens of thousands of additional vehicles through Burien each day.

According to the National Environmental Policy Act: "Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[4]

Port staff have repeatedly asserted that the 509 Gateway, which is being undertaken by the Washington State Department of Transportation (WSDOT) is not connected to the SAMP. This defies logic, given that the Port and WSDOT have coordinated to such an extent that the 509 Gateway will provide a new southern entrance to the airport.

The Final Environmental Impact Statement issued in 2003 for the 509 Gateway projected up to 6,850 vehicles per hour (both directions) north of SR-518 and up to 8,150 vehicles per hour (both directions) south of SR-518, which terminates on the eastern edge of downtown Burien.[5] Over a 24-hour period, then, SR-509 through Burien will carry between 164,400 and 195,600 vehicles daily.

WSDOT does not project in 24-hour increments, instead offering estimates for "peak hour" traffic volumes that are dramatic in their own right. Compared to 2015 measurements,[6] the segment of 509 between S. 188th Street and S. 146th Street will by 2045 will experience an increase of 112.5 percent during morning peak hours and nearly 74 percent during afternoon/evening peak hours.[7]

It is the City of Burien's position that a new and thorough evaluation must be made of noise and emissions levels that will result in Burien from the opening of this highway extension.

3

Cumulative impact: Third runway

The SAMP itself forecasts a 28 percent increase in annual aircraft operations, to 540,000 takeoffs and landings, by 2034. This makes more significant the SAMP's omission of the 2008 opening of the third runway at Seattle-Tacoma International. The Port's SAMP timeline only goes back to 2017, despite the fact the projected number of takeoffs and landings for 2024—about 423,000 annually—is about 16.5 percent greater than levels in the early 2000s before the third runway opened.

4

[4] National Environmental Policy Act, 40 CFR 1508.7
[5] Final Environmental Impact Statement, SR-509 Corridor Completion, Washington State Department of Transportation et. al., January 2003, p. 2-34
[6] Environmental Reevaluation, Puget Sound Gateway Program—Phase 1 of the SR 509 Completion Project, Washington State Department of Transportation, January 2018, Table 2, p. 11
[7] Ibid, Table 7, p. 18

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001-3. General Response #17
General Response #19b

001-4. General Response #17
General Response #19a

001. City of Burien – Received via email and website

Using as a baseline the 365,000 annual flight operations from that earlier period, people living under the flight path have been and will be exposed to a 48 percent increase in aircraft traffic—with all of its attendant noise and other forms of pollution. There are myriad health consequences linked to these contaminants, along with evidence that people beneath the flight path are experiencing those consequences.[8] The third runway, then, is a past action the Port of Seattle cannot be allowed to ignore. It must be considered as part of the cumulative impact. 4

Air quality and noise: SAMP ignores emerging science and policy

The SAMP ignores emerging science and government policy on air quality and noise standards. Of particular concern is the Port's silence regarding a 2020 report to the Washington State legislature that emphasized "people living in airport communities are *disproportionately* more likely to experience poor health"[9] (emphasis added).

The report, written by Public Health—Seattle and King County, listed an array of air quality-related issues including cardiovascular and respiratory disease. Of particular concern is the alarm the authors raised about the effects of ultrafine particles (UFPs) found in higher concentrations below aircraft flight paths. UFPs are not regulated but the report outlined significant health consequences associated with larger "fine particulate matter"[10] and recommended additional study of UFPs and their effects on human health. 5

Public Health also recommended development of a robust network of air quality monitors along the flight paths and in other areas near Sea-Tac International. A similar recommendation came in a 2020 report from the Washington Department of Commerce on how operations at SEA affect adjacent cities, including Burien.[11]

Consultants hired by the Port of Seattle dismissed much of the research on a variety of grounds.[12] It would appear the Port is disinclined to take a hard look at the emerging data on the health impacts of UFPs, which we believe the situation demands.

Noise standards present a different—and also significant—challenge. The FAA Reauthorization Act of 2024 set in motion an "assessment of alternative noise metrics that could be used to supplement or replace the existing Day Night Level (DNL) standard."[13] Against this backdrop comes a 2022 presentation to the Acoustical Society of America that argued policymakers should factor in the frequency of flights to and from a given airport.[14] (The SAMP currently under consideration would increase operations to and from SEA to nearly 1,500 per day—a 24-hour average of 62.5 flights per hour, or more than one a minute.) 6

[8] Community Health and Airport Operations Related Noise and Air Pollution: Report to the Legislature, Public Health Seattle and King County, December 2020
[9] Ibid, p. 2
[10] Ibid, p. ii
[11] Study of the Current and Ongoing Effects of the Operation of the Seattle-Tacoma International Airport, Washington State Department of Commerce, May 2020, Post-Report Update, p. 2
[12] Community Health and Airport Operations Noise & Air Pollution: The King County Health Study, Ramboll Group, undated.
[13] Airport Noise Report, May 2, 2024 (Volume 36, Number 13)
[14] The FAA's 65 dBA DNL is not a safe noise exposure level for the American public, Daniel Fink, Proceedings of Meetings on Acoustics, March 2024

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001-5. General Response #9b
General Response #10
The Washington State Department of Ecology established an air monitoring network around the State that measures air pollution. The air quality monitoring stations in King, Kitsap, Pierce, and Snohomish Counties are maintained by the Puget Sound Clean Air Agency (PSCAA). More information on the air quality monitoring program can be found at: https://pscleanair.gov/498/Air-Monitoring

001-6. General Response #12
General Response #14

001. City of Burien – Received via email and website

Further, the World Health Organization in Europe has set 45 Lden—a similar measure to DNL in the United States—as the threshold for adverse health effects.[15] These issues, and the science behind them, also demand a hard look in the context of Seattle-Tacoma International. 6

Economic consequences: Outdated and unsupported data

We are skeptical of the Port's estimates of the airport's economic benefit to Burien.[16] Compiled with data from 2017, the Port's figures are outdated in any case. Circumstances in local economies and workplaces have changed drastically since the Covid pandemic of 2020. The Port should be required to revise its data accordingly—and also to include information about the negative impacts Burien has sustained because of the continued and substantial growth of Seattle-Tacoma International.

The SAMP ignores these negative impacts—a notable omission because, in 1997, consultants commissioned by the State of Washington outlined significant economic downside to the opening of the third runway. These consultants, led by the firm of Hellmuth, Obata and Kassabaum (HOK), forecast a cycle of "blighting" that would drive down property values and, consequently, municipal tax revenues. HOK estimated that, over a 20-year period following the opening of the third runway, five airport-adjacent cities including Burien would lose $39.9 million in property tax revenues.[17] The Port is silent to this cost. 7

Data pertaining to jobs created by Sea-Tac International provide an example of the need to verify. The Port estimates that 540 Burien residents work at the airport. Figures compiled by the watchdog organization Sea-Tac Noise.Info puts the number at 820.[18] However, more than half of those (444) are non-Port workers whose positions do not provide "living" wages.

Further, it would appear actual economic benefit has fallen short of predictions for redevelopment of land vacated to create the so-called "clear zone" for the third runway. The SAMP itself highlights the warehouse complex known as the Northeast Redevelopment Area (NERA), which the Port claims would result in 600-800 new jobs.[19] However, employer data provided to the City of Burien shows that only about 165 people work at the NERA site. 8

Conclusion

We are compelled to note that a disproportionate number of our residents who live along the flight path are members of communities the State of Washington classifies as vulnerable under a variety of socioeconomic categories. These are people who generally lack the means to move elsewhere and will continue to bear the brunt of the cost, both economic and health-related, for the significant economic growth the SAMP will make possible with volume at Sea-Tac growing to more than 1,100 flights per day.

[15] Environmental Noise Guidelines for the European Region, World Health Organization, 2018
[16] SAMP, Appendix K, p. 30
[17] Sea-Tac International Airport Impact Mitigation Study, Hellmuth, Obata + Kassabaum et. al., February 1997, p. ES-6
[18] Employees in Airport Communities, Sea-Tac Noise.Info, November 2020
[19] SAMP, Appendix K, p. 30

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001-7. General Response #20
The 2017 data was the most recent and best data available at the time the study was completed. The information presented in this analysis is sufficient for the FAA to accurately assess the impacts for each alternative.

001.8 The Port estimate of 540 people from Burien working at the Airport came from the 2017 data, which was the most recent data available when the analysis was being completed. The estimate of 376 people from Burien working at the Airport from the Sea-Tac Noise Website is from November 2020, during the COVID pandemic when operations were down at the Airport and employment numbers were probably lower as a result. Given the recovery in operations and general growth in area, it is reasonable to assert that the employment numbers would be closer to the 2017 data than the 2020 data. Therefore, the employment data provided in the EA is reliable for the FAA to accurately assess the impacts for each alternative at this time.

The 600-800 new jobs related to the NERA site referenced by the Port are the total jobs expected when the site is fully built. As of today, only a portion of the site has been constructed, which is why only a fraction of the jobs have been realized.

001. City of Burien – Received via email and website

A Finding of No Significant Impact under an Environmental Assessment, especially regarding the areas addressed in this document, would be not only erroneous but spurious. Allowing these projects to proceed without more rigorous study would cause substantial, irreversible harm to the City of Burien—which believes the only proper way to gauge the SAMP's true impacts on our community, and to develop a comprehensive strategy to mitigate those impacts, would be to conduct a thorough review utilizing an Environmental Impact Statement. 9

Sincerely,

Kevin Schilling
Mayor, Burien City Council

Stephanie Mora
Deputy Mayor, Burien City Council

Linda Akey
Burien City Councilmember

Alex Andrade
Burien City Councilmember

Hugo Garcia
Burien City Councilmember

Jimmy Matta
Burien City Councilmember

Sarah Moore
Burien City Councilmember

001-9. General Response #1

002. City of Des Moines

December 13, 2024

Mr. Steve Rybolt
Port of Seattle, Aviation Environment and Sustainability
P.O. Box 68727
Seattle, WA 98168

Dear Mr. Rybolt:

Thank you for the opportunity to review and comment on the Seattle Tacoma Sustainable Airport Master Plan Environmental Assessment. We have collaborated with partner cities and a consultant to research and prepare our comments. As a result, our delegated staff members have signed this document, and we are signing and sending this same document separately.

Please understand that though individual councilmembers in our, and partner cities may not have sent individual letters, we have partnered as cities to engage a consultant to research and speak on our behalf. Our votes from our partner daises acknowledge that we believe and agree with the statements in this letter. Please consider these electeds' votes as having sent comments.

As you know, the City of Des Moines is located directly south of SEA and below the concentrated flight paths for arrivals during north-flow conditions and departures during south-flow conditions. Our residents are exposed to overflight activity during all conditions, both day and night. The growth in operations at SEA will result in increased impacts, especially for close-in communities, including Des Moines.

The City recognizes the Port's role in driving the economic growth of our region and we appreciate the airport's importance in facilitating regional, national, and international connectivity. However, as one of the communities directly affected by airport operations and development, we believe it is essential that SEA growth is balanced to sustain the quality of life in the region, particularly for those communities adjacent to SEA.

Most importantly, regardless of legal and regulatory requirements for abatement and mitigation of these impacts, it is our hope that the Port of Seattle will proactively and collaboratively work with the City to understand how our residents are impacted, how those impacts will increase, and how we can work together to plan for SEA's growth while also developing plans to address existing and increasing impacts associated with Sea-Tac operations. Collaboration with airport neighbors will build trust and enable partnership with those most impacted enabling the region to work together on shared economic goals.

Working together we can respond to growing demand at SEA, while acknowledging and addressing the inevitable impacts of that growth, most of which will be experienced by our residents who live closest to the airport.

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002-1. Thank you for your comment. The Port of Seattle collaborates with the City of Des Moines in multiple ways, including through: membership in the Highline Forum (elected officials and city manager); StART (Des Moines community members and city administrator); discussions with city staff regarding Port-owned properties in the city; financial support and membership in the Des Moines Creek Basin Committee; presentations to the Des Moines City Council; and through direct contact with city administrators and city councilmembers on a variety of issues. It is anticipated that collaboration will continue through all these venues into the future.

002. City of Des Moines

The City of Des Moines held a community meeting on December 3, 2024, to help the community understand the environmental Review and comment period process, but also to understand the community concerns regarding the SAMP and its impacts on the community and its residents. Approximately, ninety people attended the meeting split between in person and online attendance, we heard concerns and questions for over 45 minutes, and could have gone on for hours longer, had we not needed to limit it to an hour meeting. Additionally, community members held their own meetings gathering support to help their follow citizens express their concerns and respond to the SAMP. This letter aims to capture and communicate the concerns of the community who live and work in the City of Des Moines, based on the information provided to the city at the meeting, over email, and through conversations with staff and Council. 1

Public Comment Period

A number of residents expressed concern over the time allotted for the public comment period. We understand the Port requested an extension which was granted. However, the amount of information contained in the Environmental Assessment combined with the highly technical nature of the content would require months to review thoroughly. The period, even with the extension, does not provide ample time for staff, let alone the public, to review areas of interest to ensure their concerns are satisfactorily addressed. It is very disappointing that the FAA offered such a short timeframe, especially considering the magnitude of the SAMP and Environmental Assessment. In many ways it seems allowing the public to review the assumptions, analyses, and conclusions, was more about "checking a box" rather than truly seeking input. It is our hope that this is not the Port's or FAA's intention, and more time will be put into long-term planning for truly understanding and addressing the impacts that will result in not only the SAMP projects, but also the growth expected over the next ten (10) years. This should not be just about "checking a box" but rather respecting the communities and environment that are directly and indirectly impacted by SEA. 2

Aircraft Noise

The expansion of operations at SEA will result in increased impacts, particularly for nearby communities. Residents of our communities are subjected to constant aircraft overflights day and night, irrespective of runway usage or flow. Operational levels have reached pre-COVID levels and are expected to continue to growth through the EA study period. By 2032, annual operations are forecast to reach 511,800. This is an increase of nearly 20%, resulting in more overflights, more noise events, and more disruptions to conversations, learning, working, and sleeping. 3



Data Source: Port of Seattle Environment and Sustainability & 2023 Annual Report and SEA SAMP DRAFT EA, Appendix A
Total Annual Passenger data is rounded to the nearest million

2

002-2. General Response #3
General Response #4

002-3. General Response #13

002. City of Des Moines

According to the Environmental Assessment, noise exposure will not exceed NEPA thresholds; however, the DNL 65 dBA contour will expand, resulting in "significant" (as defined in CFR Part 150) aircraft noise exposure for more residents and noise-sensitive facilities, including schools and nursing homes.

A

Mitigation Status / Land Use	2022 Existing Condition DNL 65+dB	2032 No Action DNL 65+dB	2032 Proposed Action DNL 65+dB	Existing (2022) vs. No Action (2032)	Existing (2022) vs. Proposed Action (2032)
Sound Insulation Completed					
Single-Family	3,193	4,146	4,258	953	1,065
Multi-Family	349	388	436	39	87
Mobile Home	0	0	0	0	0
SubTotal	3,542	4,534	4,694	992	1,152
					0
Not Sound Insulated					0
Single-Family	662	1,046	1,089	384	427
Multi-Family	1,887	3,782	3,895	1,895	2,008
Mobile Home	125	156	177	31	52
SubTotal	2,674	4,984	5,161	2,310	2,487

Data Source: Annual Report and SEA SAMP 1

comparison of the existing noise exposure conditions (2022) indicates the 14,061 total population exposed to "significant" noise exposure conditions will increase to nearly 22,000 in 2032, even in the No Action scenario. This represents an increase of 37%. And the Proposed Action scenario increases this even further. It is clear that the growth in operations at SEA, with or without the Proposed Actions included in the SAMP will have a substantial impact on residents. Worth noting, based on the analysis in the EA, most, if not all of the increased noise exposure (increase in the existing DNL 65 dBA contour) will occur within the City of Des Moines. Again, leaving our residents carrying most of the impacts associated with the growth in operations.

4

Global research indicates that elevated levels of noise exposure can result in health impacts, sleep disturbance, and impact learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is crucial that growth is sustainable and does not disproportionately burden close-in communities with environmental impacts and reduced quality of life. With no mitigations identified in the Environmental Assessment, it is imperative that the Port's update of the Part 150 study includes both noise abatement measures to reduce noise exposure and mitigation efforts, such as sound insulation for eligible homes and schools. Additional studies, including but limited to, ongoing monitoring and testing in the City of Des Moines.

5

A comparison of the existing conditions (2022) versus future conditions with the Proposed Action will result in an increase in daily arrivals of 14% and a 25% increase in nighttime arrivals. Nighttime operations are particularly impactful for close-in communities as this results in sleep-disturbance and awakenings which add to the health effects of aircraft noise exposure. And while the DNL 65 dBA threshold may not be exceeded for all close-in communities and residents, the effects will extend far beyond those contours and should be considered when planning for impact mitigation.

6

3

002-4. General Response #5
The Airport Noise Compatibility Planning (14 CFR Part 150) is the primary Federal regulation guiding and controlling planning for aviation noise compatibility on and around airports. It does not define levels of significance. FAA Order 1050.1F defines a significant noise impact as an increase of 1.5 dB or more in the 65 DNL. As noted in your comment, the change in noise caused by the Proposed Action does not result in a significant impact in 2032 nor in 2037 (see Section 4.3.10 of the EA).

002-5. General Response #13
General Response #14
The Part 150 Update is a separate process being completed by the Port. The FAA will provide your comment to the Part 150 team.

002-6. General Response #6
General Response #13
While there will be an increase in nighttime operations, the resulting increase in noise is below levels of significance defined in FAA Order 1050.1F (see Section 4.3.10 of the EA). The FAA will provide your comment to the Part 150 team.

002. City of Des Moines

	ARRIVALS DAY	ARRIVALS NIGHT	DEPARTURES DAY	DEPARTURES NIGHT	TOTAL OPS
2022 Existing Condition	469	82	456	97	1,100
2032 Proposed Action	546	108	500	100	1,303
Difference	14%	25%	9%	3%	18%

The DNL noise metric does not adequately reflect residents' experiences with aircraft noise. This is particularly true given the current conditions within the NAS, characterized by a significantly higher number of aircraft operations/overflights and quieter aircraft (per event). Supplemental metrics, including the Number-of-Events-Above (NA) and NA night, should be utilized in the FAR Part 150 study to provide decision-makers and the public with a comprehensive understanding of both existing conditions and future changes, including those projected for the SAMP (2032). These metrics should also be considered when evaluating potential noise abatement strategies that can be applied beyond the DNL 65 dBA contours, as practiced at other airports in the United States. 7

The FAA's Neighborhood Environmental Survey confirmed that community noise annoyance is significantly higher than historically recorded. According to the study, 60-70% of residents are "highly annoyed" at noise exposure levels of DNL 65 dBA, and 27-37% are "highly annoyed" at levels down to DNL 55 dBA. While federal regulations mandate the use of DNL 65 dBA for certain policy decisions, impacts on residents outside this exposure level should be considered during noise compatibility planning. For SEA to truly support "sustainable" growth, it must consider the impacts on neighboring jurisdictions and the quality of life in those communities.

Health Effects

Global research indicates elevated levels of noise exposure can lead to health impacts, sleep disturbance, and impacts to learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is important that growth is sustainable and does not benefit the region with only those close-in communities bearing the burden in terms of environmental impacts and reduced quality of life. The increase in aircraft operations will result in an increase in aircraft noise and emissions, both of which are known to have health effects in nearby communities. The concentration of operations over Des Moines results in greater exposure to aircraft noise and emissions for residents of Des Moines resulting in an unfair burden for our community. 8

Impacts on Education and Learning

Under the existing conditions (2022) there are nine (9) schools within the DNL 65 dBA. This will increase to 12 schools in both the 2032 No Action and 2032 Proposed Action scenarios. Almost half of those schools are in Des Moines. Again, federal regulations characterize this level of noise exposure as not compatible with noise-sensitive development which includes schools. Research indicates that aircraft noise exposure can impair classroom learning. And while federal regulations cite DNL 65 dBA as the threshold of what is "compatible", the growth in daily aircraft noise events are likely to be disruptive and to impede learning, affecting many more than the 12 schools within the DNL 65 dBA contours. Health and well-being for our communities, as well as our children's education 9

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002-7. General Response #12
The FAA will provide your comment to the Part 150 team.

002-8. General Response #14
Aircraft operations over Des Moines are due to multiple factors including air traffic efficiency, safety, runway location, etc. Aviation operations are carefully planned based on established airspace procedures ensuring the safest and most efficient movement of aircraft.

002-9. General Response #6
General Response #14
General Response #16
While there was an increase in the number of schools within the 65 DNL contour (12 in 2032 and 11 in 2037), the Proposed Action did not result in a significant increase in noise in 2032 or 2037 (see Section 4.3.10 of the EA). However, the FAA will provide your comment to the Part 150 team.

002. City of Des Moines

should all be carefully considered as the Port plans for growth in SEA operations and strives to sustainability when collaborating with neighboring communities. 9

Air Quality

Air quality is another major concern for communities surrounding the airport. The Environmental Assessment indicates increases in all critical air pollutants. Although these increases do not exceed significance thresholds according to federal guidelines, they will impact our residents, particularly vulnerable populations such as those with asthma, other respiratory conditions, and the elderly. With Des Moines located directly south of SEA, our residents are overflown by nearly all aircraft arriving or 10 departing the airport, depending on which flow is in use. The result is ongoing emissions and air pollutants from the vehicular traffic, as well as the increased ground-service equipment (GSE) and aircraft. Air pollutants including air toxins, carbon monoxide, nitrogen dioxide, ozone, and ultrafine particulate matter are negatively impacted our community by the airport according to health study results by University of Washington (MOV-UP 2019).

Surface Transportation and Congestion

Total passengers are forecast to reach 63 million annually by 2023. The 20% increase in passengers will mean a significant increase in vehicular traffic on local roads for arriving and departing passengers as well as the increase in support services such as concessionaires, vendors, employees, etc. This will result in 11 additional impacts for our communities including more roadway congestion, increased air pollution and noise. The EA indicates the Port will mitigate these impacts through the funding of local improvements to roadways and intersections. Mitigation plans should be developed in collaboration with impacted jurisdictions.

Third Runway

While the 3rd Runway (16R-34L) is outside the scope of the Environmental Assessment, it is worth noting that the runway increased overflights of Des Moines and residents have expressed concerns with this increase. While we understand the FAA can (and does) use it as needed, we hope you will consider limiting 12 the growth in operations and use of that runway, especially during nighttime hours. A preferential runway-use program or preferential nighttime runway-use program could limit the growth in impact for residents of Des Moines with little or no impact to airfield capacity, particularly if applied as nighttime only.

Airspace and Flight Procedure Changes

The increase in total operations will result in more aircraft noise including overnight as well as increased emissions. Ultimately, airspace and flight procedures/patterns will likely change to accommodate the increased operations in the existing airspace. Airspace and flight procedure/noise abatement changes 13 should be thoroughly explored. These can help mediate the increase in impacts while improving efficiency and safety. The Environmental Assessment identifies specific impacts on airport-adjacent communities, and specific mitigation plans should be developed in collaboration with these communities. Sustainable growth requires adequate and effective mitigation to offset or reduce impacts, which should be identified and prioritized in collaboration with affected communities, including the City of Des Moines.

5

002-10. General Response #8
General Response #9a
General Response #9b
General Response #10

002-11. The FAA and the Port coordinated with WSDOT and jurisdictions where the Proposed Action would result in surface transportation impacts to develop mitigation. The Port will adhere to the terms of the Agreements reached with each jurisdiction when implementing the mitigation outlined in Section 4.3.12 of the EA.

002-12. The FAA will provide your comment to the Part 150 team for consideration given that it is outside the scope of this EA.

002-13. General Response #13
As noted in Section 1.3 of the EA, the only projects evaluated in this EA that may require modifications to existing flight procedures are the airfield projects (A01-A10) because they will require relocation of FAA-owned equipment (including navigational and visual aids). Most of these modifications are expected to be minor changes to accommodate the shift in equipment location. We will provide this comment to the Part 150 team for consideration during the development of the Noise Compatibility Plan.

002. City of Des Moines

Alternative Airports

Continued growth at SEA will result in increased impacts for more and more residents. There have been discussions and studies of expanding capacity and commercial service at other airports as well as siting a new airport as a reliever to SEA. The only truly sustainable approach to meeting demand through 2032 and beyond will be to leverage other existing facilities and/or to build another airport to provide additional capacity for commercial aviation rather than continuing to increase operations at SEA. While capacity on the landside, terminal, and airside can be expanded to improve service, this growth has a reciprocal effect on the quality of life to residents of communities including Des Moines. True sustainability cannot be accomplished solely by meeting the needs of SEA and its customers. True sustainability requires consideration and ultimately limiting the negative impacts for the cities, communities, and residents surrounding SEA. 14

Moving Forward

The Port should collaborate with local jurisdictions as the airport expands to ensure mutual prosperity for both the airport and its neighbors. In addition, as the FAR Part 150 moves forward to review noise contour changes, SEA should incorporate that review and findings into community communication and educations to remove silos of review and possible impact. 15

As previously noted, the time allotted for the public review and comment on the draft EA was grossly inadequate. Reviewing the thousands of pages of technical documentation and providing meaningful comment requires ample time and is a critical part of NEPA. Public input and input from affected jurisdictions should be a high priority for both the Port and FAA. We ask that a proper review/comment period be offered as part of the SEPA process. 16

In light of the recent ruling by the DC Circuit Court, which invalidated the authority of the CEQ to issue binding regulations under NEPA, and because FAA relies on CEQ's baseline for their environmental analysis related to SAMP, the City of Des Moines requests that FAA reevaluate the finding of no significant impact outside of CEQ's NEPA regulation. Alternatively, FAA is asked to take no further action until there is clarity on what is the proper environmental assessment in relation to SAMP. 17

While we recognize and value the economic and connectivity benefits provided by the airport, we remain committed to advocating for our communities to ensure that any negative impacts are fully considered and mitigated to the greatest extent possible. 18

Thank you for the opportunity to continue a productive dialogue. We look forward to your response and further discussion.

Sincerely,

Mayor Traci Buxton
Deputy Mayor Harry Steinmetz

6

002-14. General Response #7a
General Response #7b

002-15. See response to Comment 002-1. Also, the FAA will forward your comment to the Part 150 team.

002-16. General Response #4
General Response #5

002-17. Since the publication of the draft EA, the Council on Environmental Quality (CEQ) revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 et seq., as amended, in response to Executive Order (E.O.) 14154, Unleashing American Energy. This environmental document relied upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. (2025). Therefore, the analysis contained in the draft EA is sufficient for the FAA to determine if the implementation of the Proposed Action will result in significant impacts.

002-18. General Response #6

003. Cities of Burien, Normandy Park, SeaTac, & Des Moines

December 12, 2024

Mr. Steve Rybolt
Port of Seattle, Aviation Environment and Sustainability
P.O. Box 68727
Seattle, WA 98168
Sent via email: samp@portseattle.org

Dear Mr. Rybolt:

Introduction

Thank you for the opportunity to review and comment on the Seattle Tacoma Sustainable Airport Master Plan Environmental Assessment. On behalf of the Cities of Burien, Normandy Park, SeaTac, and Des Moines, Washington, we are writing to share our collective comments and observations regarding the Seattle Tacoma International Airport (SEA) Sustainable Airport Master Plan Environmental Assessment (EA).

We recognize the Port of Seattle's significant role in driving the economic growth of our region and appreciate the airport's importance in facilitating regional, national, and international connectivity. However, as communities directly affected by airport operations and development, we believe it is essential that SEA growth is balanced to sustain the quality of life in the region, particularly for those communities adjacent to SEA. Historically, south King County, including the communities within the general study area, has a large population of minority and low-income communities. The increase in impacts on these already disadvantaged communities is unfair and must be addressed by the Port. 1

In an effort to share our concerns and comments regarding the environmental assessment and impacts to our citizens, we have engaged in an effort to review the EA, in spite of the limited time offered by the Port, we wish to provide the following comments related to the Environmental Assessment and the impacts our communities face due to the existing and growing impacts attributed to the airport.

First and most importantly, regardless of legal and regulatory requirements for abatement and mitigation of these impacts, it is our hope that the Port of Seattle will proactively and

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003-1. General Response #15

003. Cities of Burien, Normandy Park, SeaTac, and Des Moines

collaboratively engage with the leadership in our four cities to understand these concerns, within and alongside of the NEPA process. Collaboration will build trust and enable partnership with impacted communities, enabling the region to work together on shared economic goals. Working together we can respond to growing demand at SEA, while acknowledging and addressing the inevitable impacts of that growth, most of which will be experienced by our residents who live closest to the airport. 2

Insufficient timeframe for review of EA

Many of our residents expressed concern over the time allotted for the public comment period. We understand the Port requested an extension which was granted. However, the amount of information contained in the Environmental Assessment combined with the highly technical nature of the content would require months to review thoroughly. The review period, even with the extension, does not provide ample time for professional staff, including environmental specialists to conduct a proper review and to provide comment. It is very disappointing that the FAA offered such a short timeframe, especially considering the magnitude of the SAMP and Environmental Assessment. In many ways it seems allowing the public to review the assumptions, analyses, and conclusions, was more about "checking a box" rather than truly seeking input. It is our hope that this is not the Port's intention, and more time will be put into long-term planning for truly understanding and addressing the impacts that will result in not only the SAMP projects, but also the growth expected over the next ten (10) years. This should not be just about "checking a box" but rather respecting the communities and environment that are directly and indirectly impacted by SEA. 3

Aircraft Noise

The expansion of operations at SEA will result in increased impacts, particularly for nearby communities. Residents of our communities are subjected to constant aircraft overflights day and night, irrespective of runway usage or flow. Operational levels have reached pre-COVID levels and are expected to continue to growth through the EA study period. By 2032, annual operations are forecast to reach 511,800. This is an increase of nearly 20%, resulting in more overflights, more noise events, and more disruptions to conversations, learning, working, and sleeping. 4



2

003-2. Thank you for your comment. The Port plans on continuing its collaboration with the local jurisdictions.

003-3. General Response #3
General Response #4

003-4. General Response #13

003. Cities of Burien, Normandy Park, SeaTac, and Des Moines

Data Source: Port of Seattle Environment and Sustainability & 2023 Annual Report and SEA SAMP DRAFT EA, Appendix A
Total Annual Passenger data is rounded to the nearest million.

According to the environmental assessment, noise exposure will not exceed NEPA thresholds; however, the DNL 65 dBA contour will expand, resulting in "significant" (as defined in CFR Part 150) aircraft noise exposure for more residents and noise-sensitive facilities, including libraries, schools, childcare centers, nursing homes, and places of worship.

Mitigation Status / Land Use	2022 Existing Condition DNL 65+dB	2032 No Action DNL 65+dB	2032 Proposed Action DNL 65+dB	Existing (2022) vs No Action (2032)	Existing (2022) vs Proposed Action (2032)
Sound Insulation Completed					
Single-Family	3,193	4,146	4,258	953	1,065
Multi-Family	349	388	436	39	87
Mobile Home	0	0	0	0	0
Sub Total	*3,542*	*4,534*	*4,694*	*992*	*1,152*
					0
Not Sound Insulated					0
Single-Family	662	1,046	1,009	384	427
Multi-Family	1,887	3,782	3,895	1,895	2,008
Mobile Home	125	156	177	31	52
Sub Total	*2,674*	*4,984*	*5,161*	*2,310*	*2,487*
Total Housing Units	**6,216**	**9,518**	**9,855**	**3,302**	**3,639**
Total Estimated Population	**14,061**	**21,975**	**22,799**	**7,914**	**8,738**

Data Source: Annual Report and SEA SAMP DRAFT EA, Appendix F

A comparison of the existing noise exposure conditions (2022) indicates the 14,061 total population exposed to "significant" noise exposure conditions will increase to nearly 22,000 in 2032, even in the No Action scenario. This represents an increase of 37%. And the Proposed Action scenario increases this even further. It is clear that the growth in operations at SEA, with or without the Proposed Actions included in the SAMP will have a substantial impact on residents. 5

Global research indicates that elevated levels of noise exposure can result in health impacts, sleep disturbance, and impact on learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is crucial that growth is sustainable and does not disproportionately burden close-in communities with environmental impacts and reduced quality of life. With no mitigations identified in the environmental assessment, it is imperative that the Port's update of the Part 150 study includes both noise abatement measures to reduce noise exposure and mitigation efforts, such as sound insulation for eligible homes and schools. 6

The Part 150 update must also address the numerous issues associated with the existing/historic sound insulation program. Issues with the contractors' quality of work, damage to residents' homes, and other issues with the program have led to tremendous stress for residents doing nothing to improve quality of life or to mitigate aircraft noise impacts. These issues must be addressed during the Part 150 update to ensure the same problems are not repeated. Impacts on residents already heavily impacted by SEA were compounded by the experience and added costs resulting from the sound insulation program.

A comparison of the existing conditions (2022) versus future conditions with the Proposed Action will result in an increase in daily arrivals of 14% and a 25% increase in nighttime arrivals. 7

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003-5. The Airport Noise Compatibility Planning (14 CFR Part 150) is the primary Federal regulation guiding and controlling planning for aviation noise compatibility on and around airports. It does not define levels of significance. FAA Order 1050.1F defines a significant noise impact as an increase of 1.5 dB or more in the 65 DNL. As noted in your comment, the change in noise caused by the Proposed Action does not result in a significant impact in 2032 nor in 2037 (see Section 4.3.10 of the EA).

003-6. General Response #14
The Part 150 Update is a separate process being completed by the Port. The FAA will provide your comment to the Part 150 team.

003-7. General Response #6
While there will be an increase in nighttime operations, the resulting increase in noise is below levels of significance defined in FAA Order 1050.1F (see Section 4.3.10 of the EA). The FAA will provide your comment to the Part 150 team.

003. Cities of Burien, Normandy Park, SeaTac, and Des Moines

Nighttime operations are particularly impactful for close-in communities as this results in sleep-disturbance and awakenings which add to the health effects of aircraft noise exposure. While the DNL 65 dBA threshold may not be exceeded for all close-in communities and residents, the effects will extend far beyond those contours and should be considered when planning for impact mitigation. 7

	ARRIVALS DAY	ARRIVALS NIGHT	DEPARTURES DAY	DEPARTURES NIGHT	TOTAL OPS
2022 Existing Condition	469	82	456	97	1,100
2032 Proposed Action	545	108	500	100	1,303
Difference	14%	25%	9%	3%	16%

Data Source: SEA SAMP DRAFT EA, Appendix F

The DNL noise metric does not adequately reflect residents' experiences with aircraft noise. This is particularly true given the current conditions within the NAS, characterized by a significantly higher number of aircraft operations/overflights and quieter aircraft (per event). Supplemental metrics, including the Number-of-Events-Above (NA) and NA night, should be utilized in the FAR Part 150 study to provide decision-makers and the public with a comprehensive understanding of both existing conditions and future changes, including those projected for the SAMP (2032). These metrics should also be considered when evaluating potential noise abatement strategies that can be applied beyond the DNL 65 dBA contours, as practiced at other airports in the United States.

The FAA's Neighborhood Environmental Survey confirmed that community noise annoyance is significantly higher than historically recorded. According to the study, 60-70% of residents are "highly annoyed" at noise exposure levels of DNL 65 dBA, and 27-37% are "highly annoyed" at levels down to DNL 55 dBA. While federal regulations mandate the use of DNL 65 dBA for certain policy decisions, impacts on residents outside this exposure level should be considered during noise compatibility planning. For SEA to truly support "sustainable" growth, it must consider the impacts on neighboring jurisdictions and the quality of life in those communities. Sustainable growth requires adequate and effective mitigation to offset or reduce impacts, which should be identified and prioritized in collaboration with affected communities. 8

Also noteworthy, SEA has experienced consistent growth in air carrier operations since 2003. The increase in operations has resulted in the continued rise in environmental and community impacts, including those considered in the SAMP environmental assessment, however, the increase in impacts was largely ignored by SEA, since it was not attached to a federal action requiring environmental review. The Port has done little to acknowledge or mitigate the growth in impact and because there was no federal action trigger, the cumulative impacts attributed to this growth is not considered in the SAMP EA. 9

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003-8. General Response #12
The FAA will provide your comment to the Part 150 team.

003-9. General Response #5
General Response #17
General Response #19

003. Cities of Burien, Normandy Park, SeaTac, and Des Moines

Impacts on Education and Learning
Under the existing conditions (2022) there are nine (9) schools within the DNL 65 dBA. This will increase to 12 schools in both the 2032 No Action and 2032 Proposed Action scenarios. Again, federal regulations characterize this level of noise exposure as not compatible with noise-sensitive development which includes schools. Research indicates that aircraft noise exposure can impair classroom learning. And while federal regulations cite DNL 65 dBA as the threshold of what is "compatible", the growth in daily aircraft noise events are likely to be disruptive and to impede learning, affecting many more than the 12 schools within the DNL 65 dBA contours. The health and well-being for our communities, as well as our children's education should all be carefully considered as the Port plans for growth in SEA operations and strives for sustainability when working with neighboring communities. 10

Health Effects
Global research indicates elevated levels of noise exposure can lead to health impacts, sleep disturbance, and impacts to learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is important that growth is sustainable and does not benefit the region with only those close-in communities bearing the burden in terms of environmental impacts and reduced quality of life. 11

Air Emissions / Air Quality
Air quality is another major concern for communities surrounding the airport. The environmental assessment indicates increases in all critical air pollutants. Although these increases do not exceed significance thresholds, they will impact our residents, particularly vulnerable populations such as those with asthma, other respiratory conditions, and the elderly. 12

Surface Transportation and Congestion
Total passengers are forecast to reach 63 million annually by 2032. The 20% increase in passengers will mean a significant increase in vehicular traffic on local roads for arriving and departing passengers as well as the increase in support services such as concessionaires, vendors, employees, etc. This will result in additional impacts for our communities including more roadway congestion, increased air pollution and noise. The EA indicates the Port will mitigate these impacts through the funding of local improvements to roadways and intersections. We expect mitigation plans to be developed in collaboration with impacted jurisdictions following completion of the NEPA and SEPA processes. 13

Airspace and Flight Procedure Changes
The increase in total operations will result in more aircraft noise including overnight as well as increased emissions. Ultimately, airspace and flight procedures/patterns will likely change to accommodate the increased operations in the existing airspace. Airspace and flight procedure changes should be thoroughly explored. These can help mediate the increase in impacts while improving efficiency and safety. Environmental Assessment identifies specific impacts on airport-adjacent communities, and specific mitigation plans should be developed in collaboration with 14

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003-10. General Response #6
General Response #14
General Response #16
While there was an increase in the number of schools within the 65 DNL contour (12 in 2032 and 11 in 2037), the Proposed Action did not result in a significant increase in noise in 2032 or 2037 (see Section 4.3.10 of the EA). However, the FAA will provide your comment to the Part 150 team.

003-11. General Response #14

003-12. General Response #8
General Response #10

003-13 The FAA and the Port coordinated with WSDOT and jurisdictions where the Proposed Action would result in surface transportation impacts to develop mitigation. The Port will adhere to the terms of the Agreements reached with each jurisdiction when implementing the mitigation outlined in Section 4.3.12 of the EA.

003-14. As noted in Section 1.3 of the EA, the only projects evaluated in this EA that may require modifications to existing flight procedures are the airfield projects (A01-A10) because they will require relocation of FAA-owned equipment (including navigational and visual aids). Most of these modifications are expected to be minor changes to accommodate the shift in equipment location. The FAA will provide your comment to the Part 150 team for consideration during development of the Noise Compatibility Plan.

003. Cities of Burien, Normandy Park, SeaTac, and Des Moines

these communities. Note, we included recommended flight procedure changes in our 2018 SAMP comments. These should be considered during the Part 150 update. The letter which included potential flight procedure changes is attached. 14

SEPA Review and Comment Period

And as noted, the time allotted for the public review and comment on the draft EA was grossly inadequate. Reviewing the thousands of pages of technical documentation and providing meaningful comment requires ample time and is a critical part of NEPA. Public input and input from affected jurisdictions should be a high priority for both the Port and FAA. We ask that a proper review/comment period be offered as part of the SEPA process. 15

While we recognize and value the economic and connectivity benefits provided by the airport, we remain committed to advocating for our communities to ensure that any negative impacts are fully considered and mitigated to the maximum extent possible. Thank you for the opportunity to continue a productive dialogue. We look forward to your response and further discussion. 16

Sincerely,

Liz Stead
Liz Stead
Community Development Director
SEPA Responsible Official
City of Burien

Nicholas Matz
Nicholas Matz
Community Development Director
SEPA Responsible Official
City of Normandy Park

Rebecca Deming
Community Development Director
SEPA Responsible Official
City of Des Moines

Jenn Kester
Planning Manager
SEPA Responsible Official
City of SeaTac

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003-15. General Response #4
General Response #5

003-16. General Response #6

004. City Council of Des Moines

DES MOINES WASHINGTON
CITY COUNCIL

December 13, 2024

Mr. Steve Rybolt
Port of Seattle, Aviation Environment and Sustainability
P.O. Box 68727
Seattle, WA 98168
Sent via email: samp@portseattle.org

Dear Mr. Rybolt:

Thank you for the opportunity to review and comment on the Seattle Tacoma Sustainable Airport Master Plan Environmental Assessment. As you know, the City of Des Moines is located directly south of SEA and below the concentrated flight paths for arrivals during north-flow conditions and departures during south-flow conditions. Our residents are exposed to overflight activity during all conditions, both day and night. The growth in operations at SEA will result in increased impacts, especially for close-in communities, including Des Moines.

The City recognizes the Port's role in driving the economic growth of our region and we appreciate the airport's importance in facilitating regional, national, and international connectivity. However, as one of the communities directly affected by airport operations and development, we believe it is essential that SEA growth is balanced to sustain the quality of life in the region, particularly for those communities adjacent to SEA.

Most importantly, regardless of legal and regulatory requirements for abatement and mitigation of these impacts, it is our hope that the Port of Seattle will proactively and collaboratively work with the City to understand how our residents are impacted, how those impacts will increase, and how we can work together to plan for SEA's growth while also developing plans to address existing and increasing impacts associated with Sea-Tac operations. Collaboration with airport neighbors will build trust and enable partnership with those most impacted enabling the region to work together on shared economic goals.

Working together we can respond to growing demand at SEA, while acknowledging and addressing the inevitable impacts of that growth, most of which will be experienced by our residents who live closest to the airport.

1

The City of Des Moines held a community meeting on December 3, 2024, to help the community understand the environmental Review and comment period process, but also to understand the community concerns regarding the SAMP and its impacts on the community and its residents.

Approximately, ninety people attended the meeting split between in person and online attendance,

Office 206.870.6552 www.desmoineswa.gov

21630 11th Avenue S. | Des Moines, WA 98198

004-1. Thank you for your comment. The Port of Seattle collaborates with the City of Des Moines in multiple ways, including through: membership in the Highline Forum (elected officials and city manager); StART (Des Moines community members and city administrator); discussions with city staff regarding Port-owned properties in the city; financial support and membership in the Des Moines Creek Basin Committee; presentations to the Des Moines City Council; and through direct contact with city administrators and city councilmembers on a variety of issues. It is anticipated that collaboration will continue through all these venues into the future.

004. City Council of Des Moines

we heard concerns and questions for over 45 minutes, and could have gone on for hours longer, had we not needed to limit it to an hour meeting. Additionally, community members held their own meetings gathering support to help their follow citizens express their concerns and respond to the SAMP. This letter aims to capture and communicate the concerns of the community who live and work in the City of Des Moines, based on the information provided to the city at the meeting, over email, and through conversations with staff and Council.

Public Comment Period

A number of residents expressed concern over the time allotted for the public comment period. We understand the Port requested an extension which was granted. However, the amount of information contained in the Environmental Assessment combined with the highly technical nature of the content would require months to review thoroughly. The period, even with the extension, does not provide ample time for staff, let alone the public, to review areas of interest to ensure their concerns are satisfactorily addressed. It is very disappointing that the FAA offered such a short timeframe, especially considering the magnitude of the SAMP and Environmental Assessment. In many ways it seems allowing the public to review the assumptions, analyses, and conclusions, was more about "checking a box" rather than truly seeking input. It is our hope that this is not the Port's or FAA's intention, and more time will be put into long-term planning for truly understanding and addressing the impacts that will result in not only the SAMP projects, but also the growth expected over the next ten (10) years. This should not be just about "checking a box" but rather respecting the communities and environment that are directly and indirectly impacted by SEA. 2

Aircraft Noise

The expansion of operations at SEA will result in increased impacts, particularly for nearby communities. Residents of our communities are subjected to constant aircraft overflights day and night, irrespective of runway usage or flow. Operational levels have reached pre-COVID levels and are expected to continue to growth through the EA study period. By 2032, annual operations are forecast to reach 511,800. This is an increase of nearly 20%, resulting in more overflights, more noise events, and more disruptions to conversations, learning, working, and sleeping. 3



Data Source: Port of Seattle Environment and Sustainability & 2025 Annual Report and SEA SAMP DRAFT EA, Appendix A

2

004-2. General Response #3
General Response #4

004-3. General Response #13

004. City Council of Des Moines

Total Annual Passenger data is rounded to the nearest million.

According to the Environmental Assessment, noise exposure will not exceed NEPA thresholds; however, the DNL 65 dBA contour will expand, resulting in "significant" (as defined in CFR Part 150) aircraft noise exposure for more residents and noise-sensitive facilities, including schools and nursing homes.

Mitigation Status / Land Use	2022 Existing Condition DNL 65+ dB	2032 No Action DNL 65+ dB	2032 Proposed Action DNL 65+ dB	Existing (2022) vs. No Action (2032)	Existing (2022) vs. Proposed Action (2032)
Sound Insulation Completed					
Single-Family	3,193	4,146	4,258	953	1,065
Multi-Family	349	388	436	39	87
Mobile Home	0	0	0	0	0
Sub Total	*3,542*	*4,534*	*4,694*	*992*	*1,152*
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Single-Family	662	1,046	1,089	384	427
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Mobile Home	125	156	177	31	52
Sub Total	*2,674*	*4,984*	*5,161*	2,310	*2,487*

Data Source: Annual Report and SEA SAMP 1

A comparison of the existing noise exposure conditions (2022) indicates the 14,061 total population exposed to "significant" noise exposure conditions will increase to nearly 22,000 in 2032, even in the No Action scenario. This represents an increase of 37%. And the Proposed Action scenario increases this even further. It is clear that the growth in operations at SEA, with or without the Proposed Actions included in the SAMP will have a substantial impact on residents. Worth noting, based on the analysis in the EA, most, if not all of the increased noise exposure (increase in the existing DNL 65 dBA contour) will occur within the City of Des Moines. Again, leaving our residents carrying most of the impacts associated with the growth in operations. 4

Global research indicates that elevated levels of noise exposure can result in health impacts, sleep disturbance, and impact learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is crucial that growth is sustainable and does not disproportionately burden close-in communities with environmental impacts and reduced quality of life. With no mitigations identified in the Environmental Assessment, it is imperative that the Port's update of the Part 150 study includes both noise abatement measures to reduce noise exposure and mitigation efforts, such as sound insulation for eligible homes and schools. Additional studies, including but limited to, ongoing monitoring and testing in the City of Des Moines. 5

A comparison of the existing conditions (2022) versus future conditions with the Proposed Action will result in an increase in daily arrivals of 14% and a 25% increase in nighttime arrivals. Nighttime operations are particularly impactful for close-in communities as this results in sleep-disturbance and awakenings which add to the health effects of aircraft noise exposure. And while the DNL 65 dBA threshold may not be exceeded for all close-in communities and residents, the effects will extend far beyond those contours and should be considered when planning for impact mitigation. 6

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004-4. The Airport Noise Compatibility Planning (14 CFR Part 150) is the primary Federal regulation guiding and controlling planning for aviation noise compatibility on and around airports. It does not define levels of significance. FAA Order 1050.1F defines a significant noise impact as an increase of 1.5 dB or more in the 65 DNL. As noted in your comment, the change in noise caused by the Proposed Action does not result in a significant impact in 2032 nor in 2037 (see Section 4.3.10 of the EA).

004-5. General Response #14
The Part 150 Update is a separate process being completed by the Port. The FAA will provide your comment to the Part 150 team.

004-6. General Response #6
While there will be an increase in nighttime operations, the resulting increase in noise is below levels of significance defined in FAA Order 1050.1F (see Section 4.3.10 of the EA). The FAA will provide your comment to the Part 150 team.

004. City Council of Des Moines

	ARRIVALS DAY	ARRIVALS NIGHT	DEPARTURES DAY	DEPARTURES NIGHT	TOTAL OPS
2022 Existing Condition	469	82	456	97	1,100
2032 Proposed Action	545	108	500	100	1,303
Difference	14%	25%	9%	3%	16%

The DNL noise metric does not adequately reflect residents' experiences with aircraft noise. This is particularly true given the current conditions within the NAS, characterized by a significantly higher number of aircraft operations/overflights and quieter aircraft (per event). Supplemental metrics, including the Number-of-Events-Above (NA) and NA night, should be utilized in the FAR Part 150 study to provide decision-makers and the public with a comprehensive understanding of both existing conditions and future changes, including those projected for the SAMP (2032). These metrics should also be considered when evaluating potential noise abatement strategies that can be applied beyond the DNL 65 dBA contours, as practiced at other airports in the United States.

The FAA's Neighborhood Environmental Survey confirmed that community noise annoyance is significantly higher than historically recorded. According to the study, 60-70% of residents are "highly annoyed" at noise exposure levels of DNL 65 dBA, and 27-37% are "highly annoyed" at levels down to DNL 55 dBA. While federal regulations mandate the use of DNL 65 dBA for certain policy decisions, impacts on residents outside this exposure level should be considered during noise compatibility planning. For SEA to truly support "sustainable" growth, it must consider the impacts on neighboring jurisdictions and the quality of life in those communities. 7

Health Effects

Global research indicates elevated levels of noise exposure can lead to health impacts, sleep disturbance, and impacts to learning. While we acknowledge the socio-economic benefits the airport brings to the region, it is important that growth is sustainable and does not benefit the region with only those close-in communities bearing the burden in terms of environmental impacts and reduced quality of life. The increase in aircraft operations will result in an increase in aircraft noise and emissions, both of which are known to have health effects in nearby communities. The concentration of operations over Des Moines results in greater exposure to aircraft noise and emissions for residents of Des Moines resulting in an unfair burden for our community. 8

Impacts on Education and Learning

Under the existing conditions (2022) there are nine (9) schools within the DNL 65 dBA. This will increase to 12 schools in both the 2032 No Action and 2032 Proposed Action scenarios. Almost half of those schools are in Des Moines. Again, federal regulations characterize this level of noise exposure as not compatible with noise-sensitive development which includes schools. Research indicates that aircraft noise exposure can impair classroom learning. And while federal regulations cite DNL 65 dBA as the threshold of what is "compatible", the growth in daily aircraft noise events 9

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004-7. General Response #12
The FAA will provide your comment to the Part 150 team.

004-8. General Response #14
General Response #16

004-9. General Response #6
General Response #14
General Response #16
While there was an increase in the number of schools within the 65 DNL contour (12 in 2032 and 11 in 2037), the Proposed Action did not result in a significant increase in noise in 2032 or 2037 (see Section 4.3.10 of the EA). However, the FAA will provide your comment to the Part 150 team.

004. City Council of Des Moines

are likely to be disruptive and to impede learning, affecting many more than the 12 schools within the DNL 65 dBA contours. Health and well-being for our communities, as well as our children's education should all be carefully considered as the Port plans for growth in SEA operations and strives to sustainability when collaborating with neighboring communities. 9

Air Quality

Air quality is another major concern for communities surrounding the airport. The Environmental Assessment indicates increases in all critical air pollutants. Although these increases do not exceed significance thresholds according to federal guidelines, they will impact our residents, particularly vulnerable populations such as those with asthma, other respiratory conditions, and the elderly. With Des Moines located directly south of SEA, our residents are overflown by nearly all aircraft arriving or departing the airport, depending on which flow is in use. The result is ongoing and growing emissions and air pollutants from the vehicular traffic, as well as the increased ground-service equipment (GSE) and aircraft. Air pollutants including air toxins, carbon monoxide, nitrogen dioxide, ozone, and ultrafine particulate matter are negatively impacted our community by the airport according to health study results by University of Washington (MOV-UP 2019). 10

Surface Transportation and Congestion

Total passengers are forecast to reach 63 million annually by 2023. The 20% increase in passengers will mean a significant increase in vehicular traffic on local roads for arriving and departing passengers as well as the increase in support services such as concessionaires, vendors, employees, etc. This will result in additional impacts for our communities including more roadway congestion, increased air pollution and noise. The EA indicates the Port will mitigate these impacts through the funding of local improvements to roadways and intersections. Mitigation plans should be developed in collaboration with impacted jurisdictions. 11

Third Runway

While the 3rd Runway (16R-34L) is outside the scope of the Environmental Assessment, it is worth noting that the runway increased overflights of Des Moines and residents have expressed concerns with this increase. While we understand the FAA can (and does) use it as needed, we hope you will consider limiting the growth in operations and use of that runway, especially during nighttime hours. A preferential runway-use program or preferential nighttime runway-use program could limit the growth in impact for residents of Des Moines with little or no impact to airfield capacity, particularly if applied as nighttime only. 12

Airspace and Flight Procedure Changes

The increase in total operations will result in more aircraft noise including overnight as well as increased emissions. Ultimately, airspace and flight procedures/patterns will likely change to accommodate the increased operations in the existing airspace. Airspace and flight procedure/noise abatement changes should be thoroughly explored. These can help mediate the increase in impacts while improving efficiency and safety. The Environmental Assessment identifies specific impacts on airport-adjacent communities, and specific mitigation plans should 13

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004-10. General Response #8
General Response #9a
General Response #9b
General Response #10

004-11. The FAA and the Port coordinated with WSDOT and jurisdictions where the Proposed Action would result in surface transportation impacts to develop mitigation. The Port will adhere to the terms of the Agreements reached with each jurisdiction when implementing the mitigation outlined in Section 4.3.12 of the EA.

004-12. The FAA will provide your comment to the Part 150 team for consideration given that it is outside the scope of this EA.

004-13. As noted in Section 1.3 of the EA, the only projects evaluated in this EA that may require modifications to existing flight procedures are the airfield projects (A01-A10) because they will require relocation of FAA-owned equipment (including navigational and visual aids). Most of these modifications are expected to be minor changes to accommodate the shift in equipment location. The FAA will provide your comment to the Part 150 team for consideration during development of the Noise Compatibility Plan.

004. City Council of Des Moines

be developed in collaboration with these communities. Sustainable growth requires adequate and effective mitigation to offset or reduce impacts, which should be identified and prioritized in collaboration with affected communities, including the City of Des Moines. 13

Alternative Airports

Continued growth at SEA will result in increased impacts for more and more residents. There have been discussions and studies of expanding capacity and commercial service at other airports as well as siting a new airport as a reliever to SEA. The only truly sustainable approach to meeting demand through 2032 and beyond will be to leverage other existing facilities and/or to build another airport to provide additional capacity for commercial aviation rather than continuing to increase operations at SEA. While capacity on the landside, terminal, and airside can be expanded to improve service, this growth has a reciprocal effect on the quality of life to residents of communities including Des Moines. True sustainability cannot be accomplished solely by meeting the needs of SEA and its customers. True sustainability requires consideration and ultimately limiting the negative impacts for the cities, communities, and residents surrounding SEA. 14

Moving Forward

The Port should collaborate with local jurisdictions as the airport expands to ensure mutual prosperity for both the airport and its neighbors. In addition, as the FAR Part 150 moves forward to review noise contour changes, SEA should incorporate that review and findings into community communication and educations to remove silos of review and possible impact. 15

As previously noted, the time allotted for the public review and comment on the draft EA was grossly inadequate. Reviewing the thousands of pages of technical documentation and providing meaningful comment requires ample time and is a critical part of NEPA. Public input and input from affected jurisdictions should be a high priority for both the Port and FAA. We ask that a proper review/comment period be offered as part of the SEPA process. 16

In light of the recent ruling by the DC Circuit Court, which invalidated the authority of the CEQ to issue binding regulations under NEPA, and because FAA relies on CEQ's baseline for their environmental analysis related to SAMP, the City of Des Moines requests that FAA reevaluate the finding of no significant impact outside of CEQ's NEPA regulation. Alternatively, FAA is asked to take no further action until there is clarity on what is the proper environmental assessment in relation to SAMP. 17

While we recognize and value the economic and connectivity benefits provided by the airport, we remain committed to advocating for our communities to ensure that any negative impacts are fully considered and mitigated to the greatest extent possible. 18

Thank you for the opportunity to continue a productive dialogue. We look forward to your response and further discussion.

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004-14. General Response #7a
General Response #7b

004-15. See response 004-001 above. Also, the FAA will provide your comment to the Part 150 team.

004-16. General Response #4
General Response #5

004-17. Since the publication of the draft EA, the Council on Environmental Quality (CEQ) revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 et seq., as amended, in response to Executive Order (E.O.) 14154, Unleashing American Energy. This environmental document relied upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. (2025). Therefore, the analysis contained in the draft EA is sufficient for the FAA to determine if the implementation of the Proposed Action will result in significant impacts.

004-18. General Response #6

004. City Council of Des Moines

On behalf of Des Moines Residents,

Traci Buxton
Mayor
City of Des Moines

Katherine Caffrey
City Manager
City of Des Moines

006. City of SeaTac

006-1. General Response #19
General Response #19c

City of SeaTac
4800 South 188th Street, SeaTac, WA 98188-8605 | City Hall: 206.973.4800 | www.seatacwa.gov

December 13, 2024

Via Email: samp@portseattle.org

Kandice Krull
Environmental Protection Specialist
FAA – Denver Airports District Office

Steve Rybolt
Senior Environmental Program Manager
Port of Seattle

Re: City of SeaTac Comments: Sustainable Airport Master Plan: FAA's Draft NEPA Environmental Assessment (EA)

Ms. Krull:

On behalf of the City of SeaTac, I am writing to formally convey our comments regarding the Port of Seattle's (Port) Sustainable Airport Master Plan (SAMP) and the FAA's Draft NEPA Environmental Assessment (EA) with respect to the future infrastructural development and expansion at Seattle-Tacoma International Airport (SEA). SeaTac acknowledges and commends the Port's commitment to long-term sustainability. However, we believe that several significant issues, particularly those directly affecting the SeaTac community, are inadequately addressed within the current environmental review framework. This is unfortunate, since several of these issues were identified during the 2018 scoping of the Environmental Assessment.

The FAA's Draft NEPA Environmental Assessment (EA) materials posted on the SAMP Environmental Review website on October 21, 2024, raise significant concerns about potential impacts on the SeaTac community. As you know, the City of SeaTac has joined the neighboring jurisdictions of Burien, Des Moines, and Normandy Park to retain professional assistance to help us respond to areas of concern in all four municipalities. The comments in this letter are intended to supplement, and do not abrogate, the joint comments provided by the four cities in the comment letter dated December 12, 2024.

Scope of Environmental Assessment: Consideration of Cumulative Impacts and Background Growth
The City of SeaTac, in its September 2018 letter to your office, noted that, beyond the near-term projects, "it is clear that the Port has developed concepts for how future expansion (Long-Term Vision) will occur after completion of the defined 'near-term projects.'" The City respectfully reiterates that Washington SEPA Guidelines (WAC 197-11-005 (2)) states:

> *"the lead agency shall prepare its threshold determination and environmental impact statement (EIS), if required, at the earliest possible point in the planning and decision-making process, when the principal features of a proposal and its environmental impacts can be reasonably identified."*

The City has raised its concern with the 'piecemeal' environmental review and assessment process in previous Port SEPA actions, including the International Arrivals Facility, North Satellite Expansion, Flight Corridor Safety Program, and the Concourse D Hardstand Project. The City reiterates this concern in light of the SAMP's compartmentalization between near-term and long-term work at the

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City Council:
Mayor Mohamed Egal, Deputy Mayor Iris Guzmán
Senayet Negusse, Jake Simpson, Peter Kwon, James W. Lovell, Joe Vinson

Interim City Manager Kyle Moore
City Attorney Mary Mirante Bartolo
City Clerk Kristina Gregg

006. City of SeaTac

airport. A piecemeal approach to environmental review does not adequately consider the cumulative impacts of all these projects together, which is a requirement under WAC 197-11-060 (3) and WAC 197-11-060 (5.d.ii) that state that 'phased review' is not appropriate when 'it would merely divide a larger system into segmented fragments or avoid discussion of cumulative impacts.' 1

Moreover, SeaTac has expressed ongoing concern regarding the methodologies employed in assessing SAMP background growth in the environmental review contained within the EA. Specifically, the period from 2012 to 2023, now considered in terms of accrued demand, coexists with significant proposed funding—$5 billion—for airport infrastructure enhancements that are occurring outside the SAMP environmental review process.[1] With the inherent complexities of growth projections and environmental ramifications, there is a distinct worry that the previous environmental reviews and current assessment framework may not accurately capture the growth trajectory of SEA and its potential environmental impacts. 2

In relation to the assessed background growth during the 2012 – 2023 timeframe, SeaTac has previously sought clarification on whether the SAMP properly contextualizes the development that has transpired and will continue to occur at the airport. Our concern is that the very significant growth that has occurred at SEA during 2012-2023 is relegated to a foregone conclusion without sufficient environmental review or analysis. The City is skeptical of the Port's stated position that "*implementation of the NTPs would neither induce regional macro-economic growth nor induce demand for air services to higher levels than expected in the unconstrained forecast.*" This assertion appears overly simplistic and does not reflect the complex interdependencies of regional economic development and air travel demand. (Landrum & Brown, 1-11). 3

NEPA/SEPA Review Separation

On February 12, 2019, The Port of Seattle issued the Near-term Projects Environmental Review Scoping Report. Within the report, the Port committed to coordinated NEPA/SEPA environmental reviews to make review "easier by the public, agencies, and potentially affected Tribes" (Landrum & Brown, 2). However, in practice, the NEPA process is occurring in advance of, and separate from, the state SEPA review.[2] The July 2018 SAMP NTP Environmental Review Process Scoping Information Packet states that,

> *"no approvals or implementation of the proposed action will take place before the completion of the environmental review process that will follow the requirements of the National Environmental Policy Act and the State Environmental Policy Act"* (Landrum & Brown, 1). 4

An integrated approach to environmental impact assessment across both federal and state parameters ensures that all environmental impacts are identified prior to any action. On Page 16 of the report, the Port offers a "Preliminary Environmental Review Schedule" which shows that the Draft NEPA EA and SEPA EIS would be released in the Early Fall of 2019 and a Final NEPA EA and SEPA EIS by Early Winter 2019.

[1] The City learned of further leases and acquisitions the Port has made for properties near the airport to bolster their employee parking capacity following the publication of the NEPA Draft EA on October 21, 2024. These leases/acquisitions that were not included as part of the SAMP's Near-term projects or any other environmental assessment that the city can find.

[2] To the City of SeaTac's knowledge, the Port did not communicate its reason to separate the NEPA and SEPA review processes from a concurrent review to consecutive environmental reviews.

006-2. General Response #5
General Response #17
General Response #19

006-3. General Response #5
General Response #17
As explained in the Constrained Operating Growth Scenarios Report in Appendix A, implementation of the Proposed Action will increase SEA's ability to accommodate increased aircraft operations and passengers at an acceptable level of service by adding gates and passenger processing facilities. As a result, the number of aircraft operations and passengers will increase toward the projected unconstrained levels identified in the 2023 Updated Forecast. This higher growth rate is expected to occur for three years after implementation (2032 to 2035) as airlines adjust their schedules to the additional gate availability. However, SEA will again experience constrained growth rates starting around 2036 as airfield and airspace constraints become the primary constraining factors, which will be exhibited through departure delay. This is why this statement was included in the EA.

006-4. General Response #5
General Response #19c
See response to Comment 006-1.

006. City of SeaTac

Now, with the NEPA process progressing on a separate timeline, there exists a greater risk that critical information regarding environmental impacts may not be adequately incorporated into the ongoing environmental assessment.

The Scoping Report cited above goes on to note that "*based on that level of concern and the potential for impacts that may occur with the implementation of the Proposed Action, the Port of Seattle has determined that a SEPA Environmental Impact Statement (EIS), known as a 'SEPA EIS,' will be prepared*" (Landrum & Brown, 1). The commitment to a full Environmental Impact Statement (EIS) within the 2019 Scoping Report highlights discrepancies between the projected and actual growth in passenger traffic at the airport. As stated in the Draft Environmental Assessment (EA):

> *"Since the SAMP forecasts were prepared, actual passenger traffic at SEA had exceeded the SAMP forecasts, reflecting strong economic growth, decreases in domestic airfares, airline competition, the continued development of Delta Air Lines hub, and strong growth in both origin-destination and connecting passengers. The analysis conducted to prepare the 2019 updated forecast indicated that the resulting level of aircraft operations could exceed the Airport's ability to accommodate the demand, even with implementation of the Proposed Action."*

How will the Port reconcile the separate NEPA and SEPA review processes to ensure a comprehensive analysis of environmental impacts? The Port's approach to the environmental review process, which includes dividing it into Near-term and Long-term strategies, increases the difficulty of adequately analyzing and mitigating for these effects. 4

<u>Consolidation of Employee Parking Projects: L-06 & L-07</u>
Originally scoped as providing a new 1,500-stall employee parking lot and a new parking structure of up to 2,000 stalls, the Port instead proposes an 8-story 3,500-stall parking structure on Port property north of SR 518 and south of S. 144th Street with an approximately 3.3-acre footprint. The original L-06 and L-07 projects were intended to "accommodate increased demand and replace stalls displaced by potential cargo development on the existing North Employee Parking Lot (NEPL).

In 2024, the City became aware of ongoing acquisitions by the Port outside of the original 2018 SAMP's scope. This appears to us to be a function of ongoing demand and growth at the airport and, therefore, functionally, should have been included in the environmental analysis documents. 5

The City is concerned that the cumulative impacts of these changes were not adequately communicated to the public or included as a substantive revision to the proposed SAMP Near-term Projects as part of surface transportation mitigation discussions between Port and City staff.

<u>Surface Transportation Mitigation</u>
A Letter of Understanding dated September 15, 2015, notes that the City and Port have worked together on a shared travel demand model to inform the City's Transportation Improvement Plan and the SAMP. This approach was confirmed in the 2018 Interlocal Agreement and reaffirmed as part of the 2024 joint update to the shared travel demand model.

The decision not to proceed with the previously proposed Airport South Access Expressway (South Access) is concerning to the City. According to the PSRC Regional Transportation Plan, the South Access project would involve a new two-lane, limited-access arterial road connecting the airport drive system south to the planned extension of SR 509 to I-5. It would also involve relocating the existing south airport entrance from S. 182nd Street to a new connection with the local roadway network at S. 188th Street and 28th Ave. S. 6

006-5. The Port currently has a waiting list for employee parking and has been actively looking for solutions to resolve the current demand. At the October 22, 2024, Port Commission meeting, Port staff requested authorization for the Executive Director to execute three, 30 Year Ground Leases for Three Parking Facilities Located Adjacent to SEA. This proposed lease of additional parking was not included as part of the analysis in the EA because it was not known at the time the analysis was completed for the EA, it is not using federal funding, and it is not part of the NTPs (it addresses an existing need while L07 addresses a future need). NTP L07 will provide parking to accommodate future demand that still exists even with the recent parking lot acquisition.

006-6. General Response #19b The concept of South Access Expressway (South Access) has been considered in regional transportation planning efforts for over a decade, with discussions involving WSDOT, the Port of Seattle, and the City of SeaTac. The Sustainable Airport Master Plan (SAMP) Long-Term Vision incorporates the South Access improvements as a conceptual future project (beyond 2034). Therefore, the South Access is not included as part of the Near-Term Projects and is considered outside the scope of this EA. Additional planning, environmental review, and coordination would be required if this project moved forward.

006. City of SeaTac

The Port's position is that while Airport South Access Expressway, or South Access, will remain in the regional plan, it is not currently part of the SAMP, which has major implications for the city's transportation network. The South Access project was included in the PSRC Regional Transportation Plan's Regional Capacity Project List, adopted in May 2022, with a projected completion date of 2032, which falls within the SAMP program horizon. Over the past two years, City staff engaged in ongoing discussions during the development of the updated 2024 travel demand model. Through these discussions, City staff discovered that the South Access project would not be completed as initially planned. 6

Regarding the Port's proposed surface transportation mitigation, the Port's mitigation development occurred before the updated 2024 joint-travel demand model (SeaCast) effort was completed. A further evaluation utilizing more recent traffic count data and the updated model parameters is necessary to adequately assess impacts outside of the SAMP study area confined to the airport campus proper. 7

Regarding potential unanalyzed impacts directly related to surface transportation, it is noted within the Draft EA that the passenger parking facilities and arrival and departure curb construction are reliant on the terminal concourse work due to space limitations. As a result, those elements do not have a separate alternatives analysis covering the potential for further changes to the scope of work around parking for passengers and employees should the proposed L-07 project not come to fruition. 8

On September 30, 2024, the Port provided the City a draft Traffic Impact Mitigation Agreement for the surface transportation mitigation proposed in the Draft EA. Port staff shared that the FAA wants this agreement signed prior to the issuance of Record of Decision. Further, Port staff have shared that the SEPA EIS will not be issued prior to the NEPA Record of Decision. As a SEPA-responsible official for the City of SeaTac, I cannot recommend Council authorization of the proposed surface transportation mitigation agreement prior to the SEPA environmental review, given the separation of the NEPA and SEPA environmental review process and concerns with possible impacts resulting from omitting the parking alternatives from the analysis. 9

<u>Aviation Noise & Emissions</u>
Residents of SeaTac are regularly exposed to noise and emissions from departing and arriving aircraft and supporting airfield operations, particularly during early morning and late-night hours. The City appreciates the Port's continued participation in noise mitigation efforts.

Prolonged exposure to aircraft noise and particulate emissions has been linked to various health issues, including hypertension, stress, hearing loss, and a reduction in overall quality of life. It is impactful both in the home and while residents travel to work or recreate at one of our parks. Recent research from a two-year Mobile Observations of Ultrafine Particles (MOV-UP) study funded by the Washington State Legislature and led by the University of Washington (UW) Department of Environmental & Occupational Health Sciences and the Department of Civil and Environmental Engineering, found that communities underneath and downwind of jets landing at SEA are exposed to a type of ultrafine particle pollution that is distinctly associated with aircraft. 10

The landmark 2019 UW study is the first to identify the unique signature of aircraft emissions in Washington. The study findings raise important questions of health equity and the potential health burden from jet-related air pollution that falls heaviest on South King County communities adjacent to the airport, which socio-economic data shows tend to be less affluent, less healthy, and more

006-7. Updated traffic counts were collected in the Fall of 2022 and the Spring of 2023. The FAA and the Port utilized the best available model and data available when the study was completed, in accordance with FAA Order 1050.1F. The Port shared all the traffic count data with the local jurisdictions.

006-8. Employee parking alternatives are discussed in Section 2.6.1.2 of the EA. The decision to construct L07 does not have any impact on the decision to construct the terminal project. The terminal could be built without L07 and L07 could be built without the terminal. The two projects are not connected.

006-9. The FAA and the Port coordinated with WSDOT and jurisdictions where the Proposed Action would result in surface transportation impacts to develop mitigation. The Port will adhere to the terms of the Agreements reached with each jurisdiction when implementing the mitigation outlined in Section 4.3.12 of the EA. Though the FAA would prefer to have the Traffic Impact Mitigation Agreements signed prior to the completion of the NEPA process, it is not required.

006-10. General Response #8
General Response #9b
General Response #10
General Response #13
General Response #14
General Response #15

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racially and ethnically diverse than King County as a whole.[3] In the 2018 SAMP Executive Summary, the Port stated, *"As activity increases in the future, additional aircraft overflights and potential aircraft noise impacts could increase"* (Leigh Fisher, 42).

The significant concerns surrounding the potential increases in carbon monoxide and nitrogen dioxide emissions, as detailed in Tables 4.6 and 4.8 of the SAMP, along with the findings of the notable UW study and the ongoing Part 150 Study related to airport noise, raise questions about the consultants' conclusion that "no significant impacts to air quality were identified, and no mitigation would be necessary." This assertion appears inconsistent with a potential expansion of the 2032 Action Alternatives 65+ DNL noise contour and the expected increase in airfield operations (Landrum & Brown, p. 4-13~4-14). 10

The City continues to partner with the Port of Seattle as a SEA Stakeholder Advisory Roundtable: Aviation Noise Working Group member and as part of the ongoing Part 150 Noise Study process. The City requests that the SAMP environmental review process be delayed until the completion of or incorporation of the Part 150 Noise Study findings. 11

Marin Audubon v. Federal Aviation Administration

On November 12, 2024, the Washington D.C. Circuit Court issued an opinion in *Marin Audubon Society v. Federal Aviation Administration*. In light of the recent ruling by the DC Circuit Court, which invalidated the authority of the CEQ to issue binding regulations under NEPA, and because FAA has improperly relied on CEQ's baseline for their environmental analysis related to SAMP, SeaTac is persuaded that FAA should reevaluate the finding of no significant impact outside of CEQ's NEPA regulation. Alternatively, FAA is asked to take no further action until there is clarity on what is the proper environmental assessment in relation to SAMP. 12

Assessment of Cumulative Impacts

When considering the cumulative impacts described in SEPA guidelines, it is clear that not only the immediate impacts of the proposed near-term projects but also how they interact with long-term expansions must be evaluated. It is particularly troubling that while there is broad concern about the cumulative effects of multiple projects, the SAMP environmental assessment process seems to treat these expansions as separate entities, neglecting the larger environmental narrative.

This fragmented view makes it difficult to ascertain the full extent of potential impacts on air quality, noise pollution, traffic congestion, and community health, particularly for those living near the airport.

The background growth assessment from 2012 to 2023 deserves deeper investigation. This issue raises questions about the accuracy of basing future infrastructure plans on projected demands without considering actual growth dynamics in the region. For example, what are the implications of increased passenger traffic beyond SAMP forecasts? If growth continues to exceed projections, the airport may face challenges that were not anticipated, which could strain local infrastructure and services. 13

The City appreciates the 8-day extension for review of the FAA's Draft EA. However, the City of SeaTac contends that significant concerns with the Sustainable Airport Master Plan (SAMP) render the extended 53-day window still inadequate for the City to appropriately weigh the potential outcomes of what the Port proposes. The 53-day review period occurs during the holiday season, and 14

[3] King County Community Health Needs Assessment Report, 2018-19.

006-11. The Part 150 update is a separate process that the Port is currently undertaking. This EA is not dependent on the results of the Part 150. Therefore, there is no reason to delay the completion of the EA until the Part 150 update is completed.

006-12. Since the publication of the draft EA, the Council on Environmental Quality (CEQ) revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 et seq., as amended, in response to Executive Order (E.O.) 14154, Unleashing American Energy. This environmental document relied upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. (2025). Therefore, the analysis contained in the draft EA is sufficient for the FAA to determine if the implementation of the Proposed Action will result in significant impacts.

006-13. General Response #17

006-14. General Response #3
General Response #4

006. City of SeaTac

while cities across the Puget Sound are working to adopt their respective major comprehensive plan updates as required by state law. 14

In light of the significant questions around the validity of CEQ regulations raised in *Marin* and the unaddressed outstanding issues that the City has raised since 2018 in individual and joint letters with the jurisdictions of Burien, Normandy Park, and Des Moines, it is impossible to adequately respond on behalf of the community in a timely fashion while addressing the areas of concern for our City.

Thank you for your consideration and for providing opportunities for public and agency comments.

Sincerely.

Jenn Kester
SEPA Responsible Official
City of SeaTac

Evan Maxim
Director of Community & Economic Development
City of SeaTac

CC: Kyle Moore, Interim City Manager
City Council

CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing document on this date with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system.

Service on Case Participants Who Are Registered for Electronic Filing:

I certify that I served the foregoing document to all registered case participants on this date via filing and notice generated through the Appellate Electronic Filing system.

PETITIONERS' EXCERPTS OF RECORD VOLUME 2 OF 3

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners, Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

Nos. 25-7373 & 25-7439
(Consolidated)

In the
UNITED STATES COURT OF APPEALS
for the Ninth Circuit

VASHON ISLAND FAIR SKIES,
Petitioner,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

Consolidated with No. 25-7439
CITY OF BURIEN, et al.
Petitioners,

v.

FEDERAL AVIATION ADMINISTRATION, et al.
Respondents,
PORT OF SEATTLE,
Intervenor-Respondent.

PETITIONERS' EXCERPTS OF RECORD VOLUME 3 OF 3
On Petition for Review of an Order of the Federal Aviation Administration

Steven M. Taber
Leech Tishman Nelson Hardiman, Inc.
1100 Glendon Ave, 14th Floor
Los Angeles, California 90024
Telephone: (424) 738-4400
Facsimile: (424) 474-4172
staber@leechtishman.com
Attorneys for Petitioners Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

037. Vashon Island Fair Skies (provided via website and mail)

Vashon Island Fair Skies
PO Box 1250
Vashon, WA 98070

http://www.vifs.org
info@vifs.org
(206)682-8638

Dedicated to restoring the pre-NextGen dispersed arrival paths and procedures at Seattle/Tacoma International Airport that had been in place since the introduction of commercial aviation to the Puget Sound region, decades ago.

Vashon Island Fair Skies SAMP Public Comments **12/13/24**

Exhibits: https://drive.ms/f/c/ee6dee612aad2845/EheGrecNm3WRLnQ7VYOvwx_QBhm866H841RSfV161IesiA?e=mArkn

These comments of Vashon Island Fair Skies center around several key themes:

1) The CEQ Regulations Upon Which the Draft Environmental Assessment Are Based Have Been Held to Be *Ultra Vires*.
2) Cumulative Impact Analysis is Incomplete
3) General Study Area/Affected Environment is too small and does not consider all areas affected by the Project.
4) NEPA requires that a Health Risk Assessment be drafted for the Project
5) The fatally flawed DNL noise metric, whose choice is not required in any actual statute, and in fact is clearly in violation of the governing statute for aviation noise: 1979's Aviation Safety and Noise Abatement Act.
6) Inherent altitude errors in the arrival profiles used with AEDT.
7) There are deficiencies in the available documentation and data provided with the Draft EA, as well technical document production details that must be rectified before the document can really be adequately reviewed.

I. The CEQ Regulations Upon Which the Draft Environmental Assessment Are Based Have Been Held to Be *Ultra Vires*.

The Draft Environmental Assessment on p.1-1 states that the DEA "is being prepared in accordance with the requirements set forth by the Council on Environmental Quality (CEQ) in its regulations for implementing the National Environmental Policy Act (NEPA)." Moreover, these regulations form the basis for FAA's Orders 1050.1F and 5050.4B. Indeed, the orders state that the order meant to implement the CEQ regulations. However, the D.C. Circuit in *Marin Audubon*

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037-1. Since the publication of the Draft EA, the Council on Environmental Quality (CEQ) revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, 42 U.S.C. 4321 et seq., as amended, in response to Executive Order (E.O.) 14154, Unleashing American Energy. This environmental document relied upon FAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order (EO) 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity,* EO 14154, *Unleashing American Energy,* and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County,* 605 U.S. (2025). Therefore, the analysis contained in the EA is sufficient for the FAA to determine if the implementation of the Proposed Action will result in significant impacts.

037. Vashon Island Fair Skies

Soc'y v. Fed. Aviation Admin., 121 F.4th 902 (D.C. Cir. 2024) held that these regulations are *ultra vires* and of no effect. The DEA should be withdrawn and should conducted without reliance on the CEQ Regulations. 1

II. Cumulative Impact Analysis is Incomplete

The Council on Environmental Quality (CEQ) in its memorandum *Considering Cumulative Effects Under the National Environmental Policy Act* defines cumulative effects as those resulting from incremental impacts of the action combined with other past, present, and reasonably foreseeable future actions. Temporal boundaries must be established considering:

- The longevity of the project's impacts.
- Historical and ongoing changes to the environment.

Per CEQ regulations (40 CFR §1508.7), the scope of cumulative effects analysis must extend to include all relevant temporal scales that influence resource sustainability. Likewise, the Environmental Protection Agency in its memorandum *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* states "reviewers should determine whether the NEPA document considered *all* past, present, and future actions that contribute to significant cumulative effects on the resources of concern. The analysis should include the use of trends information and interagency analyses on a regional basis to determine the combined effects of past, present, and future actions." EPA, p.11. To that end, setting an arbitrary cut-off for changes to the noise environment is not acceptable under NEPA.

A Five-Year lookback period is arbitrary

The DEA states that for the cumulative impacts analysis, "past projects are defined as those which occurred within the past five years (between 2017 and 2021). . . Projects that occurred more than five years ago (e.g., Third Runway) are not separately discussed in this chapter….." DEA. P. 5-1. This five-year "lookback" has no basis in statute or regulation. There is no explanation in the DEA as to why this time period was chosen. Indeed, this arbitrary value, together with a SAMP and an EA nearly a decade in the making, appear tailored to run out the clock on the most important noise concentrating change in KSEA's history: the introduction of NextGen circa 2015. In testimony before the Port of Seattle Commission on April 25th 2017[1], the former FAA Northwest Mountain Regional Administrator David Suomi described the two new hyper-focused NextGen RNAV STARs, largely implemented by 2015, as the most significant operational change to the Puget Sound regional airspace since the introduction of civilian radar after WWII. Surely, such a monumental change would be part of the Cumulative Impact analysis. No, it is ignored. In fact, the lookback period extends just a single year before the Scoping Process started. 2

[1] See exhibit with slides and video from this meeting (NextGen section starts at 42:40).

037-2. General Response #17
General Response #19a

037. Vashon Island Fair Skies

During the Scoping Process, a large number of comments (see Appendix N) expressly demanded that the EA consider the cumulative impact resulting from the most environmentally significant and deleterious changes at KSEA in the 21st Century: Construction of the third runway and the introduction of NextGen. Neither are included in determining the cumulative impact of these changes together with the SAMP's Proposed NTPs. Simply saying that any older changes are embedded in the "existing conditions" is completely antithetical to the very premise of a Cumulative Impact Analysis. If all a Federal Agency has to do is break up an environmentally disastrous change into smaller pieces spaced just outside their self-declared, and arbitrary, lookback period, then any Cumulative Impact Analysis is rendered impotent: it just takes a little longer to wreck the environment. Justice demands that this gaming of the system must not be allowed!

The 2012 EA process for the introduction of the NextGen RNAV STARs, ironically called "Greener Skies"[2] in spite of (as implemented) increasing noise, pollution, carbon emissions, and fuel burn[3], was very much a drive-by EA. Specifically, there was zero outreach to the community who lived under these new hyper-focused NextGen RNAV STARs. Further, that community is a rural Island accessible only by ferry, and thus by that physical reality cutoff from the mainland and in need of more, not less, outreach. NextGen STARs for downwind arrivals were only implemented on one side of KSEA, the Vashon Island side. A Port of Seattle email obtained through a Public Records Request[4] concedes that NextGen STARs were not implemented on the East Side due to "noise considerations". So, the FAA & Port were perfectly willing to create a new extreme noise corridor over a rural Island whose key beneficial attribute is a rural and peaceful environment, but they were emphatically unwilling to create that same noise profile over the very affluent Eastside suburbs of Seattle. By ignoring these relevant past actions, the DEA sets up a false baseline from which to compare whether the cumulative effects of the past actions will have any impact on the Proposed Action.

Vashon Island has a one-to-one relationship with zip code 98070, and the Port's reports on geographic complaint distributions[5] demonstrates the extreme and outsized impact of aviation noise on Vashon Island.

2

B. For past EAs, the analysis must consider what was actually done in reality vs. what was modeled

3

[2] Greener Skies Final EA and FONSI ROD in attached exhibit.
[3] Due to conflicting arrivals on the East Side, the West Side downwind OPD (Optimized Profile Descent) effectively backfired resulting longer low altitude level-offs than before the OPD was implemented. As all the positive environmental benefits were predicated on reducing level-offs (see slides from note 1), the OPD had the opposite effect, making all the environmental impacts worse. The extended level-offs can be seen in a briefly released FAA "Nextgen Snapshot" site for KSEA https://www.faa.gov/nextgen/snapshots/airport/?locationId=45 (still accessible via archive.org), and in much more detailed form with the raw track data released with FOIA request 2023-07909 (exhibit attached).
[4] See "Greener Skies Incentives Response to Commissioner Bowman" exhibit.
[5] See example "KSEA Monthly Report MAR24.pdf" exhibit.

037-3. General Response #5
General Response #17
General Response #19

037. Vashon Island Fair Skies

In fact, it's even worse as the previous "Greener Skies" EA didn't even describe the full scope of the change as ultimately implemented[6]. In other words, the "Greener Skies" EA proposed one change, but the FAA implemented another much more significant change. So, the only chance to consider the significant environmental impact of the larger, but never studied, change to the operation of the Puget Sound regional airspace is by including those changes **as implemented** in the Cumulative Impact Analysis of the SAMP EA. On a very fundamental level, when a federal agency performs an EA of action X that results in a FONSI ROD, but then when implementing the change – potentially years later as with NextGen at KSEA – actually takes action Y, the ONLY recourse to evaluate the environmental impact of action Y is as part of the Cumulative Impact Analysis on the next EA/EIS when action Y can be considered as implemented. The DEA's failure to address environmental degradation that was unaddressed by the past actions undermines the efficacy of the cumulative impacts analysis. 3

C. The analysis does not include "reasonably foreseeable future actions"

Alaska Airlines is the lead airline at KSEA and has deep ties with the FAA and the Port of Seattle. On page 5 of Alaska Airlines' Scoping Comment, (dated 9/27/18, p. 2171, from Appendix N), Alaska Air writes: "[a]uthorizing the SAMP without linkage to and coordination with the **FAA upcoming redesign of the region's airspace** is akin to substantially expanding a railroad station without addressing the need for additional train tracks." (emphasis added). Clearly, Alaska Airlines knows that these airspace changes are not just "reasonably foreseeable" but in-fact *imminent*. All they are waiting for is a FONSI ROD on the SAMP EA, and then a five-year waiting period before releasing the next EA for the airspace changes. This is another example of a brazen attack at the core of a Cumulative Impact Analysis by spacing out EAs to try and escape legal requirements of NEPA. This disingenuous tactic cannot be allowed to succeed. As the CEQ pointed out "[a]nalyzing cumulative effects is more challenging primarily because of the difficulty of defining the geographic (spatial) and time (temporal) boundaries. For example, if the boundaries are defined too broadly, the analysis becomes unwieldly; if they are defined too narrowly, significant issues may be missed, and decision makers will be incompletely informed about the consequences of their actions." CEQ, p. v. In this case, the DEA is too narrow on both counts: both spatially and temporally. The cumulative impacts analysis must go much further back than five years and stretched to include many more people beyond the a mile radius from the Airport. 4

[6] See Greener Skies EA Section "4.3 Operational Changes Resulting from the Proposed Action". Only 7% of Westside downwind arrivals were to fly the NextGen RNAV the entire length of Vashon Island. Instead, as mentioned numerous times in the 4/25/17 Port of Seattle Commission Meeting, David Soumi (FAA) and other FAA/Port staff report – accurate – that nearly all of Westside downwind fly the NextGen RNAV the entire length of Vashon Island. The raw flight track data in FOIA 2023-07909 show this as well.

037-4. General Response #17
General Response #19

037. Vashon Island Fair Skies

III. General Study Area/Affected Environment is too small and does not consider all areas affected by the Project.

In drafting a NEPA environmental document, proper definition of the "affected environment" (which is often synonymous with "study area") is essential. For example, the study area for noise is the three-dimensional geographic area with the potential to be impacted by noise from the proposed project. FAA Order 1050.1F, § B-1.3, p. B-2. The DEA defines the "General Study Area" as "represent[ing] the area where direct or indirect impacts may occur as a result of implementing the Proposed Action or alternatives. The GSA includes an area encompassing 3,692 acres (5.8 square miles)." See DEA, p.3-1. The GSA is depicted in Exhibit 3-2 on page 3-5. FAA Order 1050.1F, 6-2.1e "Affected Environment," requires details regarding the environment and how it was calculated:

> *Affected Environment*. This section succinctly describes the environmental conditions of the potentially affected geographic area or areas. The discussion of the affected environment will be no longer than is necessary to understand the impacts of the alternatives; data and analyses should be presented in detail commensurate with the importance of the impact.

FAA Order 1050.1F, § 6-2.1e. However, the DEA does not offer any reasoning as to how this very small area was chosen as the GSA. Both the Port and the FAA have known from the beginning that the direct and indirect impacts of the Proposed Action will be felt far beyond the boundaries indicated in Exhibit 3-1. This is an artificially small, narrow, and arbitrary study area that is used, no doubt, to avoid review of potentially significant environmental impacts. The DEA offers no explanation or justification for arbitrarily choosing this 5.8 square mile area. NEPA requires more than what the GSA and Affected Environment states in the DEA.

In the end, the DEA's geographical boundaries encompassing the "general study area" or "affected environment" did not appropriately capture the true environmental impacts of the Project.

5

IV. NEPA requires that a Health Risk Assessment be drafted for the Project

With the growing body of scientific evidence that aviation noise and emissions are creating public health concerns all over the world, the time has come for airport projects such as this one, develop a Health Risk Assessment as required by NEPA. See *infra,* articles regarding the public health effects of aviation noise and emissions. NEPA requires agencies to analyze the direct and indirect environmental consequences that a proposed action might have on public health and safety. 40 C.F.R. §§ 1501.3(B)(2)(III), 1502.16(a) – (b), 1508.1(g). The DEA fails to take a hard look at the Project's environmental impacts by failing to include an HRA or any comparable analysis and provides no support for the health and safety conclusions made in DEA § 4.3.11.3.

As a threshold issue, the DEA's analysis is improperly constrained to consideration only of health impacts to children. See DEA § 4.3.11.3. NEPA does not limit an agency's health impact analysis to just children, however. Rather, it mandates an agency consider "the degree of [a

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037-5. General Response #2

037-6. General Response #9b
General Response #10
General Response #14

037. Vashon Island Fair Skies

proposed action's] effects on public health and safety." 40 C.F.R. § 1501.3(b)(2)(iii), emphasis added. The Environmental Protection Agency's ("EPA's") guidance advises agencies to assess health impacts for all "population groups of concern." An HRA for the proposed 6

V. Noise Data/threshold of Significance is antiquated, outdated, and no longer relevant (NES/WHO – ISO)

A. DNL Is a Fatally Flawed Noise Metric for Annoyance and Health of People on the Ground.

1979's Aviation Safety and Noise Abatement Act had a simple directive: "*establish a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions of people to noise.*" DNL's problems fall more into the realm of common sense than deeply technical issues:

- DNL does not take into account the ambient sound level at different exposure points on the ground. This is fundamentally absurd as it posits that a particular overflight event has the same annoyance impact in a large, busy, and noisy city vs. a tranquil rural area. In the former one cannot even notice the overflight while in the latter it completely overwhelms all the sounds of nature for two or more minutes of pure annoyance.

- The only option to try and get any rest in an otherwise peaceful location with hundreds of overflights per day/night, is to keep adding more and more artificial white noise to your interior environment until the overflights are no longer distracting/annoying. The supreme irony here is that one is *increasing* DNL, by intentionally adding increasingly louder white noise, in order to reduce annoyance. Scientists have concluded that aviation noise that deprives individuals of sleep (considered by some to be a Constitutional right) is a public health crisis.[7] The previous sounds of nature, for many the prime reason for moving to a rural island decades or generations ago, is lost for the rest of your life. 7

- What's annoying is not the total acoustic energy normalized over a 24 hour period as DNL would have us believe, but rather (1) the number of jarring interruptions throughout the day/night, and (2) how long each of those interruptions last and (3) the irregular time distribution of the overflights. The final point being that it is much worse when the event distribution has a random nature, instead of being perfectly evenly spaced in time, like a fog horn. Points (1) and (2) can be measured by using a "Time Above Ambient" metric to model the actual human response to aviation noise as required by 1979's ASNAA.

One issue with all noise metrics that measure a sound level expressed in dB, is the default assumption to always use A-weighting. A-weighting was specifically designed to enhance those mid-range frequency components most important to human speech, on the reasonable

[7] *Sleep Is a Human Right, and Its Deprivation Is Torture*, AMA Journal of Ethics, October 2024, Volume 26, Number 10: E784-794. Caitlyn Tabor and Katherine R. Peeler.

037-7. General Response #12

037. Vashon Island Fair Skies

assumption that our auditory system and brain would be optimized for that frequency range. Specifically, it heavily attenuates low frequencies where aviation noise has its strongest components. Just because human hearing may not be as discriminating at low frequencies does not mean that low frequency noise is not extremely annoying, and A-weighting will minimize that annoyance. The more unform C-weighting may very well perform better in predicting human annoyance, and as such would then be the preferred weighting as-per 1979's ASNAA "highly reliable" standard.

The recent Neighborhood Environmental Survey[8] clearly shows that what utility DNL may have had as a noise metric decades ago when aviation noise was primarily a small number of very loud events near the airport in a city, is now completely inadequate with hundreds of daily randomly timed overflight events focused in narrow tracks over (previously) quiet residential areas. The results of the survey showed that the thresholds of significance and levels of compatibility are very outdated and no longer reflected the public's response to aircraft noise exposure. Comparison of the FICON Report prepared using the updated Schultz Curve and NES prepared using the National Curve showed the following percentage of population highly annoyed by exposure to transportation noise:

- At a noise exposure level of DNL 65 dB, the FICON Report indicated 12.3% of people were highly annoyed, compared to between 60.1% & 70.9% from the NES.
- At a noise exposure level of DNL 60 dB, the FICON Report indicated that 6.5% of people were highly annoyed, compared to between 43.8% & 53.7% from the NES.
- At a noise exposure level of DNL 55 dB, the FICON Report indicated that 3.3% of people were highly annoyed, compared to between 27.8% & 36.8% from the NES.
- At a noise exposure level of DNL 50 dB, the FICON Report indicated that 1.7% of people were highly annoyed, compared to between 15.4% & 23.4% from the NES.

Extrapolating from the FAA's current "thresholds of significance," one concludes that the new "threshold of significance" should be around DNL 45 dB, instead of DNL 65 dB, which the level recommended by the World Health Organization.[9]

7

[8] See exhibit

[9] In October 2018, the World Health Organization Regional Office for Europe published its Environmental Noise Guidelines for the European Region. Those Guidelines found that aviation noise was connected to higher incidence of ischemic heart disease, hypertension, "prevalence of 'highly annoyed'" population, and a delay in reading skills and oral comprehension in children. As a result, WHO made the strong recommendation that average noise exposure noise levels produced by

037. Vashon Island Fair Skies

NES shows that FAA's current method of assessing noise impacts is obsolete. At the very least the DEA should explain why using 65 DNL is still relevant after the NES and not simply rely on "this is the way we have always done it." To do otherwise would be arbitrary and capricious. 7

B. Federally Approved New Method of Assessing Aviation Noise Is Available for Use.

What is needed is a method that analyzes population percentages in different communities associated with particular definitions of noise impacts. A method whereby by specifying two parameters, the percentage of the population of a nominally average community to be protected from high annoyance and detriment and the percentage of people in all communities to be similarly protected, can result in a gauge of the efficacy and efficiency of regulatory policies expressed in acoustic units. This method is ISO 1996-1:2016.

The International Organization for Standardization (ISO) produces international standards. An international standard "provides rules, guidelines or characteristics for activities or for their results, aimed at achieving the optimum degree of order in a given context." ISO 1996-1:2016 "Description, Measurement and Assessment of Environmental Noise – Part 1: Basic Quantities and Assessment Procedures," was published in March 2016. ISO 1996-1:2016 defines the basic quantities to be used for the description of noise in community environments and describes basic assessment procedures. It also specifies methods to assess environmental noise and gives guidance on predicting the potential annoyance response of a community to long-term exposure from various types of environmental noises. Application of ISO 1996-1:2016 to predict annoyance response is limited to areas where people live and to related long-term land uses. ISO 1996-1:2016 and its companion ISO 1996-2:2016, have been approved for use by the ISO countries, which includes the United States. As with all ISO standards, ISO 1996-1:2016 represents the best scientific practices. 8

ISO 1996-1:2016 states in its introduction that "[its] broad aim . . . is to contribute to the international harmonization of methods of description, measurement, and assessment of environmental noise from all sources." The introduction adds, "the aim of the ISO 1996 series is to provide authorities with material for the description and assessment of noise in community environments. Based on the principles described in this part of ISO 1996, national standards, regulations, and corresponding acceptable limits for noise can be developed. The methods and procedures described in Part 1 of the ISO 1996 are intended to be applicable to noise from various sources," not just those emanating from aircraft.

ISO 1996-1:2016 corrects the reliance on the "Schultz curve" and gives policymakers a much more accurate view of community tolerance levels of noise. The additional variable used in

aircraft be reduced below 45 dB DNL, as aircraft noise above this level is associated with adverse health effects. WHO Guidelines, p. xvii.

037-8. General Response #12

037. Vashon Island Fair Skies

ISO 1996-1:2016 is the community tolerance level or ("LCT"). This variable, as explained in ISO Part 1, is the "day-night sound level at which 50% of the people in a particular community are predicted to be highly annoyed by noise exposure." Note 1 to ISO Part 1 states that LCT is a parameter that accounts for differences between sources and/or communities when predicting the percentage highly annoyed by noise exposure. It is worth repeating that Annex D to ISO 1996 Part 1 states that in newly created situations, especially when the community is not familiar with this sound source, higher community annoyance can be expected. This difference may be equivalent to up to 5 dB. Research has shown there is a greater expectation for and value placed on "peace and quiet" in quiet rules settings. In quiet rural settings, this greater expectation for "peace and quiet" may be equivalent up to 10 dB. A new, unfamiliar sound source sited in a quiet rural area can engender much greater annoyance levels than are normally estimated by these formulae. This increase in annoyance may be equivalent to adding up to 15 dB to the measured or predicted levels. Since the U.S. government has approved ISO:1996-1:2016 for use in the U.S., the FAA is required to use it instead of obsolete scientific methods using the "Schultz Curve." 8

Vashon Island is a rural area, and its inhabitants are accustomed to a relaxed, peaceful environment. And the area is known for residents who often prefer a secluded and quiet home environment. In addition, before the Third Runway was constructed and the RNAV procedures were implements, residents of Vashon Island experienced only scant traces of aircraft noise. ISO Part 1 suggests that on Vashon Island, higher community annoyance can be expected. The FAA's reliance on the DNL model does not account for the higher community annoyance being experienced on Vashon Island and other rural areas. The DEA should use ISO 19967-1:2016 to assess the noise impact of the SAMP since it is currently the best available science method that has been approved for use by the U.S. federal government.

VI. Use of Standard Arrival Profiles in AEDT Does Not Reflect Reality

Upon speaking with L&B staff at a SAMP open house, it became apparent that the AEDT Standard Arrival Profiles do not reflect the arrival altitude profiles as actually flown in reality for KSEA RNAV STARs. This is especially true of late/middle of the night arrivals which are often cleared to a visual approach and then descend far below the specified RNAV waypoint altitudes, which in the case of the HAWKZ RNAV over Vashon Island are already lower than the AEDT Standard Arrival profile. As sound intensity falls as the square of the distance, significant errors in altitude can generate profound noise modeling errors. The solution here is to create custom profiles for each arrival based on its particular radar/ADS-B flight track, as was done with the go-arounds. At the absolute minimum, this should be done for a one week sample to define the error bars that need to be put on the shortcut approach that was taken. 9

VII. Missing Information and Problematic Content in the Draft EA Document Itself.

A. AEDT raw input data and output results must be made available

037-9. The comment is correct in stating that custom profiles were not created for the HAWKZ RNAV approach. However, the assertion that not creating custom profiles results in profound noise modeling errors is not accurate. Custom or user-define profiles are a tool that can be used when operating conditions, that deviate from standard AEDT inputs, could materially impact the results of a noise analysis. No custom or user-defined profiles were considered for the referenced RNAV approach over Vashon Island because aircraft overflying Vashon Island, on approach to the Airport, which is outside the analysis area because the aircraft will travel approximately 20 to 28 miles before landing on a runway. The FAA's Guidance on Using AEDT to Conduct Environmental Modeling for FAA Actions Subject to NEPA states that, 'For arrival tracks, place the noise receptors 0.5 nautical miles apart underneath the flight path, beginning at the start of the profile, or at 10 nautical miles away from the runway threshold (whichever is shorter), and ending at the last point of the landing roll-out on the runway.'

Per FAA Order 1050.1F, the noise analysis for proposed airport development provided noise exposure contours at the DNL 65-, 70-, and 75-dB levels. As shown on the noise contour exhibits in the Draft EA, Vashon Island is not within nor is it close to the 65 DNL. Therefore, variations between the standard AEDT altitudes in this location would not typically be studied because they fall well outside the 65 DNL and would not change the location of the 65 DNL.

037. Vashon Island Fair Skies

All the AEDT input data files (especially the standard approach profiles) used for the modeling described in Appendix J, and the resulting AEDT output files, need to be made available for download or to copy to a flash drive. The set of input files must be sufficient such that with an installed version of AEDT Version 3f (assuming a valid BADA license) the output data supporting the results presented in Appendix J can be exactly reproduced by someone proficient with AEDT. Please include all topological input files used as well as any meteorological setting/files used – even if these are in theory downloadable from other government sites – so that an exact reproduction of results is possible. At the SAMP "open house" on November 16th at McMicken Heights Elementary School, Steve Rybolt (Senior Environmental Program Manager - Port of Seattle) and Rob Adams (President - Landrum & Brown, Inc.), together assured this data would be made available.

I was not convinced as the Greener Skies EA put in writing, in its Appendix H "Detailed NIRS Calculations," that "NIRS results are available on CD by request." I requested it by FOIA 2016-001183WS, which dragged on the better part of a year before my request was denied. I filed a FOIA appeal, which was also, after a long delay, denied. I then filed FOIA 2018-009352WS on documents concerning the first FOIA, which proved that all responsive records were not being released, but the FAA still refused to release the NIRS calculations. With no further options I filed Case No. 20-272 in the Western District Court of Washington[10] and the FAA said the promise made in Appendix H was a vendor (HMMH) error and that HMMH, not the FAA, had physical domain over the data and the FAA was unwilling to ask the vendor for the data explicitly promised as available in Appendix H of the Greener Skies EA. At this point, the case law is tricky and my attorney was convinced that the FAA would spare no expense to litigate all the way to the Supreme Court to prevent this NIRS data from being exposed. From a budgetary point of view we made the decision to settle, as the FAA did agree to pay my attorney fees (as I had substantially prevailed), though the FAA admitted no wrong doing. Alas, a five year battle to get those NIRS results ended without ultimate success, and the data presumably remains locked in some HMMH secure location, safe from exposing the truth about the original RNAV modeling for the Greener Skies EA.

10

This half decade FOIA/lawsuit experience is why I am skeptical about promises of transparency and data availability.

B. **Inappropriate use of scanned PDFs for newly created documents**

In Appendix J, Exhibit B-1: Memo on "Missed Approach Operations" is a 44 page **scanned** PDF. I would further editorialize very poorly scanned at a low resolution. Given the number of very detailed diagrams the scanned nature of the PDF severely impairs its legibility. This memo was contemporaneously produced by Landrum & Brown, i.e. it is not the Dead Sea Scrolls. There is no reason to replace a crisp and high-resolution native vector PDF file with a fuzzy, unsearchable, and bloated scanned PDF. Please provide the original high-quality memo in native vector PDF format, which should actually have a smaller file size as well.

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[10] FOIA requests and court document in exhibits

Exhibits: https://1drv.ms/f/c/ee9dce312aad2855/EhcGiwcNmWRLuQ7VYOyws_QBhm866H8414RSfV161IcsiA?e=niArkn

037-10. Please contact either Kandice Krull with the FAA or Steve Rybolt with the Port for a copy of the AEDT input files.

037.11. This PDF has been updated in the Final EA.

433. Alisa Ralph

Firefox https://outlook.office365.com/mail/SAMP@portseattle.org/inbox/id/...

Outlook

[EXTERNAL] New submission from Submit a Comment

From SEA SAMP <LBInternet@landrumbrown.com>
Date Wed 12/11/2024 1:07 PM
To SAMP Public Comments <SAMP@portseattle.org>

WARNING: External email. Links or attachments may be unsafe.

Name

Alisa Ralph

Address

16456 6th Ave SW Burien WA 98166

Email

aralph2011@gmail.com

Comment

See attached letter

File

- SAMPcomments20241211ARALPH.docx.pdf

1 of 1 12/11/2024, 4:37 PM

433. Alisa Ralph (continued)

December 11, 2024

Mr. Steve Rybolt
Port of Seattle, Aviation Environment and Sustainability
P.O. Box 68727
Seattle, WA 98168

Dear Mr. Rybolt,

I am a resident of the City of Burien, submitting comments on the Sustainable Airport Master Plan (SAMP) draft Environmental Assessment (EA). While I appreciate the economic benefits SeaTac Airport provides to our region and state, I am concerned that the projects described in the SAMP to address projected future demand for passenger and cargo flights will result in significantly increased noise, air quality, traffic, and safety impacts to near-airport communities. The EA is deficient in analyzing impacts in these categories. 1

SeaTac Airport is physically constrained within its existing footprint, and according to the EA, will not be able to accommodate future projected demand beyond build out of the Near Term Projects (NTPs). It would seem that future projected demand could be met only by significant land acquisition by the Port of Seattle or by siting one or more additional airports in the region. Therefore, it seems like a waste of money and an undue hardship on airport-adjacent communities to construct the NTPs, other than those necessary to improve service or safety for current levels of passengers, cargo, and flights. Only those NTPs intended to improve the efficiency or safety of current service should go forward. 2

Is there an authority, law, or regulation that requires the Port of Seattle to accommodate projected increased future demand for passenger and/or cargo flights at SeaTac Airport? If so, please state what that requirement is. In the absence of a regulatory requirement to accommodate additional flights beyond current levels, there is no justification for inflicting additional noise, air quality, traffic, and safety impacts on communities surrounding the airport without substantially more analysis and, where appropriate, mitigation.

As a Burien resident, the loudness of airport operation noise is one concern, but the timing and frequency of noise associated with take-offs and landings is of equal or more concern. At morning and evening peak flight times, and especially in warm weather when windows are open, flights taking off or landing every few seconds interfere with our sleep, our ability to have conversations, and our ability to hear our television and radio. Adding nearly 30% more flights in the future will only exacerbate our already high level of annoyance with and stress from airport noise. The EA study area is much too small to adequately assess noise impacts on surrounding communities like Burien. Additionally, the noise metrics cited in the SAMP do not adequately measure residents' actual experiences with airport noise, nor do they provide an adequate basis for determining appropriate mitigation to offset noise impacts. Additional studies are needed to assess impacts on residents and determine appropriate mitigation for noise impacts. 3

The SAMP concludes that there will be no significant impacts to air quality, but this is based on insufficient monitoring and analysis of what residents around the airport actually experience and the constituents of concern we are exposed to. Ultra fine particulates are of particular concern and 4

433-1. General Response #8
General Response #13
The FAA and the Port collaborated with WSDOT to complete a surface transportation study to identify roadway intersections that would fail to meet local and agency mobility standards in 2032 and 2037 due to the implementation of the Action Alternatives. Mitigation was proposed for the impacted intersections according to each jurisdiction's requirements. With the proposed mitigation, the impacts are not considered significant.

433-2. General Response #7a
General Response #7b
General Response #7c

433-3. General Response #12
General Response #13
General Response #14
As noted in Table 4-1 in the Draft EA, operations are forecasted to be 1.9% higher with the Proposed Action compared to the No Action in 2032 and 7.4% higher in 2037. The Port is currently in the process of updating their Part 150 study. Part 150 is a voluntary program that allows airport operators to prepare noise exposure maps and to recommend measures in a noise compatibility program to reduce noise and noncompatible land uses. For more information on the Part 150 update see: https://seapart150.com/ The FAA will provide your comment to the Part 150 team for consideration.

433-4. General Response #8

	General Response #9b General Response #10 Modeling is used to determine existing and future conditions for air analyses in accordance with FAA Orders 1050.1F and 5050.4B and FAA's Aviation Emissions and Air Quality Handbook, Version 3, Update 1. The Washington State Department of Ecology established an air monitoring network around the State that measures air pollution. The air quality monitoring stations in King, Kitsap, Pierce, and Snohomish Counties are maintained by the Puget Sound Clean Air Agency (PSCAA). More information on the air quality monitoring program can be found at: https://pscleanair.gov/498/Air-Monitoring

433. Alisa Ralph (continued)

have not been robustly studied around SeaTac Airport. Additionally, the odor of jet fuel in the air at our house is sometimes so strong that we cannot spend time outside. The EA conclusion of no significant impact to air quality seems inappropriate considering that emissions components that cause stress and health hazards have not been robustly studied. Additional air quality studies are needed in order to make a proper determination of effect on air quality from the proposed work. 4

The SAMP does not adequately address cumulative impacts on traffic, as well as on vehicle engine noise and air quality from vehicle emissions. The SR 509 completion project will bring significantly more vehicles, including many more trucks, transiting through Burien to and from the airport and Interstate 5. The work proposed in the SAMP will also result in even more vehicles passing through Burien if air traffic at SeaTac Airport is allowed to increase. The cumulative effects of both the SAMP and SR 509 Completion Project need to be adequately evaluated with respect to noise, air quality, and traffic, at a minimum. The SAMP and SR 509 Completion Project are clearly interrelated projects given that the SR 509 Completion Project will improve access to Highway 518 and the airport from the north and south, and includes adding additional access to SeaTac Airport at the south end. 5

SAMP briefing materials indicate that the Federal Aviation Administration will not conduct an updated airspace study until sometime in the future. Considering SeaTac Airport's location in a dense urban environment, and the likelihood of increased urban growth and density, an airspace study should be conducted to determine a safe operating level before adding more air traffic to our area. Therefore, the NTPs intended to accommodate increased air traffic should not go forward until an updated airspace study is completed. 6

Given the expected impacts of the proposed work and insufficient analysis of those impacts on residents and communities near the airport, the EA should conclude with a finding of significant impact and the preparation of an Environmental Impact Statement. 7

Thank you for the opportunity to comment on the SAMP draft EA.

Alisa Ralph
16456 6th Avenue SW
Burien, WA 98166

433-5. General Response #17
General Response #19b
A surface transportation noise analysis is not required in accordance with FAA Orders 1050.1F and 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise

433-6. The completion of the airspace study is not required for implementation of the NTPs.

433-7. General Response #1

Landrum & Brown AEDT Raw Data and Input Files, June 25, 2024

AR034315

These are AEDT Input Documents that are voluminous in nature and provide technical data, not otherwise capable of reproduction in the Excerpts of Record, used by FAA in evaluating Environmental Impacts. The FAA identified multiple native files with a single Administrative Record citation (AR034315).

AR021732

From: Strand, Christina
To: Zach Wieben; Rybolt, Steve; Longo, Nic; Krull, Kandice (FAA)
Cc: McColloch, Duffy; Pazooki, Ramin; Swires, Mike
Subject: RE: [EXTERNAL] RE: WSDOT response to SAMP Mitigation Questions
Date: Tuesday, April 30, 2024 1:13:13 PM
Attachments: image001.png
WSDOT Mitigation Summary Table_delay.xlsx

CAUTION: This email originated from outside of the Federal Aviation Administration (FAA). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi SAMP team,

Thank you for providing the (attached) delay summary for WSDOT intersections impacted by the SAMP trip generation. We were able to discuss internally the request to consolidate mitigation locations and to perhaps provide larger mitigation projects at select locations rather than small mitigation contributions at several locations. The consensus we came to was that our emphasis/highest priority locations where we would see large amounts of added delay- specifically, intersections 23, 24, and 33. We felt strongly that these three intersections need to be addressed because the expected additional delays would be a significant impact. In the spirit of focusing on the most impacted locations, WSDOT would be willing/open to waiving mitigation at other locations (e.g. intersection 42, intersection 86, etc) and instead focus on mitigating impacts through capital improvements at the top 3 impacted intersections (23, 24, and 33).

Of these three intersections, number 33 will likely be the most complicated. I imagine there will be a need to develop a concept that will both mitigate the SAMP impacts as well as be acceptable to the two jurisdictions having authority of the intersection, WSDOT and SeaTac.

Thanks and please let me know if you have any questions or if you need any additional information.

Christina Strand, P.E. | King Area Traffic Engineer | WSDOT NW Region |
strandc@wsdot.wa.gov | Telework Cell 206-305-3349 |

From: Zach Wieben <zach.Wieben@concordengr.com>
Sent: Monday, April 22, 2024 1:56 PM
To: Strand, Christina <StrandC@wsdot.wa.gov>; Rybolt, Steve <Rybolt.S@portseattle.org>; Longo, Nic <Longo.N@portseattle.org>; Krull, Kandice (FAA) <kandice.krull@faa.gov>
Cc: McColloch, Duffy <McCollD@wsdot.wa.gov>; Pazooki, Ramin <PazookR@wsdot.wa.gov>; Swires, Mike <SwiresM@wsdot.wa.gov>
Subject: [EXTERNAL] RE: WSDOT response to SAMP Mitigation Questions

WARNING: This email originated from outside of WSDOT. Please use caution with links and attachments.

Hi Christina,

As we discussed last week, attached is a table of WSDOT Cat1&2 intersections ranked by delay added by SAMP trips. I've included some notes as well as the 2037 PA with mitigation intersection delays for reference. Hopefully we can discuss this during tomorrow's check-in meeting.

Thanks,

Zach Wieben, P.E., PTOE, Senior Engineer
Concord Engineering
Direct: 425.361.8942 | Office Main: 206.682.0567
zach.wieben@concordengr.com
http://concordengr.com

From: Strand, Christina <StrandC@wsdot.wa.gov>
Sent: Wednesday, April 10, 2024 1:07 PM
To: Rybolt, Steve <Rybolt.S@portseattle.org>; Longo, Nic <Longo.N@portseattle.org>; Zach Wieben <zach.Wieben@concordengr.com>; Krull, Kandice (FAA) <kandice.krull@faa.gov>
Cc: McColloch, Duffy <McCollD@wsdot.wa.gov>; Pazooki, Ramin <PazookR@wsdot.wa.gov>; Swires, Mike <SwiresM@wsdot.wa.gov>
Subject: WSDOT response to SAMP Mitigation Questions

Hi SAMP Team,

I wanted to follow up about the meeting we had a couple weeks ago (3/26) about SAMP mitigation projects at WSDOT intersections. One of the Action Items from that meeting was for us (WSDOT) to investigate the question of consolidated mitigation; basically to invest in larger mitigation projects at some locations and "bank/credit" that benefit to offset mitigation at other locations.

Duffy and I were able to meet and discuss the issue with our supervisors and see if there was any support from WSDOT about utilizing that approach. Long story short – yes, we would be open to such an approach. The more interesting question revolves around which of the locations the Port should focus on in order to mitigate the biggest impacts and/or the most critical locations.

As we discussed methods for selecting locations to mitigate, the conversation really centered about focusing on locations that will experience the largest increases in delay with the Proposed Action, as opposed to focusing only on LOS. For example - intersection 23 is Category 2 since it's already LOS F, however since the proposed action adds several hundred seconds of delay we would want to give that location a higher priority than, say, intersection 42 which is Category 1 but is only adding ~11 seconds of delay in 2037.

All that said, it's sounding like WSDOT is open to consolidating mitigation efforts and I would recommend a logical next step as identifying/ranking the WSDOT intersections by amount of added delay with Proposed Action. This ranked list could then be used to aid discussions/decisions about which locations to focus on for the larger mitigation projects and which locations could be "credited"

in terms of mitigation efforts.

Hopefully that is helpful and please feel free to reach out with any questions.

Christina Strand, P.E. | King Area Traffic Engineer | WSDOT NW Region | strandc@wsdot.wa.gov | Telework Cell 206-305-3349 |

ID	Intersection	Existing Intersection Control	Category	203
				LOS
23	SR 518 EB Ramps/Des Moines Mem. Dr.	Minor-Leg Stop-Controlled	2	F
24	SR 518 WB Ramps/Des Moines Mem. Dr.	Minor-Leg Stop-Controlled	1	C
33	SR 518 WB Off-Ramp/S 154th St.	Minor-Leg Stop-Controlled	2	F
28	SR 518 EB Ramps/S 154th St.	Minor-Leg Stop-Controlled	2	F
86	Military Rd. S/NB I-5 Ramps	Signal	1	D
21	SR 509 SB Ramps/SW 148th St.	Signal	2	D
42	SR 518 EB off-ramp/51st Ave. S	Minor-Leg Stop-Controlled	1	C
83	Military Rd. S/SB I-5 Ramps/S 200th St.	Signal	1	D
94	SB I-5 Ramps/SR 516	Signal	2	D
37	International Blvd./S. 154th St.	Signal	2	F
78	NB I-5 Ramps/S 188th St.	Signal	2	E

Intersection Delay								
2 NA	2032 PA		Δ2032	2037 NA		2037 PA		Δ2037
Delay	LOS	Delay		LOS	Delay	LOS	Delay	
124.0	F	468.1	**344.1**	F	261.4	F	981.0	**719.6**
23.6	E	44.3	**20.7**	E	36.1	F	186.9	**150.8**
187.5	F	266.4	**78.9**	F	389.9	F	504.9	**115.0**
62.2	F	69.0	**6.8**	F	150.5	F	171.7	**21.2**
52.5	E	69.3	**16.8**	E	64.6	F	81.2	**16.6**
46.7	D	50.4	**3.7**	E	55.3	E	67.1	**11.8**
24.6	D	30.4	**5.8**	D	31.1	E	42.4	**11.3**
47.7	D	51.8	**4.1**	D	54.4	E	64.3	**9.9**
44.7	D	49.2	**4.5**	E	59.6	E	66.4	**6.8**
86.5	F	88.7	**2.2**	F	106.3	F	110.9	**4.6**
63.7	E	65.3	**1.6**	F	95.5	F	97.9	**2.4**
763.7		1252.9	489.2		1304.7		2374.7	**1070**

Proposed Mitigation by Port	2037 PA with Mitigation			
	LOS	Delay	Δ2037 NA	Δ2037 PA
Construct New Roundabout	A	6.1	-255.3	-974.9
Construct New Roundabout	A	4.1	-32.0	-182.8
TIP Project Proportionate Share (Signal)	C	30.9	-	-
None	F	171.7	21.2	0.0
Signal Timing	E	65.8	1.2	-15.4
None	E	67.1	11.8	0.0
Construct New Signal	A	4.8	-26.3	-37.6
Signal Timing	E	56.3	1.9	-8.0
None	E	66.4	6.8	0.0
None	F	110.9	4.6	0.0
None	F	97.9	2.4	0.0
			-263.7	**-1218.7**

Notes
Port constructed roundabout
Port constructed roundabout
Proportionate share to SeaTac TIP project. **Benefit not included in Port's net delay calc.**
Cat 1 signal timing improvements implemented.
Port constructed signal
Cat 1 signal timing improvements implemented.

DOT/FAA/TC-21/4

Federal Aviation Administration
William J. Hughes Technical Center
Aviation Research Division
Atlantic City International Airport
New Jersey 08405

Analysis of the Neighborhood Environmental Survey

January 2021

Final Report

This document is available to the U.S. public through the National Technical Information Service (NTIS), Springfield, Virginia 22161.

This document is also available from the Federal Aviation Administration William J. Hughes Technical Center at actlibrary.tc.faa.gov



U.S. Department of Transportation
Federal Aviation Administration

Executive Summary

The Federal Aviation Administration (FAA) has undertaken a multi-year research effort to quantify the impacts of aircraft noise exposure on communities around commercial service airports in the United States (US). Community annoyance is the impact of interest covered by this report. Researchers typically determine an individual's annoyance to noise through sociological surveys that measure subjective reactions to cumulative noise exposure. To be a scientifically valid evaluation of aircraft noise, the survey and resulting analysis should query respondents experiencing a wide range of noise exposure from airports with variations in aircraft operations using an identical methodology (i.e., survey timeframe, survey instruments, and survey focus). Such efforts typically provide a dose-response curve that pairs the surveyed annoyance of many individuals to their noise exposure.

The Federal Interagency Committee on Noise (FICON) performed the most recent in-depth US Government agency review of human annoyance to noise in 1992. The dose-response curve that FICON developed in 1992 confirmed the appropriateness of Federal policy at that time. The FICON curve suggests that 12.3 percent of persons are "highly annoyed" by a Day-Night Average Sound Level (DNL) of 65 dB (FICON 1992). Research published in the two decades since the release of the FICON report suggests the FICON curve might under-estimate annoyance due to aircraft noise exposure. More recent dose-response curves from data collected outside the US have shown increased levels of annoyance at a given noise exposure level; further, the FICON curve included multiple modes of transportation, not just aircraft.

The overall goal of this research effort was to produce an updated and nationally representative civil aircraft dose-response curve for the US. To meet this goal, the research team designed and conducted a national survey, known as the Neighborhood Environmental Survey,[1] with an appropriate number of residents around an objectively selected sample of airports in the US. This report provides details on the Neighborhood Environmental Survey as well as an analysis of the mail questionnaire administered as a part of the Neighborhood Environmental Survey. The result of this effort is an update to the scientific evidence on the relationship between aircraft noise exposure and the annoyance of individuals living in airport communities.

The number of airports, and the mail survey sample size for each airport, were selected to provide an accurate estimation of the dose-response curve describing the relationship between annoyance (in terms of percent highly annoyed) and aircraft noise exposure. With criteria specified by the FAA, a multi-stage and statistically rigorous process was used to select a representative sample of US airports. Eligibility criteria were established to define a sampling frame consisting of airports in the contiguous US with at least 100 annual average daily jet operations, at least 100 people exposed to DNL greater than or equal to 65 dB, and at least 100 people exposed to DNL between 60 dB and 65 dB. Applying the eligibility criteria to all airports in the contiguous US resulted in a sampling frame of 95 airports. A subset of 20 airports was selected from the 95-airport set using a balanced sampling approach on a set of FAA-chosen factors. The Federal Interagency Committee on Aviation Noise (FICAN) reviewed the methods used to select the 20 surveyed airports and stated, "the balanced sampling methodology that was employed is the correct choice given the purpose of the study and the number and range of airports available for selection" (FICAN 2013).

The national survey utilized multiple independent reviews of the employed methods as well as a pilot study. Airport Cooperative Research Program (ACRP) Project 02-35 (Miller et al. 2014a) was a pilot study that enabled real-world testing of the methods used in the national survey. In addition to the FICAN review of the national survey's methodology, external review groups examined the methods underlying the data collection and analysis process and the resulting data. These reviews took place at three separate points during the ACRP study and during this research effort. Further, the statistical analysis methodologies were approved by the Bureau of

[1] Although the survey issued to respondents was titled the "Neighborhood Environment Survey", the official title as recorded by the Federal Office of Management and Budget (OMB) is the "Neighborhood Environmental Survey", i.e., "environmental" instead of 'environment'. The official OMB record of the survey can be found under OMB Control Number: 2120-0762 at: https://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=201409-2120-002.

Transportation Statistics (BTS) and data collection was approved the Office of Management and Budget (OMB). Finally, an Institutional Review Board also reviewed all the methodologies used in conducting the national survey.

The research team used the FAA Integrated Noise Model (INM), version 7.0d, to compute the aircraft noise exposure for the 20 airports selected for the national survey.[2] The computations used a twelve-month sample of radar flight tracks and associated flight specific information, (e.g., aircraft type, time of operation, distance flown). DNL contours were computed for each airport based on operational data spanning June 2012 to May 2013 [November 2013 to October 2014 for Chicago O'Hare International Airport (ORD)]. The noise contours were used by the research team to stratify residential locations around each airport into groups based on DNL ranges. Five DNL strata were developed based on contour lines of DNL 50, 55, 60, 65 and 70 dB. The DNL values ultimately paired with the survey responses to create the dose response curve were computed for each respondent location by adjusting for the calendar year 2015 operations counts from the FAA's Air Traffic Activity Data System (ATADS). The radar flight tracking data analysis for the 2012-2013 period (the 2013-2014 period for ORD) was applied to the modeling for 2015.

Two survey instruments were administered to adult residents within the Neighborhood Environmental Survey: a mail questionnaire and a follow-up telephone interview for the mail respondents. A previous test survey of populations around three US airports, conducted by the research team through the ACRP Project 02-35, was used to inform the survey methods used here. The ACRP Project 02-35 results indicated that the response rate for the mail survey was greater and the cost was less than a phone survey. While the ACRP 02-35 results were inconclusive in determining if the mail survey data was significantly different from the telephone survey data, the mail survey was chosen to maximize the number of responses that could be attained for the funding available for the overall effort. The Neighborhood Environmental Survey's resultant national dose-response curve was based solely on the annoyance responses from the mail survey. The mail survey was administered to the individuals in the selected airport communities in six separate "waves" over a 12-month period starting in October 2015. The use of a 12-month period ensured seasonal effects did not influence the resulting dose-response curve.

All mail survey respondents were invited to complete a follow-up telephone interview, which asked detailed questions on several areas including respondents' opinions on noise, exposure to aircraft noise, relationship to the airport, concerns about aircraft operations, views on airport community relations, among others. The telephone survey data could aide in understanding why some people are highly annoyed by aircraft noise at a particular noise exposure while others at the same noise exposure are not; further, the information may help explain differences in annoyance responses among airports. The detailed questions used for the phone questionnaire were not appropriate for the mail questionnaire because the subject matter would have disclosed the purpose of the survey and potentially biased responses to the aircraft annoyance question. The phone survey data was not used to calculate the national dose-response curve as all responding households were already represented in the mail survey.

The mail questionnaire followed the recommendations of the International Commission on the Biological Effects of Noise (ICBEN) (Fields et al. 2001) and used a single question that read: "Thinking about the last 12 months or so, when you are here at home, how much does [noise from aircraft] bother, disturb or annoy you?" This primary question was embedded among 13 other questions on various sources of noise and other aspects of the respondent's community to mask the purpose of the survey and minimize potential response bias. Consistent with ICBEN recommendations, the respondent was given choices of "not at all," "slightly," "moderately," "very," or "extremely." A respondent was identified to be 'highly annoyed' if they answered either of the latter two choices. Over 10,000 people responded and completed the mail questionnaire – a response rate of 40 percent. Bias checks were conducted during and after the data collection and none was detected.

[2] Although INM was superseded in 2015 by the FAA's Aviation Environmental Design Tool (AEDT), the initial phases of this project had started prior to 2015. Further, INM had been used to select the respondents. The use of INM was maintained for consistency throughout the project.

Analysis of the 'highly annoyed' responses and the associated DNL was used to generate dose-response curves for each individual airport and a national dose-response curve. The analysis used the same form of the logistic regression model used by FICON in 1992, not only for historic consistency but because it was found to require the fewest assumptions, offer the greatest flexibility, and provide a good fit[3] to the observed data. The research team deemed the choice of logistic regression the most appropriate, compared to other curve fitting techniques. The national curve is applicable in the range of DNL 50 dB to DNL 75 dB; however, caution should be exercised in predicting annoyance for DNL greater than 70 dB, due to the relative lack of respondents at these exposure levels.

The dose-response curve created from the mail questionnaire shows considerably more people are highly annoyed by aircraft noise at a given noise exposure level compared to historical FICON data. In general, between 9 and 22 percent of those surveyed for the Neighborhood Environmental Survey were highly annoyed by the various items listed in the mail questionnaire. However, 42 percent of the respondents were highly annoyed by aviation noise (at any DNL). The percentage of those surveyed who were highly annoyed by aircraft noise increased monotonically with increasing noise exposure. The national dose-response curve shows that nearly two-thirds of people are highly annoyed at DNL 65 dB. The national dose-response curve also has a greater percent highly annoyed for a given noise exposure than recent European standards from the Netherlands Organization for Applied Scientific Research (TNO, see Janssen and Voss, 2011) and the International Organization for Standardization (ISO) (2016). While the national dose-response curve shows more people being highly annoyed at a given noise exposure level than the historical FICON data or more recent international standards, it is similar to results obtained in Europe since 2000. Caution should be exercised when comparing the national dose-response curve to the TNO and ISO standards, as the national curve provides the community response for a recent time frame whereas the TNO and ISO standards incorporate survey data taken over the last 50 years. As previously mentioned, the FICON data, which is included in the newer European standards, shows a lower level of percent highly annoyed for a given noise exposure. Differences between the national curve and the dose-response curves taken previously could be due to changes in people's attitudes toward noise; changes in the nature of the noise exposure; differences in the cultures of those being surveyed; differences in study design, implementation, or measurement; or a combination of these factors.

This report also presents several additional analyses to explore the heterogeneity of the individual airport relationships. The six factors analyzed were climate, three flight event characteristics, race/ethnicity, and income.[4] The 'Noticeable' flight event characteristic, (i.e., the number of events having a maximum sound level at or above 50 dB, $NA50L_{max}$), demonstrated marginal significance and should be investigated further because of the high correlation of $NA50L_{max}$ with DNL. None of the other five factors showed a statistically significant relationship with percent highly annoyed after accounting for the noise exposure as measured by DNL.

Overall, this research effort accomplished its goal, as it provides an updated and nationally representative dose-response curve of civil aircraft noise exposure and community annoyance for the US.

[3] "Fitting" or "fit" refers to the process whereby statistical techniques are used to produce a curve that best represents or "fits" the underlying data.

[4] Climate was characterized in terms of "degree days." The three flight event characteristics were (1) whether the aircraft was 'visible' at its point of closest approach to the respondent, (2) whether an event was 'noticeable' (related to the event's maximum sound level), and (3) the aircraft noise event's 'relative importance' (whether the event's DNL was part of the hierarchical list of events which contributed all but 1 dB of the respondent's total DNL). Income was characterized by percentage of population below the poverty level. For race/ethnicity, each respondent was characterized as minority (Hispanic, black or African American, American Indian, or Alaska Native, Asian, or Native Hawaiian or Other Pacific Islander) or nonminority (white non-Hispanic).

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8 Dose-Response Curves

The main purpose of the NES was to produce updated dose-response curves relating the predicted annual average daily noise exposure of residents near airports with their self-reported levels of annoyance. This section provides individual dose-response curves for each of the 20 airports (Section 8.1) and the dose-response curve for all 20 airports together, referred to as the national curve (Section 8.2). These curves were developed using a statistical model based upon all mail questionnaire responses, which allowed for variation among the airports while combining them to produce a national curve.

The logistic regression model from FICON (1992) was used as the basis of the functional form of the individual airport and national curves. In addition to the historical consistency of this choice, alternative models were examined with the result that the model fit for logistic regression was found to require the fewest assumptions, offer the greatest flexibility, and yet provide a good fit to the observed data (see Appendix G). OMB also approved the method. The model in Equation (8.1) gives the predicted percent HA:

$$\text{Percent HA} = \frac{100\ \exp(\beta_0 + \beta_1 DNL)}{1 + \exp(\beta_0 + \beta_1 DNL)}. \tag{8.1}$$

Details of the mathematical formulations of the individual airport and national models and of the computational methods used to fit the models are given in Appendix H. All data analyses in Chapters 8 and 9, and in Appendices E, G, H, I and J, were generated using SAS/STAT® software, Version 9.4.[40]

The outcome variable HA was defined using the responses to Question 5e of the mail questionnaire. Question 5 asked: "Thinking about the last 12 months or so, when you are here at home, how much does each of the following bother, disturb or annoy you?" and part e of the question asked about "Noise from aircraft." HA was set equal to one if the respondent reported being "very" or "extremely" annoyed by aircraft noise, and was set equal to zero if the respondent reported being "not at all," "slightly," or "moderately" annoyed by aircraft noise.[41]

8.1 Dose-Response Curves for Individual Airports

Table 8-1 gives the model coefficients, standard errors, and 95 percent confidence intervals for the fitted curves from each of the 20 sampled airports. Figure 8-1 displays the 20 individual airport curves.[42] Separate graphs for each airport, showing the curve, 95 percent confidence bands, and data points summarizing percent HA for groups of respondents, are presented in Appendix I.

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[41] Sixty-seven of the respondents checked more than one response to Question 5e. For example, 13 respondents checked both 4 (very) and 5 (extremely) annoyed. For respondents who checked more than one response, we calculated the average of the checked values and defined HIGH_ANNOY to be one if the average was 4 or greater and zero otherwise. For 40 of the 67 cases, the checked categories were entirely within the set {1, 2, 3} or the set {4, 5}.

[42] To protect the confidentiality of the respondents, each curve is drawn from DNL 50 dB to a maximum value of DNL that is rounded to a multiple of 5 near the highest DNL value. The range of DNL displayed for each airport was determined as follows. The respondents were categorized into five DNL groups: 55 dB or less, 55-60 dB, 60-65 dB, 65-70 dB, 70 dB or greater. The number of respondents in each group was calculated, and the graph was extended to the boundary of the largest DNL group that has at least 20 respondents, where the boundary of the highest DNL group is set to 75 dB. For example, if an airport has 250 respondents with DNL less than 55 dB, 250 respondents in the range 55-60 dB, and 3 respondents above 60 dB, the curve is displayed from DNL 50 dB to DNL 60 dB. Alternatively, if an airport has 240 respondents with noise exposure less than 55 dB, 240 respondents in 55-60 dB, and 23 respondents in 60-65 dB, the curve is displayed from DNL 50 dB to DNL 65 dB.

Table 8-1. Model Coefficients for Individual Airport Curves

Airport Identifier	Intercept	Standard Error of Intercept	Lower 95% Confidence Limit of Intercept	Upper 95% Confidence Limit of Intercept	Slope	Standard Error of Slope	Lower 95% Confidence Limit of Slope	Upper 95% Confidence Limit of Slope
ABQ	-6.1563	2.1591	-10.4250	-1.9521	0.1093	0.0406	0.0302	0.1894
ALB	-8.2847	1.5698	-11.4155	-5.2521	0.1355	0.0279	0.0815	0.1911
ATL	-8.3554	1.0956	-10.5485	-6.2480	0.1379	0.0182	0.1027	0.1743
AUS	-11.4847	1.6807	-14.8551	-8.2546	0.1903	0.0298	0.1330	0.2499
BDL	-6.9470	1.3290	-9.5961	-4.3781	0.1124	0.0233	0.0674	0.1587
BFI	-6.5752	1.1655	-8.8959	-4.3210	0.1031	0.0195	0.0652	0.1419
BIL	-13.8302	2.2344	-18.3277	-9.5522	0.2395	0.0407	0.1614	0.3213
DSM	-8.6299	1.4657	-11.5504	-5.7968	0.1387	0.0254	0.0895	0.1892
DTW	-5.9880	1.3581	-8.6806	-3.3507	0.1059	0.0237	0.0598	0.1530
LAS	-6.6325	1.0178	-8.6646	-4.6697	0.1025	0.0169	0.0699	0.1361
LAX	-5.7330	0.8695	-7.4677	-4.0548	0.0930	0.0137	0.0665	0.1204
LGA	-13.1473	1.2944	-15.7651	-10.6832	0.2125	0.0214	0.1718	0.2556
LIT	-8.0593	1.4986	-11.0430	-5.1606	0.1395	0.0271	0.0871	0.1934
MEM	-8.9629	1.0223	-11.0252	-7.0113	0.1388	0.0163	0.1077	0.1715
MIA	-12.6290	1.2452	-15.1485	-10.2599	0.2005	0.0201	0.1622	0.2412
ORD	-10.5999	1.1034	-12.8285	-8.4963	0.1840	0.0185	0.1488	0.2214
SAV	-9.1981	1.9600	-13.0964	-5.4026	0.1566	0.0355	0.0878	0.2270
SJC	-10.7487	1.4209	-13.6010	-8.0228	0.1782	0.0245	0.1312	0.2273
SYR	-3.4425	1.3248	-6.0567	-0.8563	0.0489	0.0234	0.00307	0.0951
TUS	-7.3388	1.3725	-10.0761	-4.6882	0.1399	0.0242	0.0933	0.1882

This graph displays the estimated dose-response curve for each airport. The y-axis is the estimated percent highly annoyed and the x-axis is the noise exposure, measured by the DNL in decibels. At noise exposure of DNL 50 dB, at the left side of the graph, the predicted percent highly annoyed ranged from about 7 percent to 40 percent. At noise exposure of DNL 75 dB, the four airports with this level of noise exposure have percent highly annoyed ranging from about to 75 percent for LAX to about 95 percent for ORD. The individual airport curves do not independently provide a complete picture of the national response to aircraft noise.

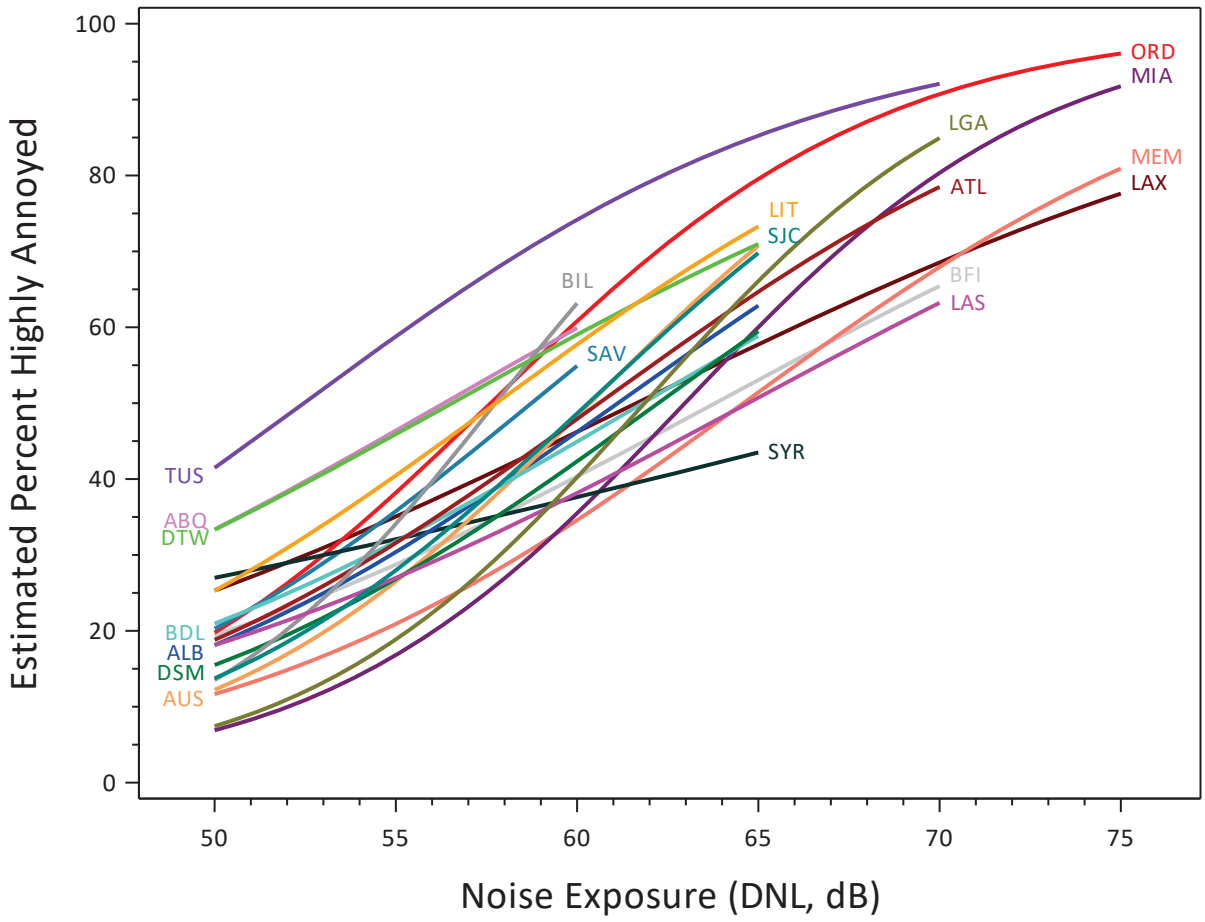


Figure 8-1. Individual Dose-Response Curves for all 20 Airports

8.2 National Dose-Response Curve

The national curve is a current national estimate of the relationship between noise and perceived annoyance based on a representative sample of airports and of residents living near them. It was created by combining the data from all of the individual airports into a single dataset. That combined dataset was used to estimate the parameters in a model that included the airports as random effects, (i.e., treating them as a random sample that is drawn from a larger population of all airports), thereby incorporating an estimate of the variation present had we drawn a different sample of airports. The approach uses all available data to create a national curve, while at the same time provides an estimated dose-response curve for each individual airport. In this way, the national curve can be considered a weighted average of all the sampled airports, taking into account how precisely the model fits each airport. The dose response is similar for most of the airports. Consequently, this approach gives more precise estimates of the model parameters by combining all airport data in a single model than if separate estimates for each airport, based on their own smaller sample, were simply averaged. In this analysis, airports with a more precise fit are given somewhat greater weight in producing the national average.

An alternative approach would have been to create separate curves for each airport independently, and then average equally the resulting slopes and intercepts to obtain a national curve. For comparison purposes, this method was evaluated and was shown to produce results within a few percentage points of the selected method. Appendix H (Section H.2) gives the mathematical formulation of this model. The alternative approach, while potentially more straightforward, would not have produced individual airport curves, a

national curve, and tests for all the parameter estimates in a single analysis informed by all the data. However, the method employed herein is able to do all of this.

Equation (8.2) displays the equation for the national curve.

$$\text{Percent HA} = \frac{100\ \exp(-8.4304 + \ 0.1397\ DNL)}{1 + \exp(-8.4304 + \ 0.1397\ DNL)}. \quad (8.2)$$

Table 8-2 repeats the model's coefficients, and provides their standard errors and 95 percent confidence intervals.

Table 8-2. Model Coefficients for the National Dose-Response Curve

Coefficient	Estimate	Standard Error	Lower 95% Confidence Limit	Upper 95% Confidence Limit
Intercept, β_0	-8.4304	0.5789	-9.6420	-7.2187
Slope, β_1	0.1397	0.0098	0.1192	0.1602

Figure 8-2 graphically displays the dose-response curve and can be used to estimate a 95 percent confidence interval on an estimated percent HA for a given DNL. The dashed lines result from incorporating all responses from all sample airports into a single model estimating both the predicted annoyance and the confidence interval for that estimate. The national curve results in approximately 20 percent HA at DNL 50 dB, 66 percent HA at DNL 65 dB and 79 percent HA at DNL 70 dB. See Appendix H for definition of the 95 percent confidence interval.

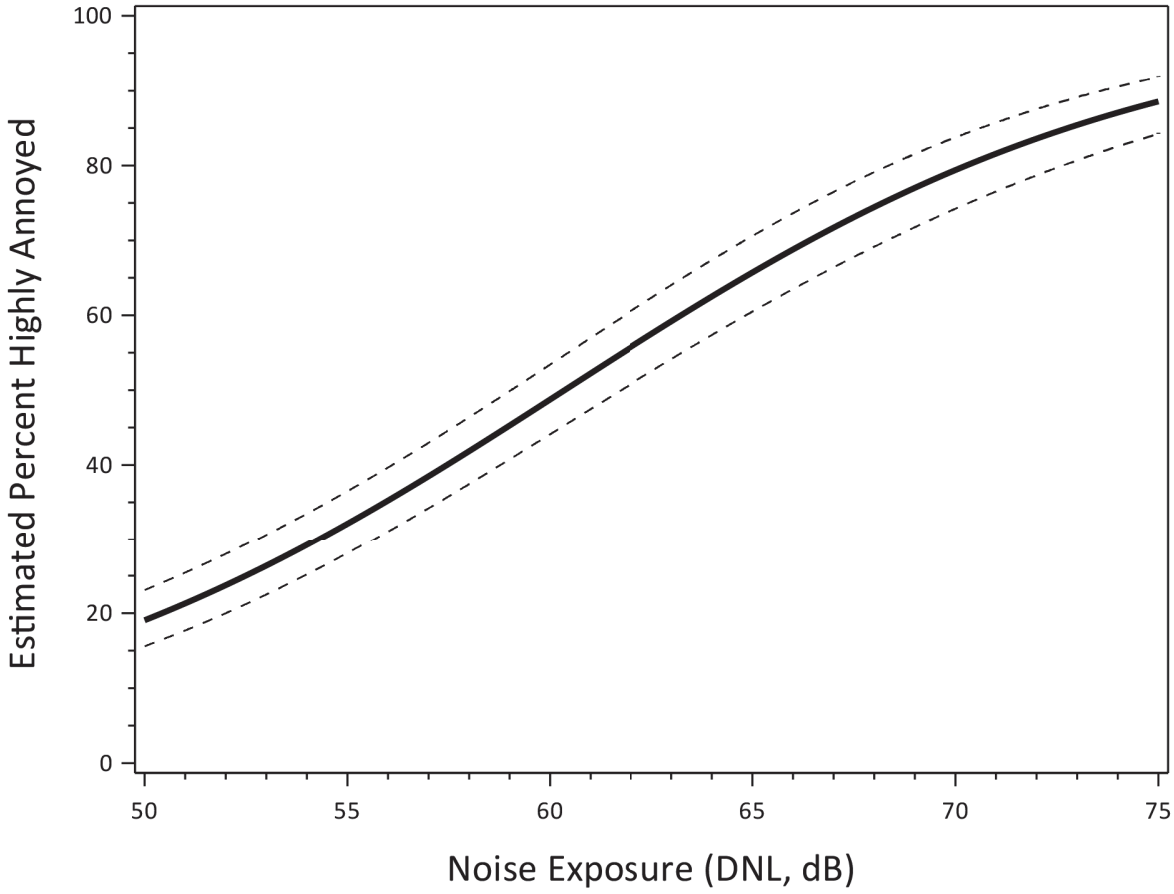


Figure 8-2. National Dose-Response Curve (solid line), with 95 Percent Confidence Intervals on Annoyance for a Given DNL (dashed lines)

Figure 8-3 displays the national curve along with a shaded region showing the range of the curves for each of the 20 airports from Figure 8-1. The national curve is approximately in the middle of the range of the individual airport curves. See Section 9.4 for discussion of airport-to-airport differences.

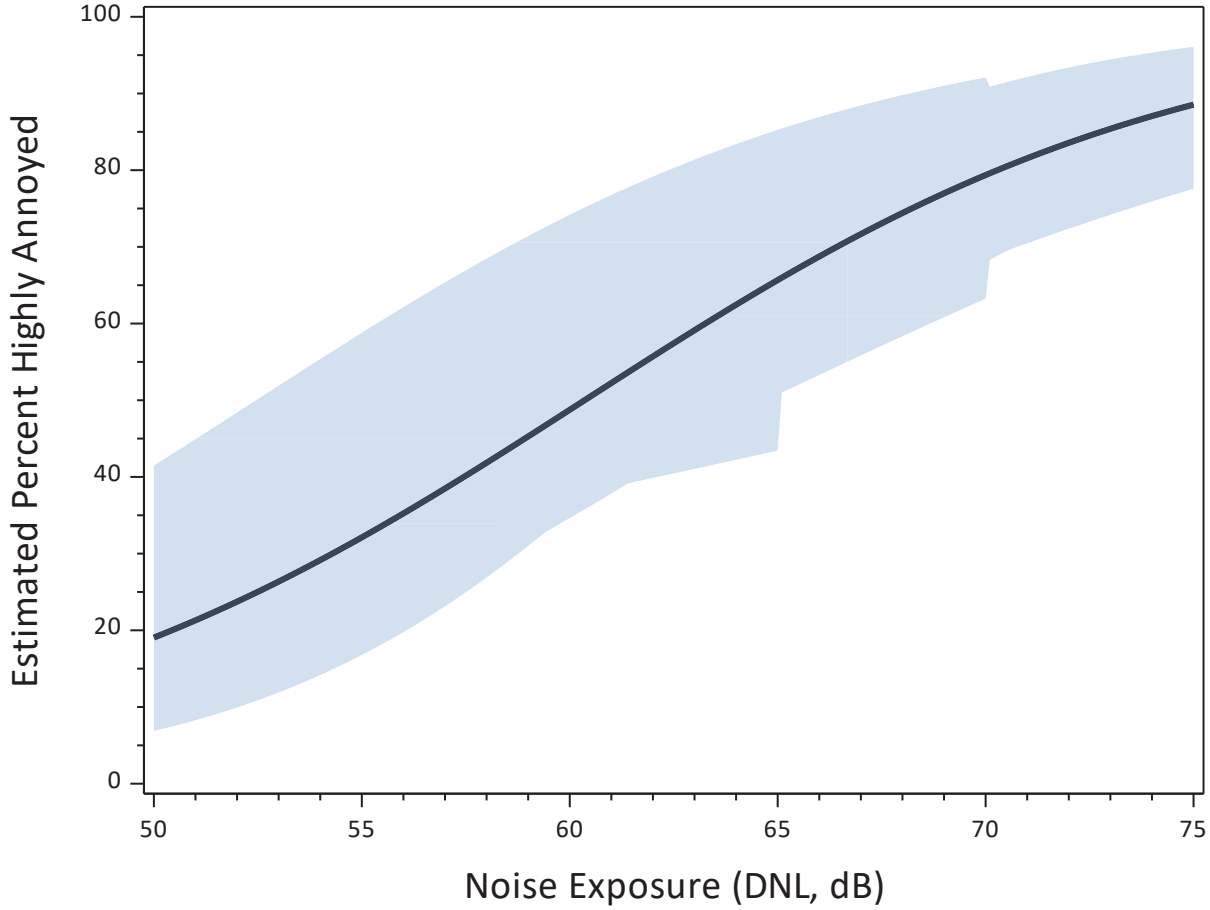


Figure 8-3. National Dose-Response Curve (solid line), Compared to Range (shaded area) of the 20 Individual Airport Dose-Response Curves

Figure 8-4 compares the national curve to four other curves from frequently cited research:

- the FICON (1992) curve,
- two community tolerance level analyses from Equation (G.1) of the International Organization for Standardization (ISO) (2016), and
- the Netherlands Organisation for Applied Scientific Research (TNO) curve at the bottom of page 4 of Janssen and Vos (2011), also given as Equation (H.3) in ISO (2016).

The dashed lines indicate the 95 percent confidence interval for a predicted percent HA for a given DNL.

The FICON, ISO and TNO equations are shown below as Equations (8.3) through (8.5), respectively. In Equation (8.4), the value of the constant depends on the adjustment used for aircraft noise. Figure 8-4 shows the ISO curve for values of the constant equal to 65 and 68, to represent the range of recommended adjustments for aircraft noise.

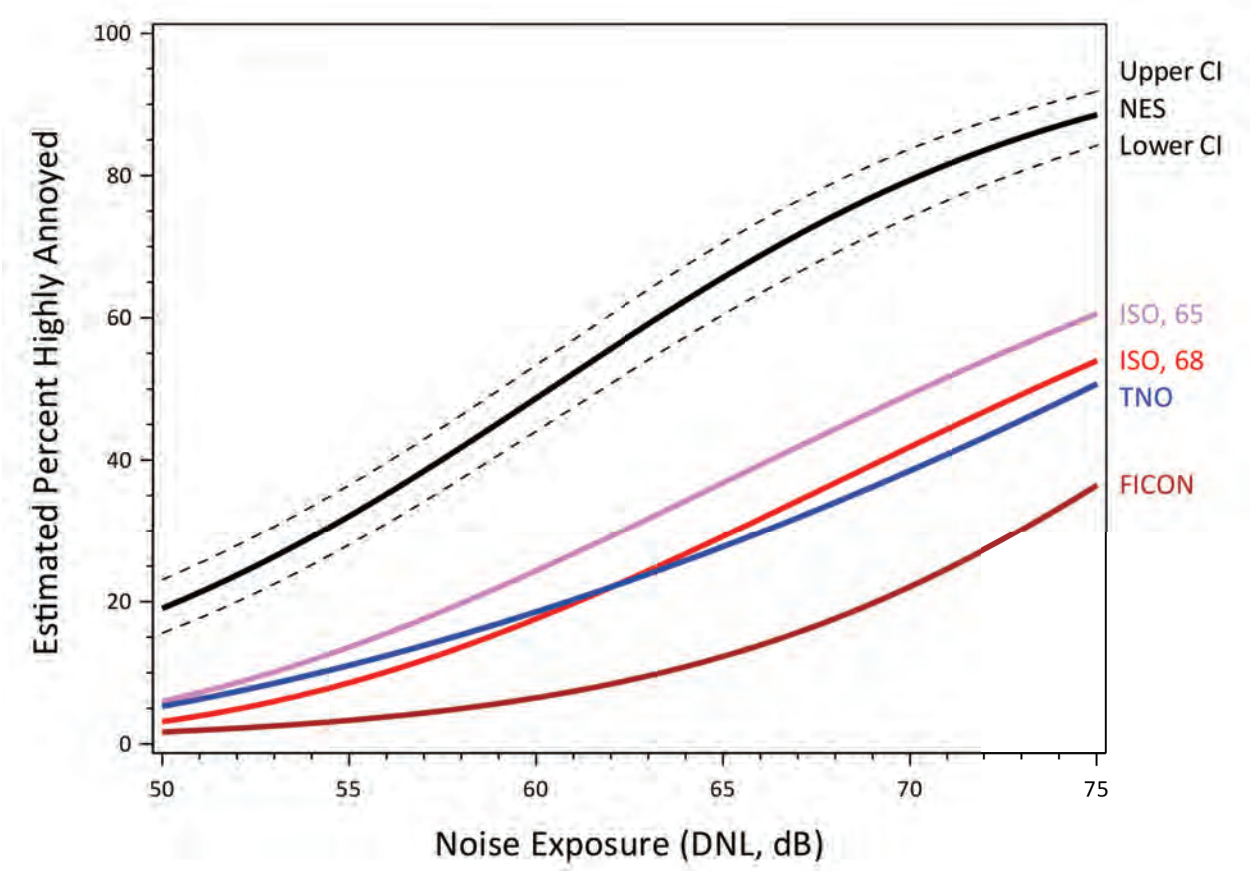


Figure 8-4. National Dose-Response Curve (NES), with 95 Percent Confidence Intervals (CI) on Annoyance for a given DNL. TNO, FICON and ISO Curves with Constants 65 and 68 are Shown Below the National Curve

$$\text{Percent HA}_{\text{FICON 1992}} = \frac{100\ \exp(-11.13 + 0.141\ DNL)}{1 + \exp(-11.13 + 0.141\ DNL)} \tag{8.3}$$

$$\text{Percent HA}_{\text{CTL ISO 2016}} = 100 \exp\left\{-\left[\frac{1}{10^{0.1[DNL-\text{constant}]}}\right]^{0.3}\right\} \tag{8.4}$$

$$\text{Percent HA}_{\text{TNO}} = \text{-1.395E-04}\times(DNL\text{-}42)^3 + \text{4.081E-02}\times(DNL\text{-}42)^2 + 0.342\times(DNL\text{-}42) \tag{8.5}$$

Figure 8-5 shows the curve along with estimates of percent HA for groups of observations from the individual airports.[43] Note that the dashed lines in Figure 8-5 and their actual values given in Table 8-3 describe the precision of estimated HA for a given DNL from the national model. They are not a reflection of the much more variable distribution of the points, which represent the variation in individual annoyance responses. In a similar way, the sample mean is much less variable than the individual observations used to compute it.

In Figure 8-5, the national curve is near the middle of the points from DNL 50 dB up to about DNL 68 dB. Above DNL 68 dB, there is some divergence between the curve and the data points from the airports that have high noise exposure. This divergence occurs in part because the national curve can be thought of as "averaging" the individual dose-response curves (Appendix H, Section H.2), and the results greater than DNL 70 dB are extrapolated for the thirteen airports (see Table 4-4) that have no data greater than DNL 70 dB.

Figure 8-5 has been simplified with DNL aggregated into eight bins to address Personally Identifiable Information (PII) considerations (i.e., to protect respondent anonymity). However, the actual curve fitting was conducted with the original non-binned data.

Sensitivity analyses, presented in Appendix G, confirmed that the curve fits the data well under alternative models for DNL less than 70 dB: The curves from the alternative models were inside the confidence limits shown in Figure 8-2 for all values of DNL between 50 and 70 dB. However, some of the alternative models predicted less annoyance than the curve shown in Figure 8-2 for values of DNL greater than 70 dB. Caution should be used when employing the logistic regression curve to predict a national value of percent HA for values of DNL greater than 70 dB. There were relatively few observations in the data set greater than 70 dB, so the data provide less information for the form of the curve in that region than in the region with DNL less than 70 dB.

[43] The data points were calculated as follows. For each airport, the respondents were classified into DNL groups of width 3 dB: less than 52.5, 52.5 to 55.5, 55.5 to 58.5, 58.5 to 61.5, 61.5 to 64.5, 64.5 to 67.5, 67.5 to 70.5, and 70.5+. Any group with fewer than 20 respondents was merged with the group to its left to protect respondent confidentiality. The percent HA was calculated for each group and airport was plotted against the midpoint of the DNL range (the midpoints are 51, 54, 57, 60, 63, 66, 69, and 72). All 20 airports had points plotted at DNL 51 dB; only the four airports with at least 20 respondents above DNL 70.5 dB had points plotted at DNL 72 dB.

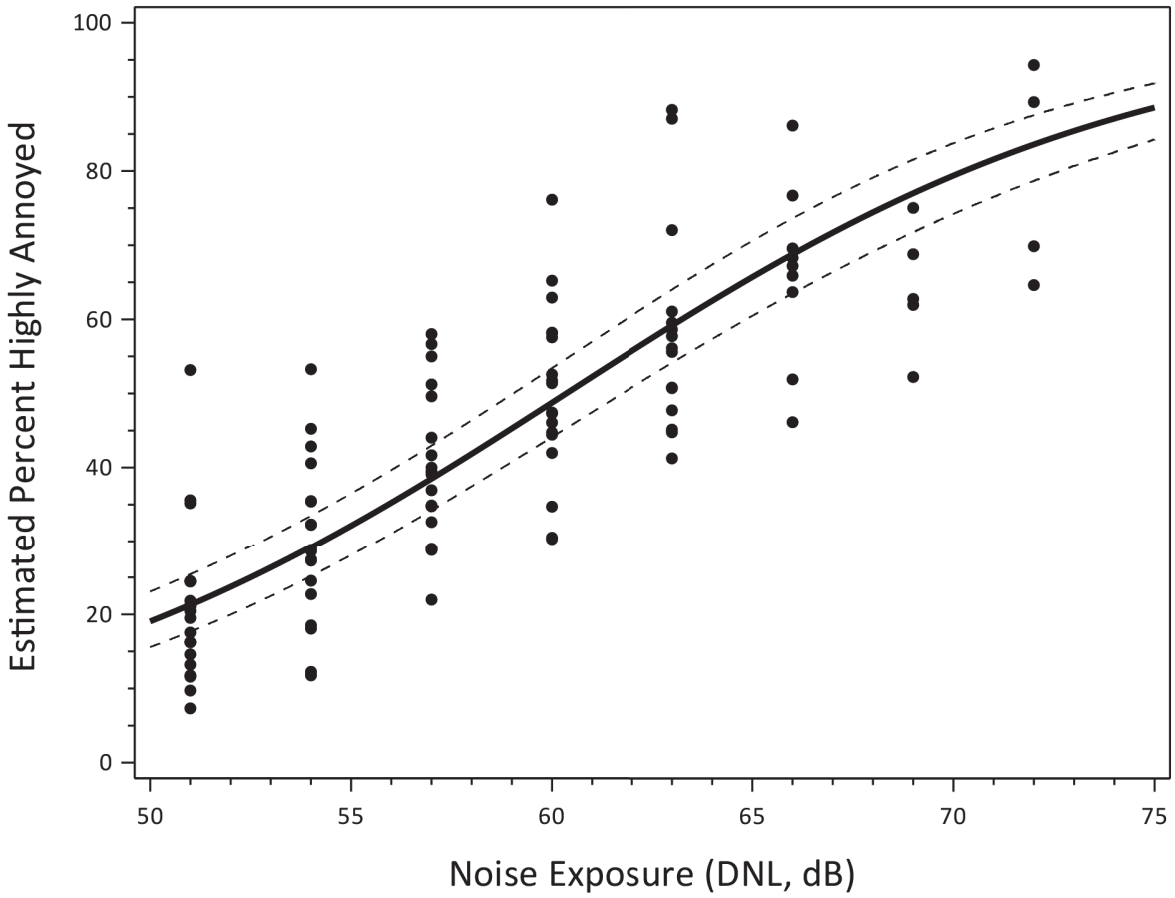


Figure 8-5. National Dose-response Curve, With 95 Percent Confidence Intervals on Annoyance for a given DNL, Displayed with 5-dB binned (see previous footnote) Point Estimates of Percent HA from Individual Airports

Table 8-3 shows the predicted percent HA from the model in Equation 8.2, for DNL between 50 and 70 dB.

Table 8-3. Predicted Percent HA at Selected Noise Exposures, from National Dose-response Curve

DNL Value (dB)	Predicted Percent HA	Standard Error	Lower 95% Confidence Limit	Upper 95% Confidence Limit
50	19.1	1.9	15.4	23.4
51	21.3	2.0	17.5	25.7
52	23.7	2.0	19.8	28.2
53	26.4	2.1	22.2	30.9
54	29.2	2.1	24.9	33.8
55	32.1	2.2	27.8	36.8
56	35.2	2.2	30.8	40.0
57	38.5	2.2	33.9	43.3
58	41.8	2.3	37.2	46.7
59	45.3	2.3	40.5	50.2
60	48.8	2.4	43.8	53.7
61	52.2	2.4	47.1	57.3
62	55.7	2.5	50.5	60.8
63	59.1	2.5	53.7	64.3
64	62.5	2.6	57.0	67.7
65	65.7	2.6	60.1	70.9
66	68.7	2.6	63.1	73.9
67	71.7	2.6	66.0	76.7
68	74.4	2.6	68.7	79.4
69	77.0	2.5	71.3	81.8
70	79.4	2.4	73.8	84.0

8.3 Considerations for Interpreting the Curves

The interpretation of a regression model for summarizing the relationship between a response variable y (here, the indicator variable percent HA defined at the beginning of this section) and an explanatory variable x (here, DNL) in a population depends on several factors:

1. Representativeness of the sample with respect to the population,
2. Functional form of the regression model and how well it fits the data,
3. Method for measuring y and the accuracy of the y values, and
4. Method for measuring x and the accuracy of the x values.

In the NES, residents in each of the 20 airport communities were surveyed with the same survey design and protocol, using the same questionnaire, and over the same period. Previous studies used different survey methods and measurements of annoyance. Janssen et al. (2011) reviewed literature finding that some of the differences among previous studies could be explained by the study design and sample selection methods. Some of the studies that served as the foundation of the ISO, TNO, and FICON curves used telephone or face-to-face survey administration, or used different mailing and nonresponse follow-up protocols for a mail survey; measured highly annoyed using a different instrument or different scale; had different response rates; surveyed the population for only part of a year rather than the whole year; and used different methods for computing DNL for respondents. The data for the studies were collected from different countries and in different languages. Importantly, many of the prior studies included noise from a variety of transportation sources.

The ISO and TNO curves from Equations (8.4) and (8.5) were fit using statistical models of different form than the two-parameter logistic regression model in Equation (8.1). The ISO curve used a log-log link function instead of the logit link function used in Equation (8.1), and it fixed the slope of the equation at a predetermined value instead of estimating it from the data see Appendix G, Section G.4 for a discussion of the model used for the ISO curve. The TNO model (Janssen and Vos, 2011) is a polynomial approximation to the results from a grouped regression model (Groothuis-Oudshoorn and Miedema, 2006) in which the individual airport study intercepts are random effects; as discussed in Appendix H, Section H.2, the model used for the national curve in Equation (8.2) uses random effects for both the slopes and the intercepts.

The NES national curve may differ from dose-response curves from other studies because the relationship between noise exposure and annoyance has changed since the earlier studies, but the differences may alternatively be due to differences in study design, implementation, measurement, cultural differences for studies occurring in other countries, or a combination of these factors. In addition, advances in technology and statistical theory have resulted in changes in methodology that were not available for some of the previous studies. Many of these aspects are discussed in the following subsection, along with implications for comparing the estimated dose-response curves from the NES with other dose-response curves in the literature.

8.3.1 Sample Representativeness

As described in Chapter 3, the sample of airports in the NES was selected using balanced probability sampling so that it is representative of the population of 95 airports with respect to the factors listed in Table 3-2. Within each airport, a stratified random sample of addresses, stratified by noise exposure, was taken at each airport, ensuring that the sample of addresses selected from each noise stratum is representative of the population of addresses in that noise stratum.

Although the address-based sampling method used in the NES has been demonstrated to have greater response rates than alternative methods of data collection such as telephone surveys (National Research Council, 2013, Chapter 4) and the ACRP study showed the response rate from the mail administration to be much greater than that of a telephone survey (Miller et al. 2014a), there was still nonresponse to the survey. If the nonrespondents differ from the respondents, and if those differences cannot be controlled for through statistical modeling or weighting, then the sample may not be fully representative of the population (Brick 2013).

The dose-response curves in Sections 8.1 and 8.2 are constructed using data from the respondents to the survey. The survey has no information on the annoyance level of the nonrespondents. Westat conducted analyses to investigate whether respondents and nonrespondents differed on characteristics that are known for every sampled address, whether respondent or not. Appendix E reports the nonresponse bias analyses performed for the survey. To conduct a further exploration of potential nonresponse bias, the model was refit to data using nonresponse-adjusted weights. The curve from this model, reported in Appendix G (Section G.3), was visually indistinguishable from the curve fitted without weights from Figure 8-2. This indicates that the dose-response relationship is unaffected by nonresponse bias adjustments that can be done using information from the sampling frame, and provides evidence that nonresponse bias is not detected from the information known from the sampling frame. However, the information known about both respondents and nonrespondents is limited, and it is possible that respondents and nonrespondents differ on characteristics not known in the sampling frame, including their annoyance to aircraft noise.

8.3.2 Regression Model Form

The analysis reported in this section used the two-parameter logistic regression model from Equation (8.1) to summarize the dose-response relationship, as requested by FAA. The logistic regression model is widely used to model dose-response relationships because it can fit many different possible sigmoidal shapes (Cox and Snell 1989). As with any parametric model, the two-parameter logistic regression model assumes a specific form for the relationship between percent HA and noise exposure. In particular, the logistic model is

symmetric about the point where 50 percent are highly annoyed. [44] The model also assumes that the percent HA always increases as DNL increases.

Appendix G evaluates the fit of the model for the individual-airport and national dose-response curves. Overall, for DNL below 70 dB, the predicted percent HA from the two-parameter national logistic model is similar to the predicted percent HA for alternative models that were fit to the data. As shown in Appendix G (Figure G-1), for DNL greater than 70 dB, some of the alternative models predicted less percent HA than the logistic model. An alternative one-parameter model from Fidell et al. (2011) exhibited significant lack of fit for the NES data, as presented in Appendix G (Section G.4).

8.3.3 Methodology and Accuracy of Measurement of Highly Annoyed

Chapter 2 described the development of the NES methodology and the question used to classify a respondent as being highly annoyed. Annoyance was measured following procedures developed by ICBEN (Fields et al. 2001), recommended by ISO (2016), including the use of a five-point verbal scale, which is widely used in current surveys. Respondents answering "Very" or "Extremely" annoyed are counted as HA as opposed to those answering "Not at all", "Slightly" or "Moderately" annoyed. Some laboratory research has shown that people rate "Very" and "High" as expressing equivalent degrees of annoyance (Fields et al. 2001). Many earlier surveys, including many of those in the FICON analysis (1992), derived their annoyance indicator from survey questions that differed in such features as: the use of numeric rather than verbal scales, the language of administration, the reaction (not always "annoyance"), the number of scale points, the verbal labels for the scale points ("highly" has not been offered as a choice in surveys), and whether the scale is presented in as single question or is broken into two parts with a screening question. The NES mail questionnaire only asked about aircraft noise annoyance as part of a rating of thirteen neighborhood conditions. As a result, respondents in the NES mail survey, as for most recent surveys, did not know that aircraft noise was the focus of the inquiry when answering the question. Noise annoyance surveys differ considerably from one another in many ways that sometimes affect survey responses (Groves et al. 2011) and might affect annoyance responses. Examples include the season of administration, the mode of questioning (mail, telephone, face-to-face, etc.), the method for identifying households, whether the respondent within a household is self-selected or selected by the survey, and the context set by any introductory materials including the identification of the survey purpose and sponsor.

8.3.4 Methodology and Accuracy of DNL Modeling

Chapter 7 described the methodology used by the NES to calculate the value of DNL for each sampled address in the research effort, and the steps taken by HMMH to ensure the accuracy of those calculations. Westat performed internal consistency checks to verify that the values of DNL used in the model were consistent with the noise contours that had been used when selecting the sample.

8.3.5 Comparison with Other Curves

A comparison of the NES curves to other curves in the literature should consider the populations from the studies and how well the samples represent those populations, and how well the statistical models that are employed summarize the information from those studies. It also needs to account for differences in the methodology for measuring HA and possible differences in the calculation of DNL. The survey methodology used in the NES follows current best practices in public opinion / social science research. These methods

[44] Dobson and Barnett (2008, Section 7.3) review alternative models that can be used for dose-response relationships, including probit and complementary log-log link models. The different models give similar results for predicted percentages between 30 and 70 percent but may differ slightly for predicted percentages close to 0 and 100 percent. In particular, log-log and complementary log-log link models do not have the symmetry property of the logistic and probit models. The log-log link model has a shallower slope than the logistic model when the predicted percentage is close to 100 percent and a steeper slope when the predicted percentage is close to 0 percent.

were tested and refined following a pilot test (ACRP 02-35) and have been commonly used for recent major surveys by other Federal agencies such as the Federal Highway Administration, National Cancer Institute and the Department of Education.[45]

Figure 8-4 shows that the TNO, ISO, and FICON curves fall outside of 95 percent confidence limits for the national curve fit to the NES data. This indicates that the NES curve is statistically significantly different from the mathematical functions used to summarize those curves. However, each of the TNO, ISO, and FICON curves is an estimate based on airport surveys that had been conducted in the past and on samples of respondents in those surveyed airports. These surveys also had sampling and nonsampling errors, and a proper significance test would need to account for the errors in the studies used to construct the TNO, ISO and FICON estimates.

The model for the NES in Equation (8.1) used the same functional form as the FICON (1992) curve. Table 8-4 compares the coefficients from the two curves. The estimated slope from the FICON (1992) curve is close to that of the NES curve. The intercept for the NES curve, however, is greater than the FICON value of -11.13. The estimated coefficients indicate that the rate of increase in percent HA with increasing DNL is consistent with the earlier FICON results. However, it appears that the percent HA for a given DNL has increased over that previously observed in FICON.

Table 8-4. Comparison of NES and FICON (1992) Coefficients

Coefficient	Estimate from NES Curve	Lower 95% Confidence Limit for NES Curve	Upper 95% Confidence Limit for NES Curve	Estimate from FICON (1992)
Intercept, β_0	-8.4304	-9.6420	-7.2187	-11.13
Slope, β_1	0.1397	0.1192	0.1602	0.141

The increase in annoyance at all levels of DNL exposure should be placed in context with the timeframe of this research effort. The FICON curve utilized data from the 1960s through 1980s and is now several decades old. Over that timeframe, the public may have become increasingly sensitive to aircraft noise at a given DNL, perhaps due to differences in the nature of sound exposure (e.g., changes in operations, frequency of flights), differences in study design, country surveyed, implementation and measurement, changes in attitudes, or a combination of these factors. Meta-analysis of more recent studies has also found higher levels of aircraft noise annoyance compared to historical curves (Guski et al. 2017). Further research is underway by the project team to examine historical trends in aircraft noise annoyance data, including comparisons to other recent research.

[45] These recurrent major Federally-funded national surveys have all transitioned from telephone to mail data collection over the past decade: National Household Travel Survey, Federal Highway Administration, Department of Transportation - https://www.nationalhouseholdtravelsurvey.com/
Health Information National Trends Survey (HINTS), National Cancer Institute - https://hints.cancer.gov/
National Household Education Surveys, National Center for Education Statistics, Department of Education - https://nces.ed.gov/nhes/

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AR034334

Item No. 3c supp
Meeting Date: April 25, 2017

Noise Programs & NextGen Briefing

Arlyn Purcell, Director Aviation Environmental Services
Stan Shepherd, Manager Airport Noise Programs
David Suomi, FAA Deputy Regional Administrator
Steve Karnes, FAA Senior Technical Advisor

Port of Seattle

ER-345

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AR034335

Presentation Overview

- Noise Information Hotline
- Increased Operations
- Economic Impacts
- Noise Contours
- Noise Mitigation Programs
- Fight Procedures

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AR034336

Noise Information Hotline

Noise Office Inquiries – Noise Hotline & online comment forms

- 2016: 2,959
  - 10 people = 55% of comments
- 2015: 2,632
  - 4 people = 59% of comments
- 2014: 2,172
  - 4 people = 63% of comments

Calls to the Noise Office have increased in the past couple of years

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AR034337

Aircraft Operations

- 2016: 412,170 operations – 8% increase
- 2015: 381,408 operations – 12% increase
- 2014: 340,478 operations – 7% increase
- 2013: 317,186 operations

The difference between 2013 and 2016 was 94,984 operations.

That's 260 more aircraft going over homes per day.

The increase in operations is predominantly what is causing additional noise complaints

Case: 25-7439, 08/10/2026, DktEntry: 45.4, (46 of 65), Page 565 of 674 (565 of 674)

Sea-Tac Airport Economic Impacts

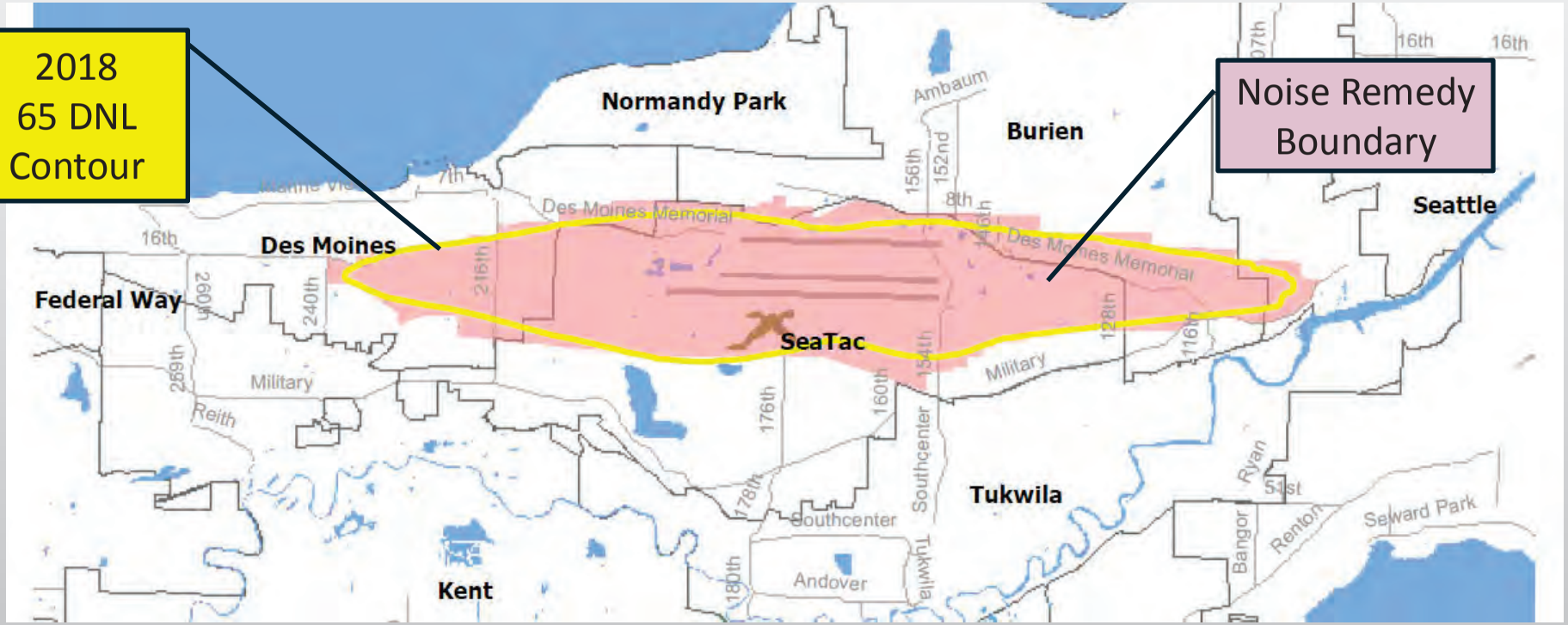
- Economic Impact = $16.3 billion annually in business revenue
- Generates 171,769 jobs / 19,000 directly related to the airport
- Approximately 4,000 airport employees live in the local cities
- Each international flight generates $75 million annually to the economy
- Tourism creates $365 million annually in state & local taxes and approximately 140,000 jobs.

Sea-Tac Airport is a major contributor to the local economies

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AR034339

Noise Contour & Noise Remedy Boundary



Residential sound mitigation occurs within the Noise Remedy Boundary per FAA rules

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AR034340

Accomplishments to Date

- 9400 Single-family homes sound insulated
- 8 Schools sound insulated
- 14 College buildings sound insulated
- 246 Condo units sound insulated
- 359 Mobile home units acquired and residents relocated

$400 million spent since 1985 on mitigation

Case: 25-7439, 08/10/2026, DktEntry: 45.4, Page 568 of 674 (568 of 674), (49 of 65)

Part 150 Approved Sound Mitigation Programs

- Single-Family Residential Insulation – Continuation of 1985 program
- Condominium Insulation
- Apartment Insulation – Pilot Project
- Places of Worship Insulation – Pilot Project
- South Approach Transition Zone Voluntary Residential Acquisition
- School Insulation –MOA with FAA & School District

Part 150 is the FAA regulation outlining how airports study noise

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AR034342

Noise Abatement

- Flight Procedure Monitoring



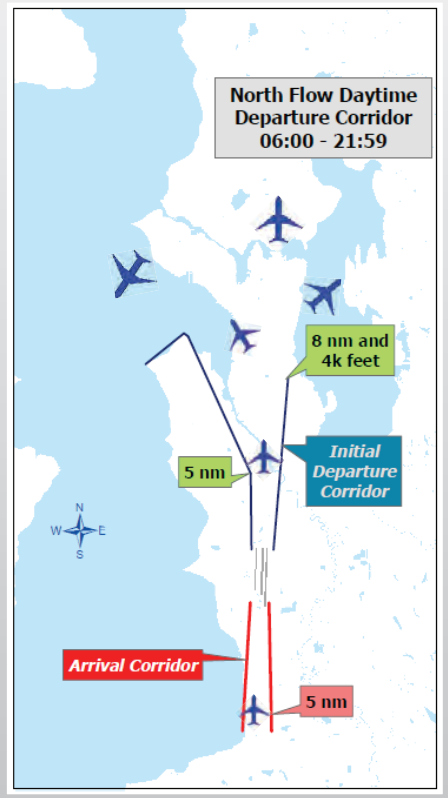
Procedures are designed to minimize noise impacts

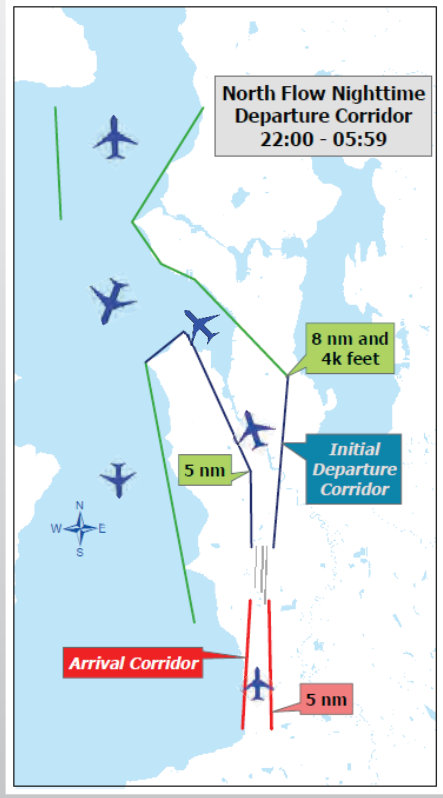
ER-353

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Jet Noise Abatement Procedures





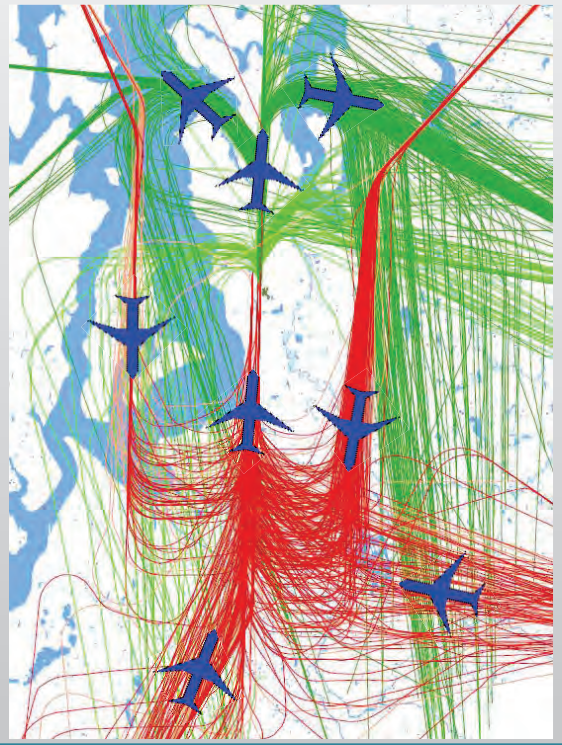


Noise Abatement Procedures are for jet aircraft only

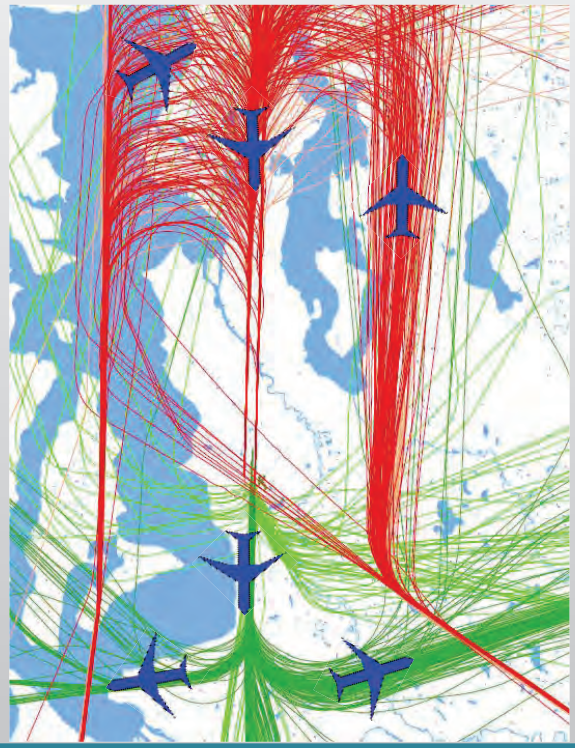
AR034344

Flight Paths

North Flow



South Flow



Flight paths have been in place since 1990

ER-355

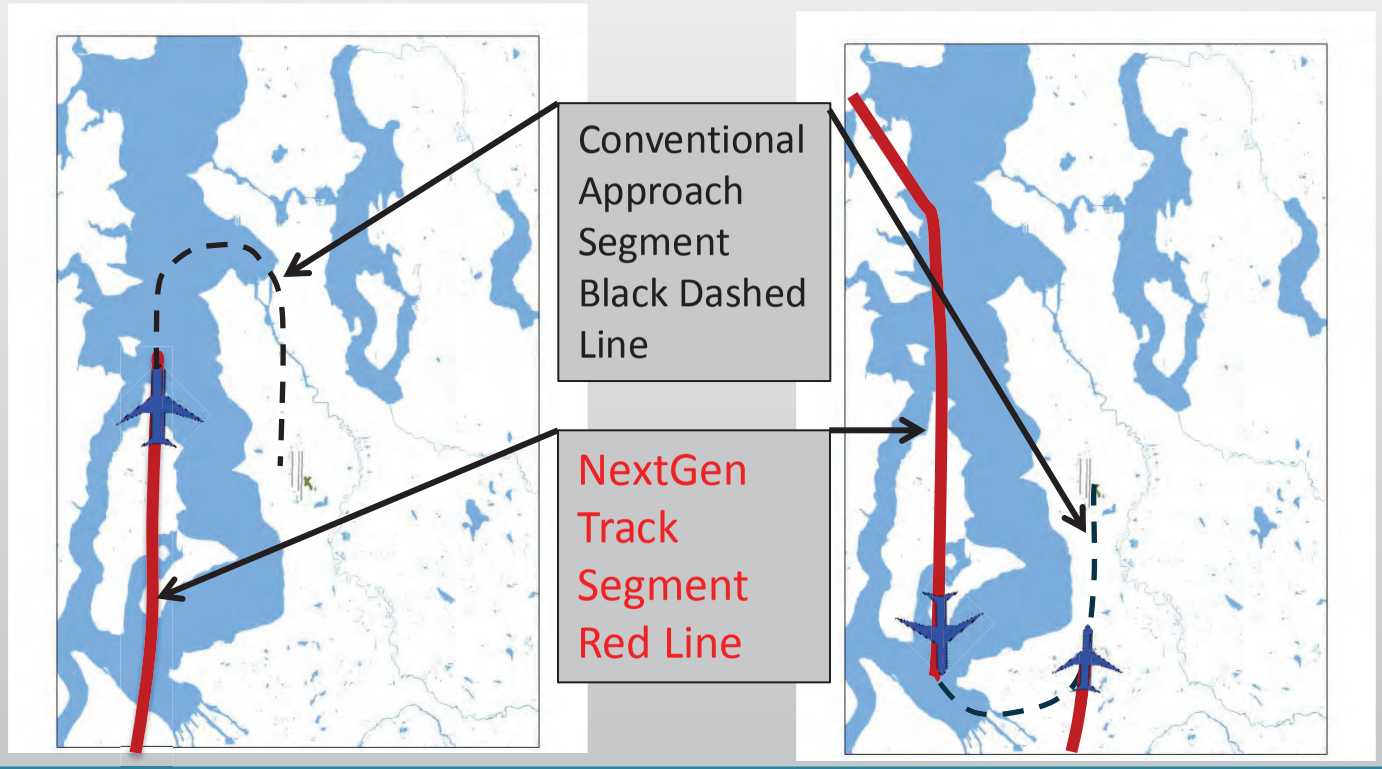
(572 of 674), Page 572 of 674 Case: 25-7439, 08/10/2026, DktEntry: 45.4, (53 of 65)

NextGen And Conventional Approaches At SEA

AR034345

South Flow

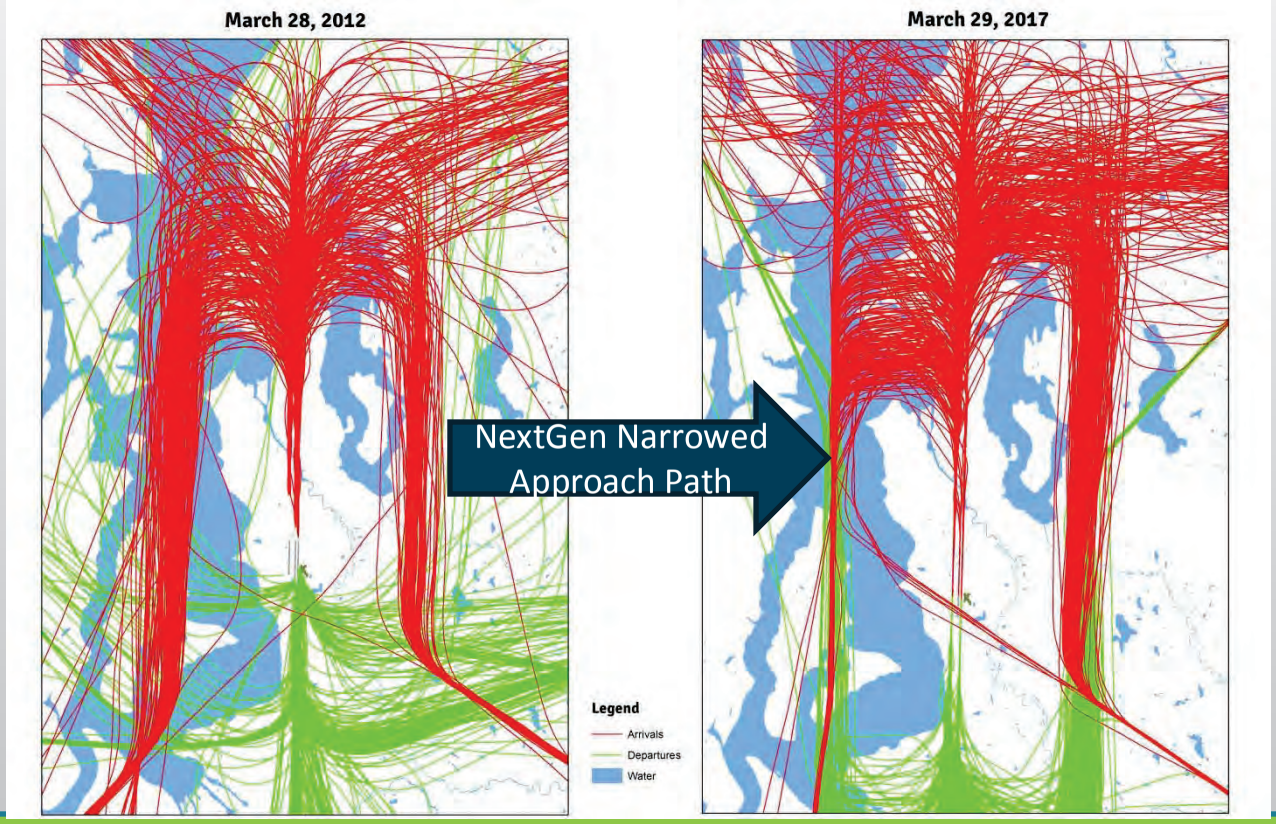
North Flow



Not all approaches are NextGen

(573 of 674), Page 573 of 674 Case: 25-7439, 08/10/2026, DktEntry: 45.4, (54 of 65)

South Flow Before and After Greener Skies

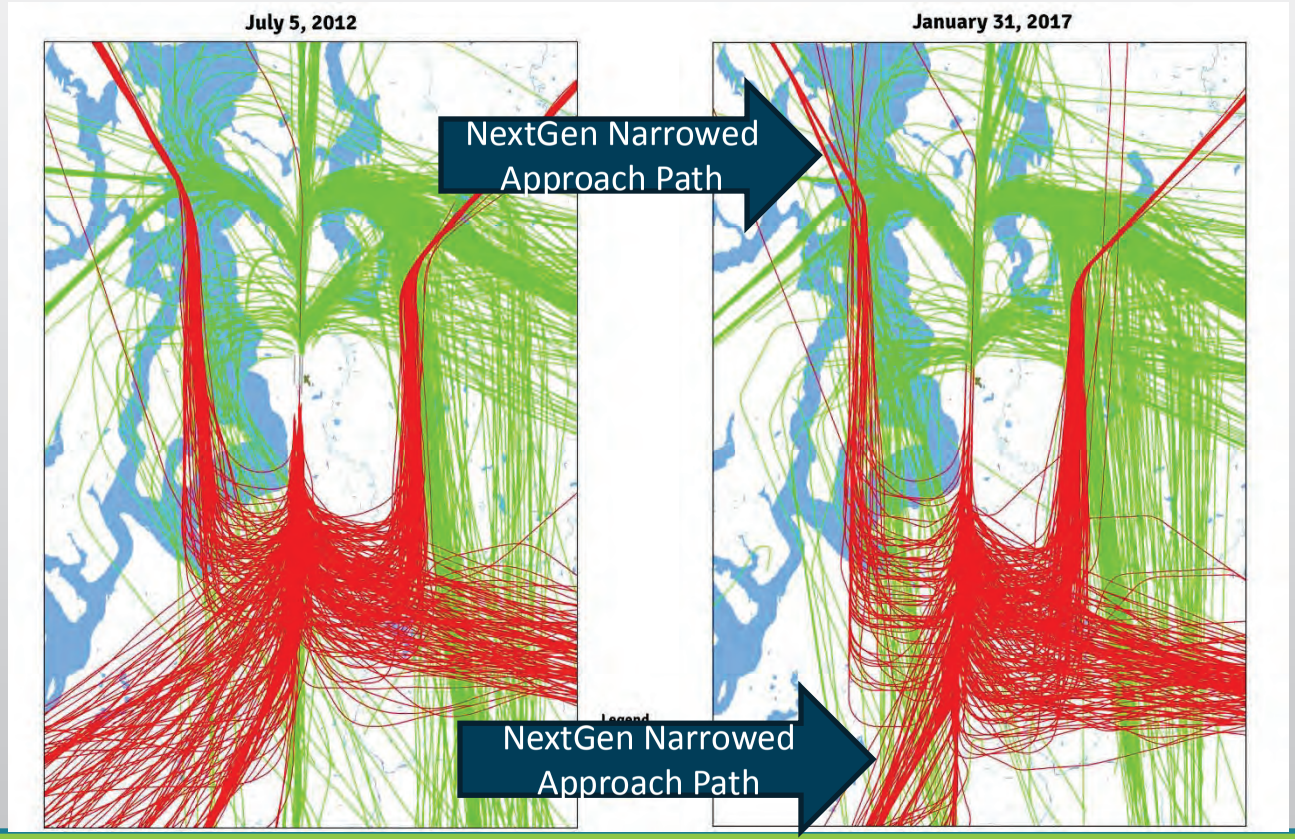


Greener skies approaches are west side only

(574 of 674), Page 574 of 674 Case: 25-7439, 08/10/2026, DktEntry: 45.4, (55 of 65)

North Flow Before and After Greener Skies

ER03-347



Greener skies approaches are west side only

ER-358

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AR034348

Questions?

ER-359

Case: 25-7439, 08/10/2026, DktEntry: 45.4, (576 of 674), Page 576 of 674 (576 of 674)

Final Environmental Assessment

for

Greener Skies Over Seattle; Proposed Arrival Procedures to Seattle-Tacoma International Airport

Volume 1 – Main Document

31 October 2012

Prepared by:
United States Department of Transportation
Federal Aviation Administration

Renton, Washington

4.3 Operational Changes Resulting from the Proposed Action

Table 4.3-1 provides a brief summary of the projected shift in traffic from the current arrival routes to the new RNAV STARs, if approved.

Table 4.3-1. Major Changes in Operations with the Proposed Action

New STAR	Key Arrival Points	Operational Changes
MARNR	At start of procedure	70% of existing JAWBN traffic (up to 25 arrivals per hour) will be cleared for the MARNR STAR. Remainder will stay on JAWBN THREE
	For MARNR landings to south on Runways 16L, 16C and 16 R	10% will be cleared to RAYNI then vectored to final approach by ATC. 88% will be cleared to GRIFY or CELAK then vectored to final. Initially, only 2% will be cleared to DALTN for RNP through Elliott Bay due to complexity and length of route. Only 1 Dash-8 per day is expected to use MOONZ RNP
	For MARNR landings to north on Runways 34L, 34C, and 34R	15% of arrivals will go to SHIPZ to follow RNP; 85% will be cleared to MOLDY on downwind and vectored to final approach; visual approaches will turn to final approach sooner than now due to lower altitudes on downwind
HAWKZ	At start of procedure	70% of existing OLYMPIA traffic (up to 25 arrivals per hour) will be cleared for the HAWKZ STAR. Remainder will stay on OLYMPIA SEVEN
	For HAWKZ landings to south on Runways 16L, 16C and 16 R	10% will go to HEDDR to follow RNP through Elliott Bay. 90% will be cleared to NETTZ on downwind, then vectored to final approach; Visual approaches will turn to final approach sooner than now due to lower altitudes on downwind
	For HAWKZ landings to north on Runways 34L, 34C, and 34R	80% will be cleared to SONDR for RNP or ILS 20% will be cleared to FOOTT then vectored to ILS for final approach

Table 6.1-2. Comparisons of DNL Values for 25 Selected Sites

Point	Site description	Population	DNL Values for 2014			DNL Values for 2018			DNL Values for 2023		
			No Action	Proposed	Difference	No Action	Proposed	Difference	No Action	Proposed	Difference
1	Shoreline, on shoreline	64	40.0	40.2	0.2	40.3	40.5	0.2	40.8	41.1	0.2
2	Seattle, new dogleg to final	46	45.3	45.2	-0.1	45.7	45.6	-0.1	46.3	46.2	-0.1
3	Seattle, at RNAV to ILS	13	49.4	49.5	0.1	49.9	50.0	0.1	50.4	50.6	0.1
4	Seattle, under ILS	84	52.7	52.9	0.2	53.1	53.3	0.2	53.8	54.0	0.2
5	Seattle, to side of ILS	120	50.7	50.6	-0.1	51.1	51.1	-0.1	51.8	51.7	-0.1
6	Seattle, on PBN at shoreline	10	51.4	51.4	0.1	51.8	51.9	0.1	52.5	52.5	0.1
7	Seattle, at Elliott Bay	6	46.7	46.8	0.1	47.1	47.2	0.1	47.6	47.7	0.1
8	Seattle, where PBN joins ILS	44	58.4	58.7	0.2	58.8	59.0	0.2	59.4	59.7	0.2
9	Vashon Isl., north	35	41.2	43.1	1.9	41.5	43.4	1.9	42.1	44.0	1.9
10	Burien, to side of ILS	36	53.9	53.9	0	54.4	54.4	0	55.1	55.1	0
11	Burien, under ILS	24	65.8	65.8	0	66.3	66.3	0	66.9	66.9	0
12	Des Moines, under ILS	31	66.9	66.9	0	67.3	67.3	0	67.9	67.9	0
13	Des Moines, under ILS	42	64.6	64.5	0	64.9	64.9	0	65.5	65.5	0
14	Des Miones, towards water	41	58.7	58.7	0	59.1	59.1	0	59.8	59.8	0
15	Vashon Isl., east	39	43.5	43.5	0	43.8	43.7	0	44.3	44.3	0
16	Vashon Isl., south	46	42.9	43.9	1	43.3	44.2	1	43.8	44.8	1
17	Federal Way, under ILS	497	60.7	61.0	0.3	61.0	61.4	0.3	61.6	61.9	0.3
18	Federal Way, north at shoreline	11	47.6	47.5	-0.1	47.9	47.8	-0.1	48.5	48.4	-0.1
19	Federal Way, under ILS	24	54.6	55.1	0.5	55.0	55.5	0.5	55.6	56.1	0.5
20	Tacoma, downwind to base	23	41.2	42.1	0.9	41.4	42.3	0.9	41.9	42.8	0.9
21	Federal Way, base to final	241	48.9	48.6	-0.3	49.2	48.9	-0.3	49.9	49.6	-0.3
22	Tacoma, base leg	11	43.6	43.1	-0.5	43.8	43.3	-0.5	44.4	44.0	-0.5
23	Puyallup, on final at LORIE	225	47.1	47.8	0.7	47.4	48.1	0.7	48.0	48.7	0.7
24	New HAWKZ approach at SONDR	303	41.5	42.9	1.4	41.8	43.2	1.5	42.2	43.7	1.5
25	New HAWKZ approach at GOALZ	53	31.5	36.1	4.6	31.6	36.4	4.8	32.0	36.8	4.9

Most of the differences at sites whose levels are greater than DNL 45 are on the order of a few tenths of a decibel, both for increases and for decreases. Sites whose exposure is less than DNL 45, such as at Site 9 on the northern tip of Vashon Island, and at Sites 24 and 25 under the new HAWKZ STAR, are exposed to somewhat higher changes but the aircraft noise is below the level of exposure that is normally reportable by the FAA; such values are so low in level to begin with that noise from local community sources (vehicle pass-bys and distant traffic) is apt to partially or totally mask the changes.

Raw Data Track Data Release with FOIA Requests, attached as Exhibits to Public Comments of Vashon Island Fair Skies

AR035275 – AR035414

These are voluminous raw data spreadsheets collected from 2012 – 2023. These are technical data that was used in the development of flight tracks.

Attached here: Raw Track Data Release — KSEA October 2022 arrival data, selected HAWKZ7 arrival record cited at AR035405

FieldDescriptions - Relevant Fields for AR035405

Include this page in the Excerpts of Record only if the FieldDescriptions workbook is itself part of the certified administrative record or is otherwise properly before the Court

Field Name	Description
STAR	The last STAR that appears in a flight plan or amendment associated with that flight; a null value could indicate the flight did not file a STAR or we don't have the flight plan data for that time period (flight plan information a bit spotty prior to ~2015)
runway_id	The likely landing runway that is assigned based on surveillance data and runway geometry
land_time	Estimated wheels down time based on surveillance data
lo_duration	Time spent in the level-off segment in seconds. This will be null for flights without identified level segments.
lo_dist	The along-track distance of the flight during the level segment in nautical miles. This will be null for flights without identified level segments.
lo_alt	The altitude at which the level-off occurred in feet. This is a pressure-corrected altitude for level offs below 18,000 feet. This will be null for flights without identified level segments.
lo_start_time	The time when the level-off started. This will be null for flights without identified level segments.
lo_start_lat	The latitude where the level-off started. This will be null for flights without identified level segments.
lo_start_lon	The longitude where the level-off started. This will be null for flights without identified level segments.
lo_end_time	The time when the level-off ended. This will be null for flights without identified level segments.
lo_end_lat	The latitude where the level-off ended. This will be null for flights without identified level segments.
lo_end_lon	The longitude where the level-off ended. This will be null for flights without identified level segments.

Arrival Level-Off Criteria

To be considered a level segment, the flight has to meet the following conditions: slope of less than 0.5 degrees, last for a period of 30 seconds or more (2017 onward) or 50 seconds or more (2012 - 2016), and the level off must start after the identified top of descent and within 200 NM of the arrival airport

AR035405 - KSEA_arr_202210.xlsx - Selected Source Row 1074

Selected data from the native spreadsheet record cited in the brief. The Excel source-row number is supplied only for navigation; the field names and values below are reproduced from the spreadsheet.

track_key	aircraft_type	star	runway_id	land_time	lo_duration	lo_dist	lo_alt
41M2GmH_VeBAA4i	A320	HAWKZ7	16R	2022-10-20T05:52:39.000Z	35	2.29	6032

This page contains the facts cited in the brief identifying the aircraft and level-off: A320; HAWKZ7; Runway 16R; 35 seconds; 2.29 nautical miles; 6,032 feet.

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AR035405 - Same Record - Level-Off Segment Geometry

The track_key is repeated solely to identify this as the same native spreadsheet record shown on the preceding page.

track_key	lo_start_time	lo_start_lat	lo_start_lon	lo_end_time	lo_end_lat	lo_end_lon
41M2GmH_VeBAA4i	2022-10-20T05:46:36.000Z	47.4898684228327	-122.4557106765466	2022-10-20T05:47:12.000Z	47.5280823810016	-122.4555766340332

The level-off starts at longitude -122.4557106765466 and ends at longitude -122.4555766340332, supporting the brief's shorthand description of the segment as near longitude -122.4556.

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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing document on this date with the Clerk of the Court for the United States Court of Appeals for the Ninth Circuit using the Appellate Electronic Filing system.

Service on Case Participants Who Are Registered for Electronic Filing:

I certify that I served the foregoing document to all registered case participants on this date via filing and notice generated through the Appellate Electronic Filing system.

PETITIONERS' EXCERPTS OF RECORD VOLUME 3 OF 3

Respectfully Submitted,

Dated: August 10, 2026

LEECH TISHMAN NELSON HARDIMAN INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners, Vashon Island Fair Skies, Inc., City of Burien, City of Des Moines, and City of SeaTac

In the
UNITED STATES COURT OF APPEALS
For the Ninth Circuit

No. 25-7373
VASHON ISLAND FAIR SKIES,
Petitioner
v.
FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents

No. 25-7439

CITY OF BURIEN, *et al.*,
Petitioners,
v.
FEDERAL AVIATION ADMINISTRATION, *et al.*,
Respondents

PETITIONERS VASHON ISLAND FAIR SKIES, CITY OF BURIEN, CITY OF DES MOINES, AND CITY OF SEATAC JOINT UNOPPOSED MOTION FOR LEAVE TO FILE STANDING DECLARATIONS SEPARATELY

Steven M. Taber
LEECH TISHMAN NELSON HARDIMAN, INC.
1100 Glendon Avenue, 14th Floor
Los Angeles, California 90024
Telephone: (424)738-4400; Facsimile: (424)738-5080
staber@leechtishman.com

Attorneys for Petitioners, Vashon Island Fair Skies, City of Burien, City of Des Moines and City of SeaTac

INTRODUCTION

Pursuant to Federal Rule of Appellate Procedure 27 and Ninth Circuit Rule 27-1, Petitioner Vashon Island Fair Skies ("Vashon," Case No. 25-7373), and Petitioners the City of Burien, the City of Des Moines, and the City of SeaTac (the "Three Cities," Case No. 25-7439) (collectively, "Petitioners") respectfully move for leave to file separately the declarations of David Goebel (Exhibit A), Robert K. Harmon (Exhibit B), Robert Larson (Exhibit C), Katherine Caffrey (Exhibit D) and Jonathan Young (Exhibit E) (collectively, the "Declarations"). Petitioners request that the Court accept the Declarations for filing as exhibits to this motion and consider them solely for purposes of Article III standing.

Counsel for Respondents and Intervenor in the consolidated cases have indicated that they do not have a position on the Motion and do not intend to file any papers in opposition.

BACKGROUND

On August 10, 2026, Petitioners filed their Opening Brief in these consolidated petitions for review. The Brief's standing section cites the Declarations as support for the concrete injuries suffered by the Three Cities and the members of Vashon from additional aircraft operations and the Near-Term Projects contemplated in the challenged FONSI/ROD. The Declarations also provide the factual basis for Vashon's associational and procedural standing arguments.

ARGUMENT

Leave to file or lodge the Declarations is warranted. Rule 27 authorizes a party to seek appropriate relief by motion and contemplates the filing of affidavits or other papers necessary to support the requested relief. The Declarations are not offered as new merits evidence or to supplement the administrative record. They are offered solely for the limited purpose of establishing standing by describing the concrete injuries the Three Cities and Vashon's members suffer from the agency action under review. Because Petitioners' Opening Brief already relies on the Declarations for that purpose, separate filing would simply place before the Court, in proper form, the same materials already cited in the Brief.

Ninth Circuit authority permits the Court to consider affidavits or declarations submitted for the limited purpose of establishing standing. In *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1527–28 (9th Cir. 1997), the Ninth Circuit denied a motion to strike affidavits submitted in the court of appeals for that purpose, distinguishing cases that barred supplementation of the administrative record on the merits. The court held that it could consider those affidavits in determining whether the petitioners had standing to seek review. *See id.* The Ninth Circuit likewise accepted supplemental declarations to establish standing in *Didrickson v. U.S. Department of Interior*, 982

F.2d 1332, 1340 (9th Cir. 1992). The Declarations here are offered for that same limited purpose only.

Granting this motion would not prejudice Respondents or Intervenor. Petitioners' Opening Brief identifies and cites the Declarations solely in support of Article III standing. Petitioners do not offer the Declarations to enlarge the administrative record or to establish any proposition on the merits. Their filing would simply provide the Court with the jurisdictional evidence on which Petitioners rely and permit the Court to resolve standing together with the petitions.

CONCLUSION

Petitioners respectfully request that the Court grant this motion and accept the Declarations of David Goebel, Robert K. Harmon, Robert Larson, Katherine Caffrey, and Jonathan Young for filing as Exhibits A through E to this motion and consider them solely for the purpose of determining Article III standing.

Respectfully Submitted,

Dated: August 10, 2026 LEECH TISHMAN NELSON HARDIMAN, INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners, Vashon Island Fair Skies, City of Burien, City of Des Moines, and City of SeaTac

CERTIFICATE OF COMPLIANCE

I certify that the foregoing motion complies with the type-volume limitations of Federal Rule of Appellate Procedure 27(d)(2) because it contains 555 words. I further certify that this motion complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type-style requirements of Federal Rule of Appellate Procedure 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in Century 14-point font.

Respectfully Submitted,

Dated: August 10, 2026 LEECH TISHMAN NELSON HARDIMAN, INC.

By: Steven M. Taber

Steven M. Taber
Attorneys for the Petitioners,
Vashon Island Fair Skies, City of Burien, City of Des Moines, and City of SeaTac

Exhibit A

Declaration of David Goebel

DECLARATION OF DAVID GOEBEL

I, David Goebel, declare as follows:

1. I am the President of and a member of Vashon Island Fair Skies ("VIFS"). I have served as President since 2018. I was a member of VIFS when it filed its petition for review in this case and remain a member. In preparing this declaration, I reviewed the relevant FAA excerpts identified below. I make this declaration from my personal knowledge and am authorized to submit it in support of VIFS in this litigation.

2. VIFS is a Washington nonprofit corporation (UBI 604 274 811) and a federally recognized 501(c)(3) public charity (EIN 82-5451411) based on Vashon Island, Washington. Its members include residents of Vashon and Maury Islands who seek to protect the islands' quiet rural character, natural environment, and the use and enjoyment of their homes, neighborhoods, farms, and outdoor areas from concentrated aircraft overflights and their resulting noise and other environmental pollutants.

3. VIFS's Articles of Incorporation states:

> 3.1 Purposes: The corporation is organized exclusively for charitable, scientific, religious, literary or educational purposes, within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1986, as amended (the "Code"), including, without limitation, **seeking to ensure that Vashon Island, WA has a clean and healthful environment that is not unfairly burdened with air and water pollution, other hazardous substances, and excessive levels of commercial aviation noise.**

4. VIFS participated in FAA's environmental review of the SAMP Near-Term Projects. VIFS submitted Comment 037, which addressed aircraft noise over Vashon, FAA's use of the 65-DNL significance screen, and FAA's treatment of

arrival profiles for the HAWKZ RNAV approach. FAA reproduced and responded to VIFS's comment in the Final Comments and Responses. AR008370–AR008378.

5. I have lived in the North End of Vashon Island since 1998. I own my home and intend to continue living there for the foreseeable future, including during the years in which FAA forecasts the additional aircraft operations described below.

6. I regularly use my home for software activities requiring a very high level of focus and concentration, sleeping, reading, conversations, and ordinary household activities. I use my 21 rural acres of land for grazing of our 7 horses and work outside taking care of the horses and maintaining the land on a daily basis regardless of weather. I also spend time strolling in my woods and eating on our outside decks as weather permits, near daily in the summer and less frequently in other seasons. These activities are important to my use and enjoyment of my home and especially my land on Vashon Island. The rural character of Vashon Island, enforced both by King County land use planning and – more importantly – by the unavoidable physical isolation due to being accessible only by ferry, was the absolute prime factor that led me to choose Vashon Island almost 30 years ago to build my dream life and house.

7. Aircraft arriving at Seattle-Tacoma International Airport on their Westside downwind leg repeatedly pass above or immediately adjacent to my home and farm in a highly focused and avionics enforced PBN (Performance Based Navigation) procedure. When the airport is operating in Southflow, my focus and concentration are interrupted well over a hundred times a day, requiring me to restart complicated trains of thought and severely degrading both my quality of life and its productivity. In Northflow, the downwind legs are used much less due to Seattle's location in the NW corner of the country. Together with a higher overflight altitude at my location on the North end of Vashon Island, these Northflow periods result in substantially fewer interruptions, perhaps just a dozen per day. While it can and does vary year

to year, Seattle-Tacoma International Airport spends approximately 70% of the time in Southflow and 30% Northflow.

8. The overflights interfere with my activities in concrete ways and require the implementation of draconian mitigations that substantially impair my quality of life. The most annoying impact is the randomly distributed interruptions to my train of thought. These can occur as frequently as every 90 seconds when one overflight bleeds into the next, or sometimes after 10 minutes of peace. This so impairs my ability to perform work I created an office in a subterranean room adjacent to my basement, which is surrounded by earth on three sides and layers of concrete, rebar, and flagstone above. This room/bunker is the only place on my 21 acres where I can have peace and actually focus and work when in Southflow. This mitigation comes at the deep cost of despair by being forced underground when I built my life and home here expressly because of the natural beauty of Vashon Island. At night, I have to run a very loud air filter next to my bed so that I am not awakened at random intervals throughout the night. While adding this constant loud level of white noise to overwhelm the random overflight noise does help prevent REM sleep interruptions, its implication to deep sleep are more problematic.

9. FAA acknowledged in its response to VIFS that no custom profile was created for the HAWKZ RNAV approach, that the approach passes over Vashon Island, and that aircraft over Vashon are approximately 20 to 28 miles from landing at the Airport. Final Comments and Responses at AR008378.

10. I obtained and reviewed the AEDT study files (version 3f) that FAA used to model aircraft noise for the SAMP Environmental Assessment, which FAA produced as part of the administrative record at AR034315. Exhibit A to this Declaration is a screenshot taken directly from AEDT 3f showing the modeled southflow arrival tracks that FAA used to assess noise impacts on Vashon Island. Exhibit B is the Port of Seattle's own published "SEA South Flow Operations Sample

Map," which depicts how aircraft actually fly during southflow operations. A comparison of these two images reveals a fundamental and irreconcilable difference. In the real world, depicted in Exhibit B, the vast majority of westside downwind arrivals (approximately a third to one-half of all KSEA arrivals in southflow) follow the HAWKZ RNAV procedure in a tightly concentrated track, roughly 100 yards wide, running the full length of Vashon Island before turning toward the airport. In AEDT's model, depicted in Exhibit A, the HAWKZ procedure is not modeled as a precision RNAV procedure at all. Instead, FAA programmed in a broad geographic dispersion of tracks that does not exist in reality and assigned only a small fraction of operations to anything resembling the HAWKZ corridor. The modeled tracks bear a closer resemblance to the pre-NextGen dispersed arrival patterns from before 2015 than to current operations.

11. This lateral track error compounds a separate altitude error that makes the noise underestimate even more severe. AEDT uses what are called "STANDARD" arrival profiles, meaning the model assumes aircraft descend at a uniform rate based purely on their distance from the runway threshold. That assumption is accurate for a straight-in approach but breaks down completely for the "extended trombone" pattern that HAWKZ arrivals actually fly over Vashon Island. In reality, arrivals must descend to between 5,000 and 6,000 feet by the time they reach the north tip of Vashon Island, far lower than a standard profile would predict at that distance. because they need to complete a U-turn through Elliott Bay before aligning with the runway. The result is that the vast majority of westside downwind arrivals reach Vashon already at low altitude and then fly extended level segments at that low altitude before beginning their final approach. Because sound intensity increases with the square of the decrease in altitude, cutting altitude in half increases noise intensity fourfold. Thus, modeling aircraft at standard-profile altitudes when they are actually flying hundreds or thousands of feet lower produces a systematic and

material underestimate of the noise experienced by Vashon Island residents. FAA's noise model, in short, depicts a different airport flying a different procedure at a different altitude than what Vashon Island residents experience on a daily basis. Thus, the project does not accurately assess the damage to Vashon Island residents.

12. The lack of a custom profile for HAWKZ, however, is only the start of the problem. Must worse is the dispersion of Southflow downwind tracks over Vashon which is not reality. They are narrowly focused in 100-yard wide track. Also, a large chunk of arrivals from the Southwest are shown crossing over to the East side, which is also counter-factual. Finally, the use of the "STANDARD" arrival profile is highly problematic for variable length segments with many level-offs such as we have over Vashon until the runway.

13.FAA's Proposed Action-versus-No Action forecast projects 8,755 more annual aircraft operations in 2032 and 35,018 more annual operations in 2037 under the Proposed Action than under No Action. Final EA Appendix A, Table 6, AR000318. FAA separately describes the 2037 increase as approximately 96 additional aircraft operations on an average annual day. Noise Technical Report at AR002762.

14.FAA's Noise Technical Report states that the flight-track locations for the 2032 and 2037 Proposed Action are expected to remain the same as the Existing 2022 Condition because no flight-track changes are proposed. Noise Technical Report at AR002732, AR002756.

15.I do not contend that every additional Airport operation will pass over my home and farm, rather that in Southflow approximately a third to one half of new arrivals pass over my home and farm, assuming the arrival source city geographical distributions don't substantially change. Existing Airport arrivals already use RNAV PBN routes over Vashon and cause the disturbances described above; FAA expects the future flight-track locations to remain unchanged; and FAA forecasts a

substantial increase in total operations because of the approved projects. Based on those facts, I reasonably expect that a third to one half of Southflow additional arrivals will use the existing routes over or near my home and farm and will increase the frequency or duration of the same disturbances I already experience.

16. Vacating the September 2025 Finding of No Significant Impact/Record of Decision and requiring lawful reconsideration could reduce the threatened increase in my injuries. On remand, FAA could withhold approval, approve fewer or differently phased projects, or impose additional conditions or mitigation that would reduce the additional operations or noise effects. I do not contend that vacatur would eliminate existing Airport operations or all aircraft noise over Vashon.

17. VIFS' hope is that upon vacatur and remand, The FAA will agree to fix the broken Optimized Profile Descents and implement a dispersed set of RNAV arrivals for the downwind leg. And, at the very least, the FAA should perform an AEDT analysis using custom profiles that reflect the actual arrivals as actually flown over Vashon and Maury Islands.

18. The interests asserted by VIFS in this petition are absolutely central to VIFS's purposes. The petition challenges FAA's evaluation and approval of additional aircraft operations and its treatment of aircraft-noise effects and arrival-profile issues affecting Vashon and Maury Islands - the same interests that VIFS and its members organized to protect.

19. VIFS seeks vacatur and remand based on record-based legal errors. It does not seek individualized damages, and adjudicating its claims does not require the participation of every VIFS member.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 6th day of ~~July~~ Aug 52 2026, in Vashon, Washington.

David Goebel

David Goebel

President, Vashon Island Fair Skies

Exhibit A

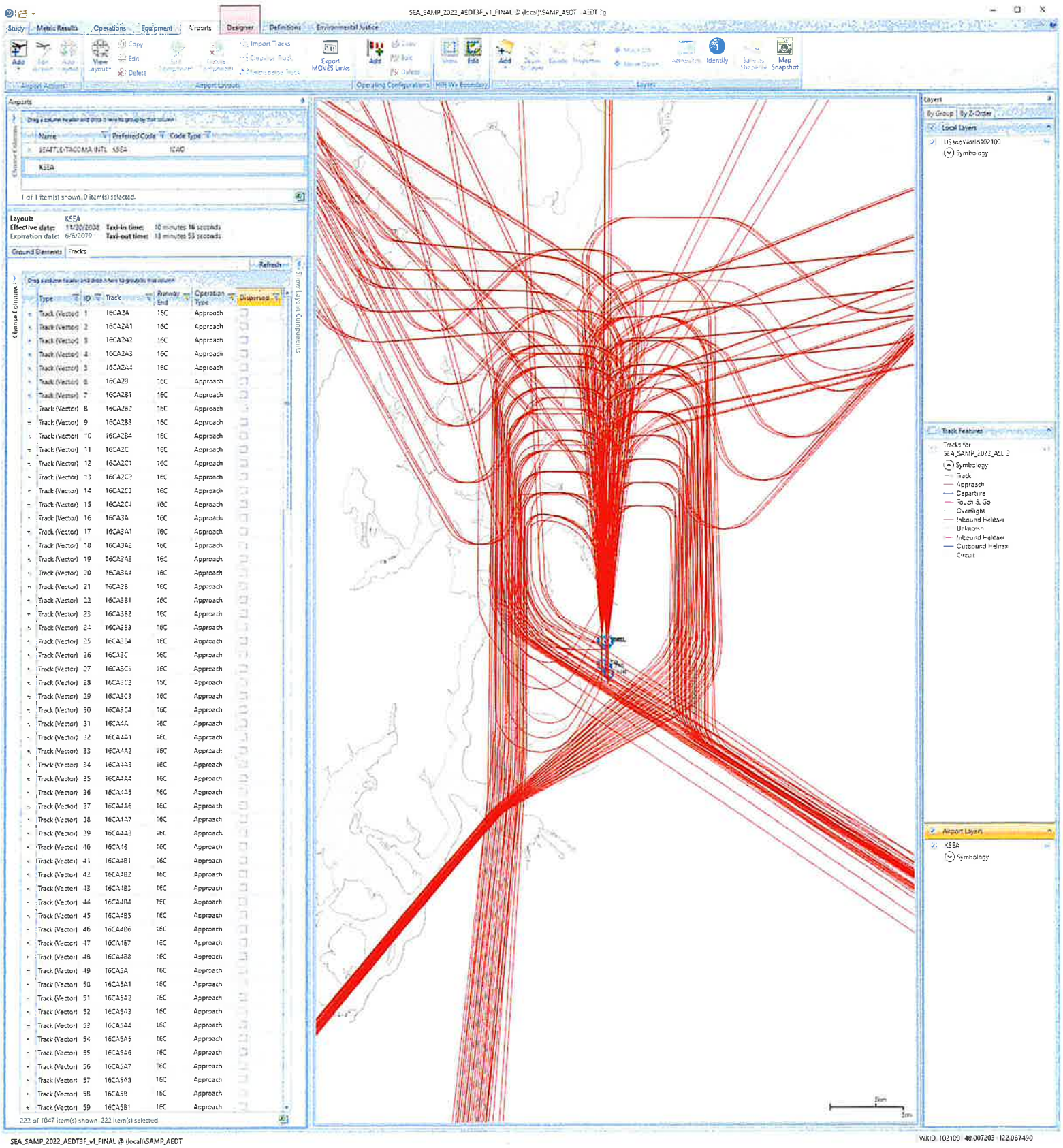
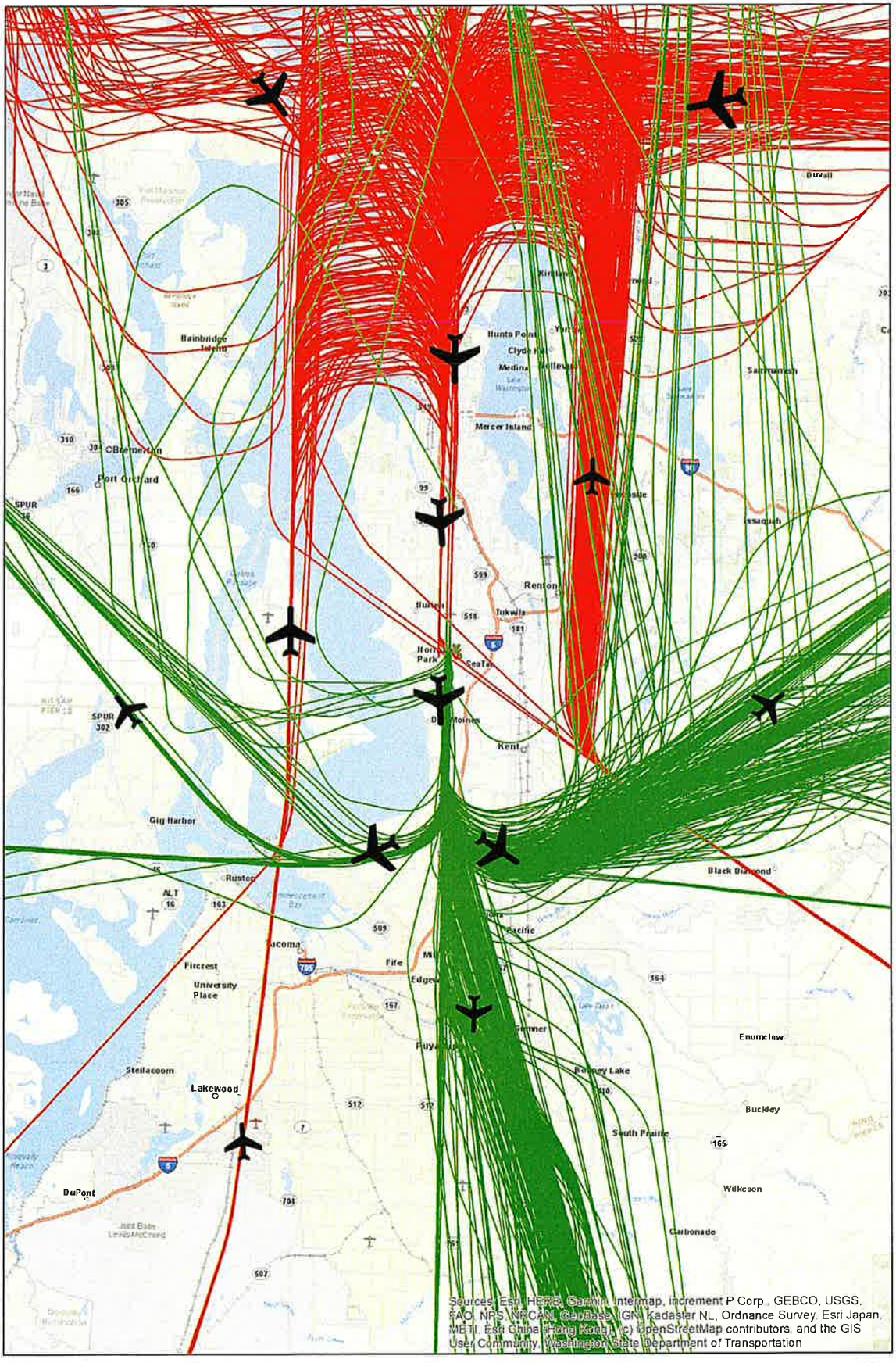

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Code Type
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Operation Type
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By Group
By Z-Order
Local Layers
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Symbology
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Overflight
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Exhibit B

SEA Airport South Flow Operations Sample Map



Legend

- Jets and Propeller Departures
- Jets and Propeller Arrivals

N W E S

2024

Exhibit A

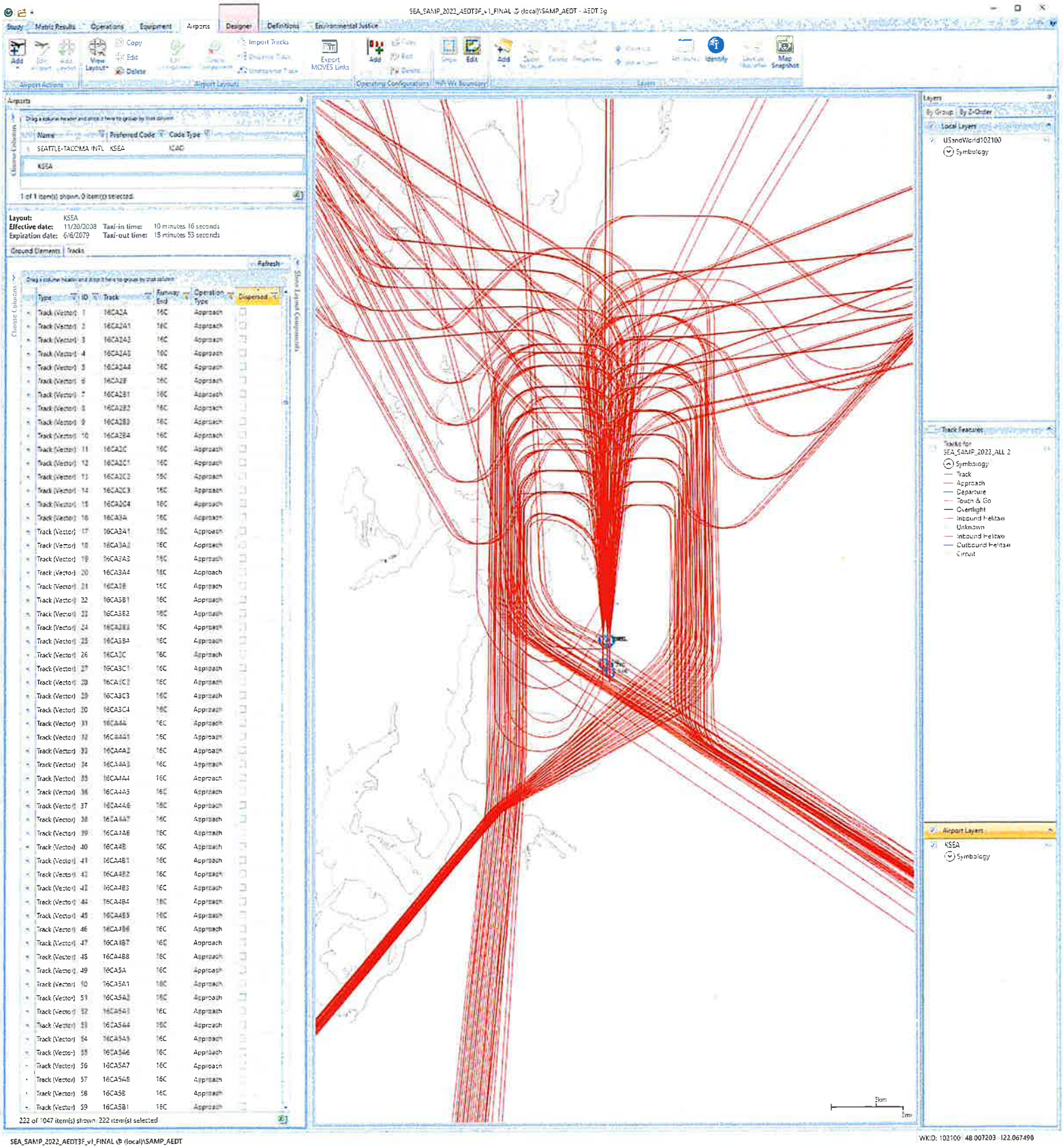
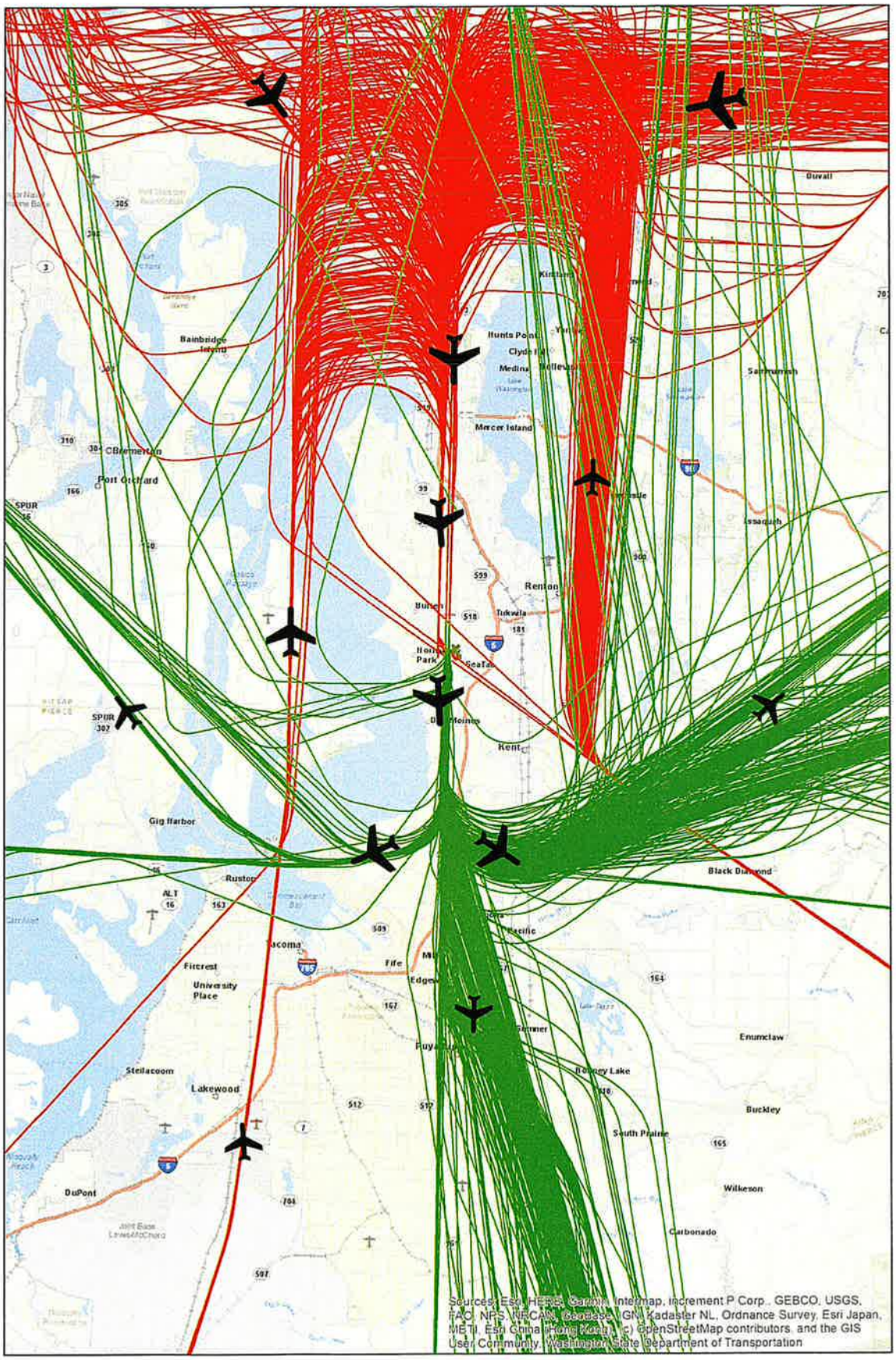

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Map Snapshot
Airports
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Preferred Code
Code Type
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Track Features
Tracks for SEA_SAMP_2022_ALL 2
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Approach
Departure
Touch & Go
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Airport Layers
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3km
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SEA_SAMP_2022_AEDT3F_v1_FINAL @ (local)\SAMP_AEDT
WKID: 102100 -48.007203 -122.067490

Exhibit B

SEA Airport South Flow Operations Sample Map



Legend

- Jets and Propeller Departures
- Jets and Propeller Arrivals

N
W E
S

2024

Exhibit B

Declaration of Robert K. Harmon

DECLARATION OF ROBERT K. HARMON

I, Robert K. Harmon declare as follows:

1. I am a member of Vashon Island Fair Skies ("VIFS"). I became a member in 2018, was a member when VIFS filed its petition for review in this case and remain a member. I make this declaration from personal knowledge and from my review of the FAA excerpts found below.

2. I have lived on Vashon Island or Maury Island since 1998. Since 2017 I have lived in the Gorsuch area of Vashon, in a home I purchased in 2017. I own my home and intend to continue living there for the foreseeable future.

3. I regularly use my home for sleeping, reading, work, conversations, and family activities. I also use yard, deck and garden for recreational activities on a daily basis when the weather allows.

4. Aircraft arriving at Seattle-Tacoma International Airport repeatedly pass above or near my home or the places I regularly use. During a representative day I hear or observe approximately a hundred overflights. They occur every few minutes during the peak times of day and there are several spread out though the entire night, which often wake me up.

5. These overflights interfere with my activities by regularly interrupting outdoor conversations and listening to music inside or outside. Perhaps most importantly, the flights make it impossible to sleep through the night with the

windows open. These effects occur nearly every day and diminish my use and enjoyment of my home and the outdoor places I regularly use.

6. FAA acknowledged in its response to VIFS that no custom profile was created for the HAWKZ RNAV approach, that the approach passes over Vashon Island, and that aircraft over Vashon are approximately 20 to 28 miles from landing at the Airport. Final Comments and Responses at AR008378.

7. From my personal observations and from using flight-tracking information, during south-flow operations, aircraft arriving at SEA on the HAWKZ RNAV arrival travel north across Vashon through the NETTZ, KWEST, and VASHN waypoints. My Gorsuch-area home lies close to that established arrival path, and I regularly observe and hear arriving aircraft passing over or near my home.

8. FAA's Proposed Action-versus-No Action forecast projects 8,755 more annual aircraft operations in 2032 and 35,018 more annual operations in 2037 under the Proposed Action than under No Action. Final EA Appendix A, Table 6, AR000318. FAA describes the 2037 increase as approximately 96 additional aircraft operations on an average annual day. Noise Technical Report at AR002762.

9. FAA's Noise Technical Report states that the flight-track locations for the 2032 and 2037 Proposed Action are expected to remain the same as the Existing 2022 Condition because no flight-track changes are proposed. Noise Technical Report at AR002732, AR002756.

10.I do not contend that every additional Airport operation will pass over or near my home. But existing SEA arrivals already use routes that affect my home and the places I regularly use; FAA forecasts approximately 96 additional daily operations by 2037; and FAA expects flight-track locations to remain unchanged. Those facts create a reasonable probability that some added arrivals will use the same routes and increase the frequency or duration of the disturbances described above.

11.Vacating the September 2025 Finding of No Significant Impact/Record of Decision and requiring lawful reconsideration could reduce the threatened increase in my injuries. On remand, FAA could withhold approval, approve fewer or differently phased projects, or impose additional conditions or mitigation that would reduce the additional operations or noise effects. I do not contend that vacatur would eliminate existing Airport operations or all aircraft noise.

12.The interests described in this declaration are consistent with VIFS's purposes, and I support VIFS's representation of those interests in this litigation.

13.VIFS seeks vacatur and remand based on record-based legal errors. It does not seek individualized damages on my behalf, and adjudicating its claims does not require my participation beyond providing this declaration.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 31st day of July 2026, in Vashon, Washington.



Robert K. Harmon

Member, Vashon Island Fair Skies

Exhibit C

Declaration of Robert Larson

DECLARATION OF ROBERT LARSON

I, Robert Larson, declare as follows.

1. I am the Interim City Manager for the City of Burien ("Burien"). My responsibilities include oversight of City departments, property, parks, transportation facilities and right-of-way improvements, infrastructure, planning, surface-water and sensitive-area programs, emergency-response coordination, and municipal operations. In preparing this declaration, I reviewed the cited portions of FAA's Final Environmental Assessment ("Final EA"), Noise Technical Report, air-quality analysis, and flight-track and noise-contour exhibits. I also reviewed the cited portions of the City's 2024 Parks, Recreation, and Open Space Plan, relevant City GIS and property records, the City's transportation improvement program, and information provided to me by the City's Parks, Recreation, and Cultural Services, Public Works, Community Development, and GIS staff. The facts concerning City ownership, maintenance, planning, and operations are based on my personal knowledge, information regularly provided to me in carrying out my official duties, and City records maintained in the ordinary course. I am authorized to make this declaration on Burien's behalf in this litigation.

2. Burien is a municipal code city in King County, Washington, northwest of Seattle-Tacoma International Airport (the "Airport"). In September 2025, FAA issued a Finding of No Significant Impact/Record of Decision approving the

SAMP Near-Term Projects ("FONSI/ROD"). The FONSI/ROD is the FAA action challenged in this case.

3. Burien owns Des Moines Memorial Park, Miller Creek Trail, Moshier Memorial Park, Walker Creek Wetland, Moshier Community Art Center, Hilltop Park, and Mathison Park. FAA's Final EA identifies Des Moines Memorial Park, Miller Creek Trail, Moshier Memorial Park, and Walker Creek Wetland as City-owned properties within the SAMP general study area. Final EA at AR000099. Moshier Community Art Center is a separate public facility within the Moshier Memorial Park complex. The Final EA did not separately identify the Art Center. The Burien segments of the Lake to Sound Trail lie in City right-of-way. After King County constructed those segments, they were turned over to Burien to operate and maintain.

4. Burien also operates and maintains Southern Heights Park through an interlocal agreement with Water District 20 and Manhattan School Park through an interlocal agreement with Highline School District 401. Burien leases property at 15446 Des Moines Memorial Drive South from the Port of Seattle for its Public Works and Parks Maintenance operations facility and yard. These ownership, leasehold, right-of-way, and operating interests are interests of the City itself.

5. Burien's Parks, Recreation, and Cultural Services Department ("PaRCS") and Public Works Department operate and maintain the properties described above.

Under the City's adopted 2024 Parks, Recreation, and Open Space Plan, Des Moines Memorial Park is a Special Use Park. Miller Creek Trail and the Lake to Sound Trail are Trail Corridors. Moshier Memorial Park is a Community Park. Walker Creek Wetland is a Resource Park. Moshier Community Art Center is a Community Center. Burien devotes recurring staff time and appropriated funds to these properties. I do not visit each property on a fixed schedule, but I receive reports and information concerning their condition, maintenance, programming, and capital needs as part of my regular oversight duties. Burien intends to continue owning or operating, maintaining, and investing municipal resources in these properties.

6. The City has not identified a compiled set of community aircraft-noise complaints specific to these properties. PaRCS maintenance and recreation staff, however, regularly report that aircraft noise makes communication difficult while they are working or instructing participants at parks near or under Airport flight tracks. Because of aircraft-noise interference, PaRCS has moved some recreation programming to parks farther from the Airport. When community members or groups request events at parks near or under flight tracks, PaRCS staff warn them about known aircraft noise and suggest more suitable locations farther from the Airport. Aircraft noise has also made some recreational programs and special events impracticable at affected parks.

7. City staff report location-specific effects at additional Burien properties that the Final EA did not identify in its property list. Southern Heights Park is north of the Airport, directly below a mapped existing flight track, and within the 65 DNL contour. Staff report that overhead aircraft are often low and can prevent communication even at close range. Hilltop Park is north of the Airport, below a mapped existing flight track, and just outside the 65 DNL contour. Staff report difficulty communicating when aircraft are overhead. At Mathison Park, northwest of the runway and just outside the 65 DNL contour, and Manhattan School Park, southwest of the runway and just outside that contour, staff report aircraft noise that disrupts communication. Moshier Community Art Center lacks mechanical cooling and ventilation, so its windows are often open for comfort. Aircraft noise interferes with instruction and creative work there. These staff observations show actual noise effects both inside and outside the 65 DNL contour.

8. FAA's Proposed Action-versus-No Action forecast projects 8,755 more annual aircraft operations in 2032 and 35,018 more annual aircraft operations in 2037 under the Proposed Action than under No Action. Final EA Appendix A, Table 6, AR000318. FAA's Noise Technical Report states that the flight-track locations for the 2032 and 2037 Proposed Action are expected to remain the same as the Existing 2022 Condition because no flight-track changes are proposed. Noise Technical Report at AR002732, AR002756.

9. FAA's Noise Technical Report further states that, in 2037, the Proposed Action noise contour would be approximately 0.66 square miles larger than the No Action contour, due primarily to approximately 96 additional average annual day aircraft operations. Noise Technical Report at AR002762. Thus, the FONSI/ROD approves projects that FAA forecasts will result in additional operations on the same flight-track locations where City staff already experience aircraft-noise interference. Those additional operations would add aircraft-noise events affecting the City's property, facilities, programs, and staff.

10. The Noise Technical Report explains that sound can be annoying, defines unwanted sound as noise, and recognizes that communication interference can affect activities such as personal conversation. Noise Technical Report at AR002668, AR002675-AR002676. In my judgment as City Manager, additional aircraft-noise events at Burien's parks, trails, wetland, community center, and maintenance facility would further diminish their quiet and natural character, interfere with communication, recreation, instruction, and creative work, constrain the City's programming choices, and impair the City's use and management of its property and facilities.

11. FAA's air-quality analysis states that emissions of every analyzed pollutant will be greater under the Proposed Action than under No Action because of increased aircraft operations, taxi times, and motor vehicles. For 2037, FAA

projects increases of 263 short tons of carbon monoxide, 20 short tons of volatile organic compounds, 225 short tons of nitrogen oxides, 34 short tons of sulfur oxides, 3 short tons of PM10, and 2 short tons of PM2.5. Final EA at AR000187. Burien has municipal responsibilities for environmental quality, surface water, and sensitive areas. I do not offer an expert opinion that the modeled emissions will cause a quantified health or water-quality effect at any particular City property. I identify FAA's project-specific emissions increase as an additional effect relevant to the City's management of its outdoor property and environmental programs.

12. Burien's Public Works Department plans, operates, and maintains municipal streets, transportation facilities, rights-of-way, and stormwater facilities. Its responsibilities include transportation mobility and connectivity, emergency access, project management, design and construction coordination, and compliance with applicable surface-water requirements before discharge from the municipal stormwater system to Puget Sound. The Community Development Department reviews and permits work within City jurisdiction. Those departments must participate in the review, permitting, coordination, construction, operation, and maintenance of improvements that the NTPs make necessary within Burien.

13.FAA attributes specific surface-transportation effects to the NTPs. At Des Moines Memorial Drive and South 144th Street, which is at the Burien-SeaTac boundary, the Final EA projects that the Proposed Action will change operations

from level of service E under No Action to level of service F and add 201.3 seconds of delay in 2032 and 222.1 seconds in 2037. Final EA at AR000227. Burien's Public Works Department is responsible for the City's right-of-way and transportation facilities serving the Burien portion of that intersection.

14. At Des Moines Memorial Drive and South 168th Street, within Burien's jurisdiction, FAA projects that NTP traffic will add 9.9 seconds of delay in 2037 and identifies a new signal, turn-lane work, and related trail mitigation. Final EA at AR000227, AR000229. The trail-related work will require City coordination concerning pedestrian and bicycle facilities within or connected to City right-of-way. Burien would have project-specific responsibilities for planning, design review, permitting, right-of-way and construction coordination, and later operation or maintenance of improvements accepted into the City's system.

15. The Final EA's transportation-mitigation tables identify Project Nos. 49, 98, 101, and 102 as improvements within or affecting Burien. Final EA at AR000227-AR000230. Based on current City planning-level estimates, their capital costs are approximately $9.7 million for Project 49, $4 million for Project 98, $3 million for Project 101, and $8 million for Project 102. Project 101 could be constructed with Project 102. Project 49 is Burien's currently unfunded 1st Avenue South/Southwest 160th Street safety-and-capacity project. It would install new signal equipment, reconfigure the existing six-leg intersection as a four-leg intersection or possible

roundabout, rechannelize lanes, and accommodate pedestrian and bicycle improvements. City records identify that improvement as Transportation Improvement Program Project No. 26, although the Final EA's table refers to City Project No. 22. FAA's tables also identify Project Nos. 14 and 54. City Public Works staff understand those to be SeaTac-based projects and do not identify them as principal Burien burdens.

16. The Port's proposed payment of a project-generated share of some corridor improvement costs does not eliminate Burien's burdens. Public Works and Community Development staff would still perform project management, design and technical review, permitting, right-of-way and construction coordination, surface-water and sensitive-area review, and eventual operation or maintenance. The City may also incur consultant costs, permitting costs charged to City projects, and capital costs not covered by Port funding. The City cannot yet quantify the staff hours or final uncompensated expense because design, phasing, and funding arrangements are not complete. Those duties and costs are incremental consequences of the NTP-generated traffic and project-specific mitigation, not merely duties Burien would perform on the same schedule regardless of the FONSI/ROD.

17. Without the NTP approval, the City would not need to advance the identified right-of-way improvements on the same timetable and could devote its limited staff

and capital resources to higher-priority projects. Existing Airport operations, existing aircraft noise, and municipal duties that arise independently of the NTPs would remain. But vacating the FONSI/ROD and requiring lawful reconsideration could reduce the additional injuries described above. On remand, FAA could withhold approval, approve fewer or differently phased projects, or impose additional conditions or mitigation that would reduce additional aircraft operations, aircraft-noise events, surface traffic, effects on City property and programs, and project-generated municipal responsibilities.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 30th day of July 2026, in Burien, Washington.

Robert J. Larson

Robert Larson

Interim City Manager, City of Burien

Exhibit D

Declaration of Katherine Caffrey

DECLARATION OF KATHERINE CAFFREY

I, Katherine Caffrey, declare as follows:

1. I am the City Manager for the City of Des Moines ("Des Moines" or the "City"), a position I have held since 2024. My responsibilities include oversight of City departments, parks and recreation, transportation planning, infrastructure, environmental planning, and municipal operations. In preparing this declaration, I reviewed the relevant portions of FAA's Final Environmental Assessment ("Final EA"), Noise Technical Report, air-quality analysis, and flight-track and noise-contour exhibits identified below. I also reviewed relevant portions of the City's Comprehensive Plan, parks master plan, and City records concerning the properties, infrastructure, and municipal responsibilities described in this declaration. The facts concerning City ownership, maintenance, planning, and operations are based on my personal knowledge, information regularly provided to me in carrying out my official duties, and City records maintained in the ordinary course. I am authorized to make this declaration on behalf of Des Moines in connection with this litigation.

2. Des Moines is a municipal code city in King County, Washington, south of Seattle-Tacoma International Airport (the "Airport"). In September 2025, FAA issued a Finding ofNo Significant Impact/Record of Decision approving the SAMP Near-Term Projects ("FONSI/ROD"). The FONSI/ROD is the FAA action challenged in this case.

3. Des Moines owns, maintains and manages parks, trails, waterfront, and recreational properties, including Des Moines Beach Park, the Des Moines Marina, Des Moines Creek Trail, City Park and Kiddie Park, Wooton Park and Redondo Boat Launch and Field House Park. Additionally, Des Moines owns Steven J. Underwood Park, which is maintained and operated via lease with a third party that uses the park for little league and baseball activities and events. Des Moines maintains these properties for outdoor recreation, walking, bicycling, waterfront access, community activities, environmental enjoyment, and other public uses.

4. The outdoor, waterfront, quiet, and natural characteristics of these properties are part of the use and value that the City seeks to provide and preserve. Through its Marina, Public Works and Parks and Recreations Departments, the City devotes recurring staff time and appropriated funds to operating and maintaining these properties and intends to continue owning or managing, operating, maintaining, and investing municipal resources in them. Aircraft operating to and from the Airport are regularly audible at these properties, harming the City's and the public's interest and damaging the revenues the City generates from rents for these properties in connection to private events.

5. FAA's Proposed Action-versus-No Action forecast projects 8,755 more annual aircraft operations in 2032 and 35,018 more annual operations in 2037 under the Proposed Action than under No Action. Final EA Appendix A, Table 6, AR000318. FAA's Noise Technical Report states that the flight-track locations for the 2032 and 2037 Proposed Action are expected to remain the same as the Existing 2022 Condition because no flight track changes are proposed. Noise Technical Report at AR002732, AR002756.

6. FAA's Noise Technical Report states that, in 2037, the Proposed Action noise contour would be approximately 0.66 square miles larger than the No Action contour, due primarily to approximately 96 additional average annual day aircraft operations. Noise Technical Report at AR002762. Because existing operations are already audible at the City-owned or managed outdoor properties identified above, FAA's forecast of additional operations using the existing flight tracks creates a reasonable probability of additional aircraft-noise events affecting those properties. Properties impacted under the expanded noise contour are identified in the attached Exhibit "A". The Noise Technical Report explains that sound can be annoying, defines unwanted sound as noise, and recognizes that communication interference can affect activities such as personal conversation. Noise Technical Report at AR002668, AR002675-AR002676. In my judgment as City Manager, additional aircraft-noise

events at Des Moines's parks, trail, marina, and waterfront properties would further diminish their quiet, outdoor, and recreational character, interfere with conversation and passive recreation, and impair the City's use and management of those properties for the purposes for which they are maintained.

7. FAA's air-quality analysis states that emissions of every analyzed pollutant will be greater under the Proposed Action than under No Action because of increased aircraft operations, taxi times, and motor vehicles. For 2037, FAA projects increases of 263 short tons of carbon monoxide, 20 short tons of volatile organic compounds, 225 short tons of nitrogen oxides, 34 short tons of sulfur oxides, 3 short tons of PMl0, and 2 short tons of PM2.5. Final EA at AR000187. These are project-specific increases associated with Airport activity and surface traffic affecting the surrounding communities. I do not offer an expert opinion concerning pollutant concentrations or health effects at any individual City property. I identify FAA's projected emissions increase as an additional project-specific effect relevant to the City's proprietary and managerial interest in the environmental quality of its outdoor property.

8. Des Moines, through its Public Works and Community Development Departments, plans, operates, and maintains municipal streets and transportation facilities and administers transportation planning, traffic-impact fees, development review, and project coordination for facilities within its jurisdiction.

9. The Final EA identifies NTP-generated delay at Pacific Highway S. at S. 216th Street and Pacific Highway S. at SR 516, both within Des Moines's jurisdiction. The Final EA projects that NTP trips will add delay at both intersections in 2032 and 2037. Final EA at AR000228.

11. .For Pacific Highway S. at SR 516, the Final EA provides that the Port will pay a proportionate share for delay added by NTP trips under Des Moines's traffic-impact-fee schedule. It states that mitigation for that intersection also covers Pacific Highway S. at S. 216th Street. Final EA at AR000230. The Port's payment is

mitigation for an underlying project-generated transportation effect; the payment itself is not the City's injury.

12. The NTP-generated traffic will require Des Moines to account for additional trips in its transportation planning and to administer the related fee, review, coordination, and infrastructure responsibilities. Those incremental activities consume City staff and administrative resources and affect the operation and planning of City transportation facilities even where the Port pays a proportionate mitigation share. Together, the additional aircraft noise, project-related emissions, surface traffic, and municipal responsibilities threaten concrete City interests in the use, environmental quality, management, and operation of City-owned or managed property and infrastructure. These are burdens the City itself bears as an owner and operator, apart from concerns experienced by residents in their individual capacities.

13. Vacating the FONSI/ROD and requiring lawful reconsideration could reduce the threatened injuries described above. On remand, FAA could withhold approval, approve fewer or differently phased projects, or impose additional conditions or mitigation that would reduce the additional aircraft operations, noise events, surface traffic, effects on City-owned or managed property, or project-generated municipal responsibilities. I do not contend that vacatur would eliminate existing Airport operations, the City's traffic-impact-fee schedule, or municipal duties that would exist independently of the NTPs.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 31 day of July 2026, in Des Moines, Washington.

Katherine Caffrey

Katherine Caffrey

City Manager, City of Des Moines

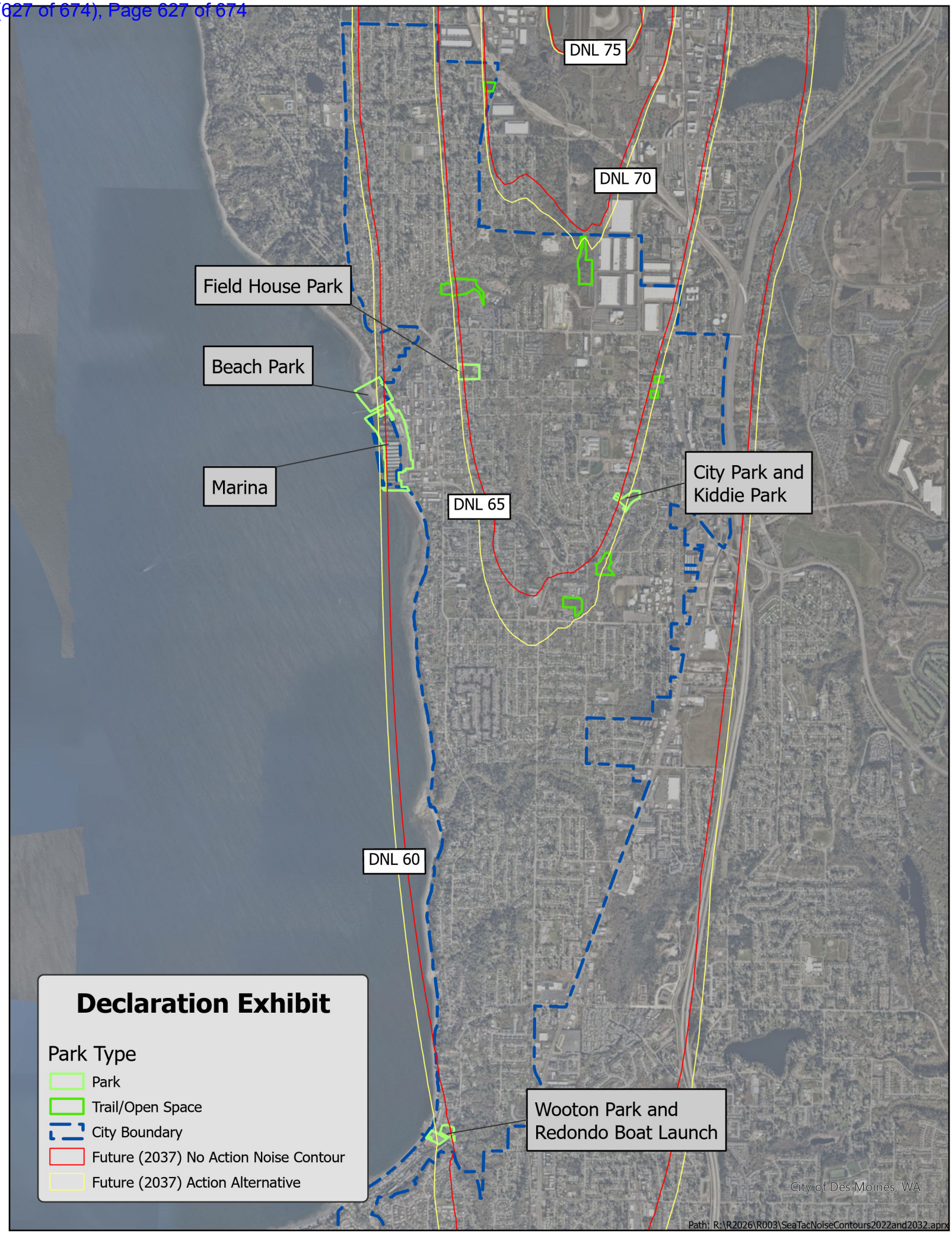

DNL 75
DNL 70
Field House Park
Beach Park
Marina
City Park and Kiddie Park
DNL 65
DNL 60
Wooton Park and Redondo Boat Launch
Declaration Exhibit
Park Type
Park
Trail/Open Space
City Boundary
Future (2037) No Action Noise Contour
Future (2037) Action Alternative
City of Des Moines, WA
Path: R:\R2026\R003\SeaTacNoiseContours2022and2032.aprx

Exhibit E

Declaration of Jonathan Young

DECLARATION OF JONATHAN YOUNG

I, Jonathan Young, declare as follows:

1. I am the City Manager for the City of SeaTac ("SeaTac"), a position I have held since 2025. My responsibilities include oversight of City departments, City property, parks, infrastructure, planning, public safety, and municipal operations. In preparing this declaration, I reviewed the cited portions of FAA's Final Environmental Assessment ("Final EA"), Noise Technical Report, air-quality analysis, flight-track materials, and noise-contour exhibits. I also reviewed relevant City records, including City GIS information; the Envision SeaTac 2044 Comprehensive Plan; the City's current Parks, Recreation and Open Space Plan; transportation and capital-planning records; and the City documents attached as exhibits. Unless otherwise stated, the facts below are based on my personal knowledge and on City records that SeaTac keeps in the ordinary course of its regularly conducted municipal activities. I am authorized to make this declaration on SeaTac's behalf in this litigation.

2. SeaTac is a municipal code city in King County, Washington. Seattle-Tacoma International Airport (the "Airport") is located entirely within SeaTac's municipal boundaries. In September 2025, FAA issued a Finding of No Significant Impact/Record of Decision approving the Sustainable Airport Master Plan Near-

Term Projects ("FONSI/ROD"). The FONSI/ROD is the FAA action challenged in this case.

3. SeaTac owns and, through its Parks and Recreation and Public Works departments, operates or maintains public recreational and transportation property near the Airport. City GIS records identify these properties as Angle Lake Park and the adjoining Angle Lake Nature Trail; SeaTac Des Moines Creek Park; Riverton Heights Park; the segment of the Lake to Sound Trail that FAA materials call the S. 156th Way Trail; the S. 200th Street Shared Use Path; and the Westside Trail. FAA's Final EA identifies the same properties, except the Angle Lake Nature Trail, as City-owned properties within the SAMP general study area. Final EA at AR000099.

4. City GIS staff compared those City properties with FAA's Future 2032 Proposed Action Noise Contour. That comparison shows that, except for Riverton Heights Park, each identified property lies partly or wholly within the area enclosed by the mapped 2032 Proposed Action contour. A true and correct copy of FAA's contour exhibit is attached as Exhibit A. A true and correct copy of the parks-and-recreation map used by City GIS staff to cross-check the properties' locations is attached as Exhibit B.

5. Parks and Recreation operates and maintains the parks and recreational facilities. Public Works operates and maintains City transportation facilities, signals, trails, shared-use paths, and rights-of-way. Community and Economic Development

administers planning, permitting, and environmental review. These properties and facilities implement the City's adopted objectives for parks and recreation, multimodal transportation, access to public amenities, environmental stewardship, and resilient public infrastructure. SeaTac devotes recurring staff time and appropriated funds to their operation and maintenance and intends to continue owning, operating, maintaining, and investing municipal resources in them.

6. Aircraft noise is a recurring concern in SeaTac. City staff routinely hear and observe aircraft during field visits, public programs and meetings, outdoor activities, and their ordinary work at locations throughout the City, including the properties identified above. SeaTac also receives aircraft-noise concerns from residents through public meetings, correspondence, planning processes, and airport-related forums. The City does not maintain a comprehensive property-specific aircraft-noise complaint database equivalent to the Port of Seattle's complaint system. I rely on these staff observations, City records, community reports, and SeaTac's sustained participation in aviation-noise discussions as the basis for stating that aircraft operations are regularly audible at the identified properties; I do not purport to state a property-specific decibel level.

7. FAA's Proposed Action-versus-No Action forecast projects 8,755 more annual aircraft operations in 2032 and 35,018 more annual operations in 2037 under the Proposed Action than under No Action. Final EA Appendix A, Table 6, AR000318.

FAA's Noise Technical Report states that flight-track locations for the 2032 and 2037 Proposed Action are expected to remain the same as the Existing 2022 Condition because no flight-track changes are proposed. Noise Technical Report at AR002732, AR002756.

8. FAA's Noise Technical Report also states that, in 2037, the Proposed Action noise contour would be approximately 0.66 square miles larger than the No Action contour, due primarily to approximately 96 additional average-annual-day aircraft operations. Noise Technical Report at AR002762. Existing Airport operations are already audible at SeaTac's outdoor properties, most of those properties lie partly or wholly within the mapped 2032 Proposed Action contour, and the additional operations will use the existing flight tracks. Those facts create a reasonable probability that the challenged FONSI/ROD will cause additional aircraft-noise events affecting SeaTac's own property.

9. The Noise Technical Report explains that sound can be annoying, defines unwanted sound as noise, and recognizes that communication interference can affect activities such as personal conversations. Noise Technical Report at AR002668, AR002675-AR002676. Additional aircraft-noise events would reduce SeaTac's ability to provide quiet or restorative outdoor settings, interrupt outdoor programs and staff-public communication, interfere with environmental education and passive recreation, generate additional public inquiries and mitigation work, and require the

City to consider noise conditions when designing or locating shelters, gathering areas, signage, programming, and capital improvements. These effects would diminish the recreational and outdoor character that SeaTac seeks to provide through its own parks, trails, and shared-use paths.

10. FAA's air-quality analysis states that emissions of every analyzed pollutant will be greater under the Proposed Action than under No Action because of increased aircraft operations, taxi times, and motor vehicles. For 2037, FAA projects increases of 263 short tons of carbon monoxide, 20 short tons of volatile organic compounds, 225 short tons of nitrogen oxides, 34 short tons of sulfur oxides, 3 short tons of PM10, and 2 short tons of PM2.5. Final EA at AR000187. I do not offer an expert opinion about pollutant concentrations or health effects at any particular property. I identify FAA's project-specific emissions forecast because environmental quality affects SeaTac's planning, management, and use of its outdoor property.

11. Before FAA issued the FONSI/ROD, SeaTac had selected 2701 South 200th Street as the preferred site for its Civic Campus, now called the SeaTac International Village. The City began acquisition negotiations in early April 2025 and signed a letter of intent on June 9, 2025. The City's July 10, 2025, executive summary described an anticipated $40.395 million land purchase and a long-term civic investment that could include City Hall, a justice center, a civic plaza, community and recreational uses, commercial uses, and housing. A true and correct copy of that

executive summary is attached as Exhibit C. Additional aircraft noise, surface traffic, and project-related emissions are conditions SeaTac must account for in planning, designing, programming, constructing, and operating this substantial municipal investment.

12. The International Village and the nearby Angle Lake Station area also implement SeaTac's strategy to use transit access, public investment, remediation, civic development, and mixed-use development to encourage housing, small-business growth, employment, and equitable private investment in South SeaTac. SeaTac previously sought and obtained Opportunity Zone designation for three low-income South SeaTac census tracts as one part of that strategy. A true and correct copy of SeaTac's Opportunity Zone nomination application is attached as Exhibit D. Project-specific noise, traffic, and emissions can complicate the City's site planning, infrastructure coordination, public programming, and efforts to attract and shape compatible development in this area.

13. SeaTac contracts with Puget Sound Fire for fire suppression, emergency medical response, fire prevention, emergency management, communications, training, and related services. A July 2, 2026, presentation to the City's Administration and Finance Committee states that the contract costs approximately $15.4 million. A true and correct copy of that presentation is attached as Exhibit E. FAA forecasts more aircraft operations and project-related surface activity under the

Proposed Action. SeaTac must consider that added activity when planning and budgeting for emergency access and response capacity. I do not offer a quantified forecast of SAMP-attributable emergency calls or fire-service costs.

14. SeaTac plans, programs, operates, and maintains municipal streets, signals, trails, shared-use paths, rights-of-way, and other transportation facilities. Public Works performs transportation planning and engineering, design and permit review, traffic-signal integration, construction coordination and inspection, asset acceptance, operation, and maintenance. Community and Economic Development performs land-use, environmental, building, and permit review. The City programs transportation investments through Envision SeaTac 2044, the Transportation Master Plan, the Transportation Improvement Program, capital planning, and annual budgeting.

15. The Final EA projects specific transportation effects within SeaTac from the Proposed Action. It projects that Des Moines Memorial Drive at S. 144th Street will change from level of service E to F, with 201.3 seconds of total delay in 2032 and 222.1 seconds in 2037; that 24th Avenue S. at S. 146th Street will change from level of service C to E in 2032 and D to F in 2037; and that 8th Avenue S. at S. 156th Street will change from level of service E to F in 2037, with 120.1 seconds of total delay. Final EA at AR000227. These intersections are within SeaTac or affect

facilities for which SeaTac has transportation-planning, review, coordination, operational, or maintenance responsibilities.

16. The Final EA identifies Port-proposed mitigation on which FAA's FONSI/ROD relies, including new signals, lane and intersection work, roundabouts, and replacement or improvement of portions of the Westside Trail. Final EA at AR000229-AR000231. The Final EA also refers to the Port-SeaTac interlocal agreement as a possible mechanism for addressing additional project effects within SeaTac. Final EA at AR000227 n.59 and AR000229 n.60.

17. SeaTac would perform ordinary development review, intergovernmental coordination, interlocal-agreement administration, and asset maintenance even without the NTPs. The NTP-generated traffic and project-specific mitigation would add work beyond those baseline responsibilities. That additional work is likely to include review of traffic models and mitigation triggers; signal warrants, timing, communications, and intelligent-transportation-system integration; roadway, pedestrian, bicycle, accessibility, drainage, utility, and right-of-way design; permitting or delegated-permit oversight; construction staging, haul-route, lane-closure, and temporary-traffic-control coordination; trail continuity and protection; inspection, testing, acceptance, and record documentation; and post-opening traffic monitoring or signal retiming. If SeaTac accepts new or modified facilities, the City

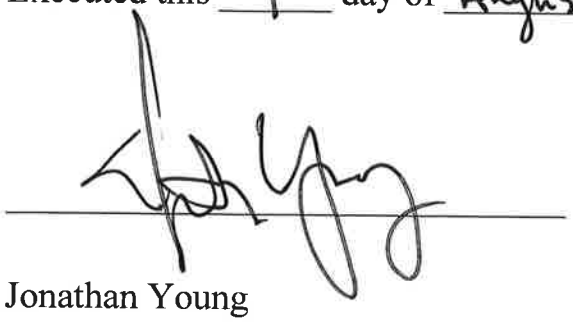
may also assume future operation, maintenance, repair, communications, electricity, resurfacing, or equipment-replacement responsibilities.

18. The Port asked SeaTac to enter a memorandum of understanding concerning SAMP mitigation, and SeaTac declined. The existing interlocal agreement, permit fees, traffic-impact fees, or a future mitigation agreement may fund or reimburse some project-specific work, but no such mechanism eliminates SeaTac's need to assign staff, administer the work, protect existing City investments, coordinate construction, and operate facilities placed under City responsibility. NTP-related work would use engineering, inspection, planning, legal, information-technology, public-information, public-safety, and project-management capacity otherwise available for the City's adopted programs.

19. Vacating the FONSI/ROD and requiring lawful reconsideration could reduce these threatened injuries. On remand, FAA could withhold approval, approve fewer or differently phased projects, select or require different mitigation, or impose conditions that reduce additional aircraft operations, noise events, surface traffic, effects on City-owned property, or project-generated municipal work. I do not contend that vacatur would eliminate existing Airport operations, the interlocal agreement, or municipal duties that exist independently of the NTPs.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 4th day of August 2026, in SeaTac, Washington.



Jonathan Young

City Manager, City of SeaTac

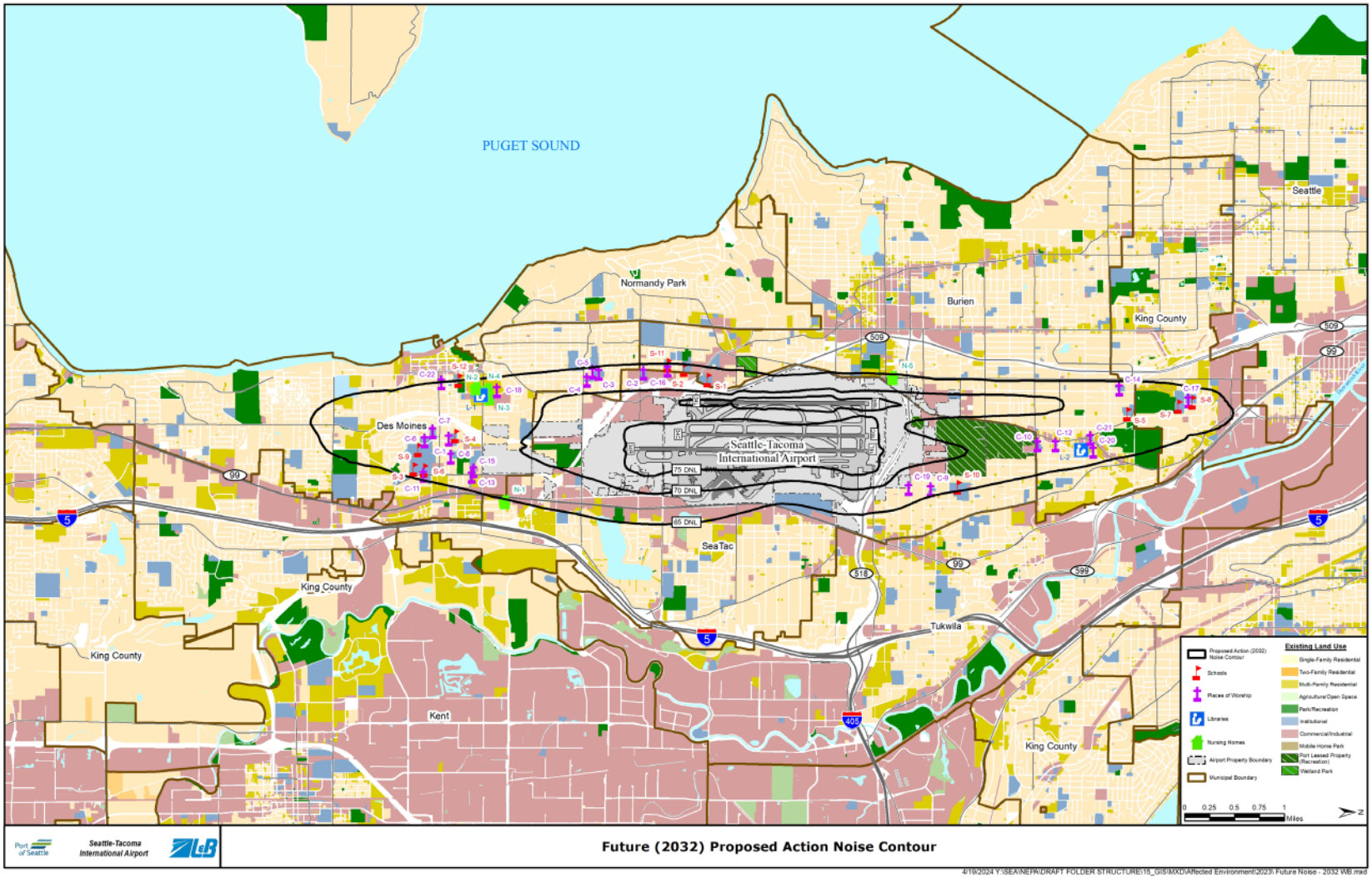
EXHIBIT A

FAA Future (2032) Proposed Action Noise Contour

Noise Technical Report, Exhibit 7-11 (March 2024).

SEATTLE-TACOMA INTERNATIONAL AIRPORT
SUSTAINABLE AIRPORT MASTER PLAN NEAR-TERM PROJECTS

EXHIBIT 7-11: FUTURE (2032) PROPOSED ACTION NOISE CONTOUR



Sources: AEDT Version 3f; Landrum & Brown analysis, 2024.

EXHIBIT B

Parks and Recreation Areas in the General Study Area

SAMP Draft EIS, Exhibit 3.3.5-1 (May 2026), used by City GIS staff for a location cross-check.

SEATTLE-TACOMA INTERNATIONAL AIRPORT
STATE ENVIRONMENTAL POLICY ACT
ENVIRONMENTAL IMPACT STATEMENT
FOR THE SUSTAINABLE AIRPORT MASTER PLAN NEAR-TERM PROJECTS

EXHIBIT 3.3.5-1: PARKS AND RECREATION AREAS IN THE GSA

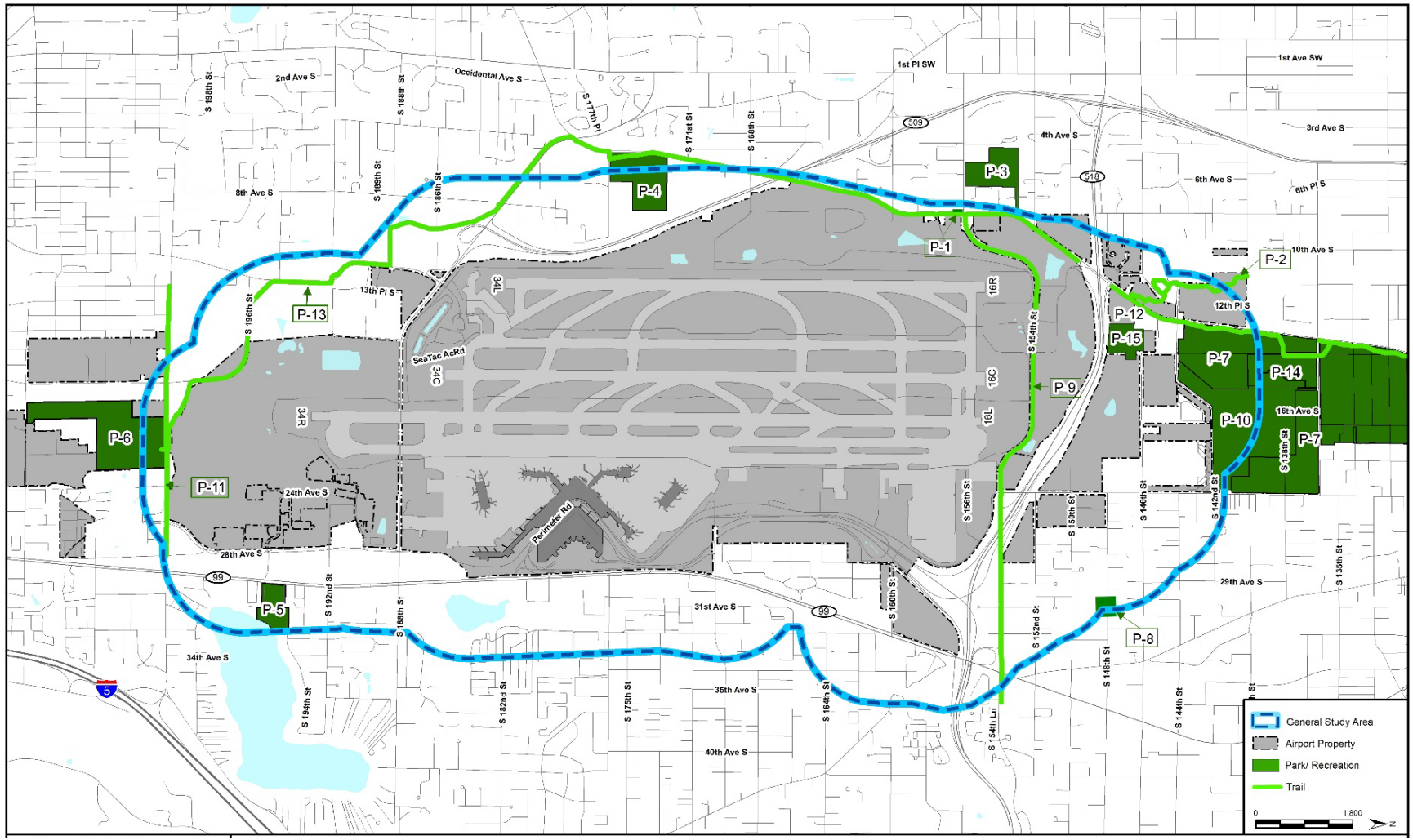


EXHIBIT C

Civic Campus Project Feasibility Report - Executive Summary

Memorandum to SeaTac City Council dated July 10, 2025.

MEMORANDUM

To: City Council
From: Evan Maxim, Director of Community and Economic Development
Date: 07/10/2025
Re: Civic Campus Project Feasibility Report, AB 6742 July 22, 2025, RCM

I. PURPOSE OF THIS REPORT

The City of SeaTac is exploring a new Civic Campus, and in July 2025 the City Council will decide on whether to purchase land for the Civic Campus. The Project Feasibility Report for the City of SeaTac Civic Campus ("report") summarizes the 2024–2025 feasibility analysis performed. The report identifies a preferred site and assesses whether to move forward with purchasing the site. It helps answer, "Should we do this?" by evaluating costs, risks, and opportunities. Since Spring 2024, JLL and City staff have led a process to provide the City with the information and analysis needed for an informed decision by the City Council.

II. CIVIC CAMPUS VISION

Imagine a place where the SeaTac community comes together—a welcoming, inclusive place that reflects SeaTac's unique identity, where people connect, businesses thrive, and City services are easily accessible. Anchored in our global connections and rich diversity, this community space will serve as a cultural and social gathering place for all generations; by activating the land early, we'll set the stage for a future that embodies SeaTac's character, fosters community pride, and creates a lasting, vibrant space for everyone.

III. THE NEED FOR A CIVIC CAMPUS

Existing City Hall: In 2001 the City of SeaTac purchased its current City Hall, a three-story, 75,000 sq. ft. building originally built in 1979 as general office space. Though renovated in 2002, the building's age and design have resulted in ongoing maintenance costs, issues, and inefficiencies, prompting the City to commission a third-party analysis to explore future options.

Third Party Analysis: In 2020, the City hired ARC Architects to assess renovation vs. replacement of the existing City Hall; their analysis found that even with significant investment, key deficiencies, including parking, security, and space limitations would remain and the cost to

renovate versus rebuild was comparable. In 2022, City Council (Agenda Bill #6288) directed staff to explore building a new City Hall/Civic Campus.

Owners Representative: In 2023, the City issued a competitive Request for Proposals and selected JLL, Inc. (January 2024) as the Owner's Representative (Agenda Bill #6393) to lead a feasibility analysis to assess potential options and support overall project planning.

Current and Future Space Needs: In 2024, JLL began by assessing City Hall space needs through visioning sessions, department interviews, workshops, and facility tours. Analysis concluded between approximately 55,000 to 97,000 square feet are needed for City Hall and Justice Center functions on a go-forward basis. In addition, 82,500 square feet is needed to accommodate parking, and 35,000 square feet is needed to accommodate exterior functions (a civic plaza and a police sallyport).

Civic Campus Decision: In July 2023, City Council confirmed the City Council's direction to pursue a "Civic Campus" that would include community, retail, and recreational uses rather than a standalone City Hall (Resolution 23-007).

IV. SITE SELECTION PROCESS AND RANKING

Site Selection: The process primarily focused on the evaluation selection of a preferred site(s) for the future construction of a Civic Campus. In February 2025, the City Council approved site evaluation criteria for potential Civic Campus locations and authorized the City Manager to execute necessary agreements for evaluating and negotiating up to four property sites (AB#6640). The site criteria established in February 2025 are referred to as "Framework A".

12 Sites Evaluated: The consultant team, staff and City Council evaluated 12 sites (Framework A) located within the City's Urban Center and included the existing City Hall location, against ten key evaluation criteria, which include: location, compatibility with surrounding land uses, environmental factors, financial criteria, accessibility, site size, transit access, and the site's ability to accommodate a civic uses (City Hall) and community-based uses.

Expanded Site Evaluation, +1 Site: After further consideration, the City developed modified evaluation criteria (Framework B) to expand site options, resulting in the re-evaluation of two sites and identifying one new site for consideration.

13 Sites Ranked: In total 13 sites were considered and ranked as follows: four sites were identified as top-tier, three as secondary-tier, and six as lower-tier potential sites. One site in the top-tier has been identified as the preferred site.

V. PREFERRED SITE SELECTED

Preferred Site Selected for Purchase Evaluation: Following a detailed analysis and evaluation of select sites, in the Spring of 2025, the City selected its preferred site (referred to as "the site" hereafter): Site J, known as the "S 200th Street" site is a 8.26 acre site located at 2701 South 200th Street at the corner of S. 200th Street and 26th Avenue S, and currently operates as the SeaTac Park: Park-and-Fly.

This site was chosen, among many factors, for its prime location (directly across from the Angle Lake light rail station), its large size (8.26 acres), the site is adjacent to a City-owned 0.32-acre parcel and offers strong visitor access. The Combined subject property is 8.58 acres.



Technical Site Feasibility Analysis: Between February and June 2025, specialized consultants conducted comprehensive investigations of the preferred site to determine soil conditions, identify easements and existing infrastructure, evaluate transportation considerations, and pinpoint potential constraints. There were no major risks identified.

Civic Campus Suitability: Architectural analysis confirmed that the site can accommodate a City Hall, a Justice Center, an outdoor plaza, parking, and other community uses. The site can also accommodate 230 housing units that were required as a condition of development by Sound Transit on one of the parcels included in the total site. The site also offers efficient circulation, safety compliance, and potential Puget Sound views. Its location aligns with the City's goals for

centralized, accessible services, addressing current inefficiencies and creating a strong civic presence for the community.

Civic Uses and Community Based Uses: From the technical feasibility analysis, the zoning allows for a broad mix of uses with the vision of supporting walkable transit-oriented development. Permitted uses Include: Office, Civic and Institutional, Cultural, Multi-family, General Retail, and Hotel. Development of these civic and community uses at this location is generally consistent with the City's adopted Comprehensive Plan and the Angle Lake Subarea plan.

VI. SITE ACQUISTION

The City started negotiations with HB Management, LLC in early April 2025 for the acquisition of the site. On June 9, 2025, the City and HB Management, LLC signed a Letter of Intent (Appendix M). The Letter of Intent establishes the general terms under which the City will purchase the site from HB Management LLC.

Since June 9, 2025, the City has negotiated a Purchase and Sale Agreement with HB Management for the purchase of the site.

On July 22, 2025, staff will seek City Council authorization for the City Manager to sign the Purchase and Sale Agreement for the purchase of the site. If the Purchase and Sale Agreement is signed by the City, action by the City Council to secure funding is anticipated in October 2025, with a closing date on the purchase no later than December 15, 2025.

VII. NEGOTIATED TERMS OF PURCHASE

Intent to Purchase: Once the City identified the site as its preferred location, City staff took action to begin the process to negotiate terms and pricing to enter into an agreement to purchase the site. In June 2025, the City negotiated a Letter of Intent (LOI) to purchase the S 200th Street site for $40,395,000. Immediately following closing on the purchase of the property, the City intends to activate a portion for the site for community uses.

The LOI also allows a portion of the site to temporarily remain leased as a park-and-fly during the planning and design of the City's Civic Campus. Revenue from the temporary lease will offset part of the purchase price. During the lease, the City may temporarily close the park-and-fly to hold large community events.

The LOI also includes an option for the seller to purchase back a part of the site to build at least 230 multifamily housing units; at least twenty percent of the units will be affordable to moderate- or low-income families.

VIII. COMMUNITY ENGAGEMENT

Community Engagement: Throughout the feasibility analysis, the City conducted two surveys (1.0 and 2.0) to understand current City Hall service use and desired potential uses and features for a future Civic Campus.

Survey 1.0 (December 2024) gathered input from 301 community members, revealing that the most commonly used services are pet tag purchases, permit applications, and police reports, while services like rental assistance and domestic violence support see lower usage, highlighting the need to prioritize high-use services in future planning.

Survey 2.0 (April 2025) focused on understanding what types of "community uses" the SeaTac community desired on the site. The survey received more than 600 responses and revealed that the top desired community uses on the site were space for a farmer's market / community events / celebrations, café or restaurant space, community support services for housing / employment / immigration, and support for small businesses and entrepreneurs.

Overall, the results reflect strong community interest in vibrant public spaces, essential services, and amenities that support everyday life and local economic opportunity.

IX. SITE AQUISTION FINANCING

Based on the strength of the City's current financial position, as well as its projected decrease in General Fund balance, it is recommended that the City finance the purchase of S 200th Street with a combination of 96% debt and 4% cash reserves. This combination preserves the City's cash reserves, allowing flexibility for future unexpected expenses or opportunities.

The City anticipates using private placement for land acquisition. Private placement will give the City more flexible payoff options if interest rates decrease or when the City is ready to issue construction debt to build the Civic Campus.

Potential Financing Options: The City, in collaboration with Piper Sandler (consultant) and through public Council meetings (April 8 and June 10, 2025), has identified and reviewed several financing strategies for the site purchase, including:

- Private (taxable) financing;
- Public (tax-exempt) financing; or
- A mix of cash reserves and public or private debt financing.

X. CIVIC CAMPUS CONSTRUCTION: PRELIMINARY COST ESTIMATES

- Four Civic Campus Preliminary Cost Estimates: JLL provided SeaTac four preliminary Civic Campus cost estimate options, based on the architectural test-fit scenarios. This amount is currently estimated to be in the range of $85M to $216M and should be used as a general guide, that will be subject to master planning and detailed design.

Option	Description	Location	Includes	Estimated Cost
A	Renovate and expand existing City Hall	Current City Hall S 188th St	City Hall, Police	$116M (2021 ARC Report, updated to 2027 dollars)
B	New single building	S 200th Street	City Hall, Justice Center, parking, plaza	$145 – 203 M
C	New two buildings	S 200th Street	City Hall, Justice Center, parking, plaza	$155 - 216 M
D	New building with City Hall only	S 200th Street	City Hall, parking, plaza	$85 - 119M

XI. OTHER CONSIDERATIONS

Maintenance costs of the existing City Hall over 30-to-50-year period vs maintenance of new building(s)/campus were not scoped as part of this report but are a key consideration when reviewing the preliminary construction costings.

Disposition of existing City Hall property for cost recovery is not included in the costing.

The budget and funding sources will be created for each component of the campus, which may include the use of City reserves, public-private partnership funding, possible federal and state grants, and debt financing, which can either be taxable or tax-exempt.

XII. RECOMMENDATION

Based upon the information in the Project Feasibility Report, JLL recommends the City of SeaTac proceed with the purchase of the site located at 2701 South 200th Street for development of the new Civic Campus. The analysis confirms that the site's strong location for the intended civic impact; and the analysis confirms that the site is both technically and financially feasible for the

intended project, aligning with City Council priorities while offering significant practical and financial advantages over renovation of the existing facility.

XIII. NEXT STEPS

Next Steps: If the City moves forward with purchasing the site, the City staff will proceed in negotiating a Purchase & Sale Agreement, and the following Phase 2 activities will begin:

1. Conduct detailed due diligence (e.g., soils testing);
2. Finalize site purchase contract (to be finalized pending City Council approval);
3. City to secure financing;
4. Launch community engagement for site development concepts and civic opportunities;
5. Define community uses (secondary program elements, e.g., arts, markets, housing); and
6. Advance conceptual site design

EXHIBIT D

South SeaTac Opportunity Zone Nomination Application

City of SeaTac competitive application for Opportunity Zone designation.

Department of Commerce

Opportunity Zone Nomination Form – Competitive Application

SECTION 1: LEAD APPLICANT

The nomination must be sponsored by a lead applicant that is either a city, town, county, tribe, associate development organization (ADO), housing authority, or port district. The lead applicant's support must be documented through an official letter from the lead applicant's legislative authority, chief executive officer, or chief economic development officer.

1. **Lead Applicant:**

   City of SeaTac

2. **Contact information:**

   Contact Person: Jeff Robinson

   Title: Director of Community and Economic Development

   Telephone: 206-973-4812

E-mail Address: jrobinson@ci.seatac.wa.us

SECTION 2: AREA PROPOSED FOR NOMINATION

The U.S. Department of the Treasury has published an Information Resource with a list of eligible census tracts, available here (https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx).

Each application may nominate as many as three tracts. Please provide the 11-digit number for each tract, and indicate whether each is a LIC or contiguous tract based on the Treasury list, or a tract that qualifies based on 2012-16 ACS data.

SOUTH SEATAC

Tract Number	Is this an LIC tract, a contiguous tract, or a tract qualifying based on 2012-16 ACS data?
53033028402	LIC Tract
53033028403	LIC Tract
53033028802	LIC Tract

NOTE: Commerce strongly encourages entities to nominate only LIC or contiguous tracts shown on the Treasury list, as there is no guarantee that other tracts will be accepted. Nominations of tracts not included on the Treasury list should submit an attachment

documenting how the tracts qualify, based on 2012-16 ACS data as discussed in the guidance available here: https://www.irs.gov/pub/irs-drop/rp-18-16.pdf

SECTION 3: NARRATIVE RESPONSES

Please provide responses to the following five questions. Responses should relate to the entire area proposed for nomination (all tracts listed above) to the extent possible. In cases where answers for one or more tracts would differ significantly from each other, consider submitting separate applications. Each application will be scored separately.

NOTE: The word limits shown below are strict. Reviewers will not consider additional words beyond the limits.

1. **Overview. Please provide an overview of the area, including a brief description of current or planned land use, available workforce, infrastructure advantages, and any significant public or private investments that have occurred in the past few years. Describe the availability of developable sites, proximity to roads, rail, or ports, and any other significant features of the area. Note any other special designations the area has (i.e., if the area includes a Promise Zone, Community Empowerment Zone, Innovation Partnership Zone, etc.), and if applicable, describe how the area fits into your community's economic development strategy or Comprehensive Plan. (500 words)**

The City of SeaTac, where "Everywhere's Possible," is a transportation-centric community perfectly positioned, and highly motivated to help both residents and businesses flourish. As a regional hub, SeaTac is located between Seattle and Tacoma at the intersection of several major highways and is home to the Seattle-Tacoma International Airport, as well as two light rail stations. Each day tens of thousands of visitors, nearly 40,000 workers and close to 30,000 residents join to make SeaTac one of the state's most culturally diverse cities. This bustling community's transit oriented development includes offices, retail, hospitality, passenger airline, air cargo, food services, entertainment venues and hotels. SeaTac has approximately 1,000 businesses; a healthy mix of small and minority-owned businesses and "Fortune 1,000" companies, including the corporate headquarters of Alaska Airlines, Horizon, and Boeing's Spare Parts Facility.

Located in the heart of South King County, all three LIC census tracts are home to an ethnically, culturally and socioeconomically diverse population. Current and planned land use encourages the addition of quality single family residential and multifamily housing, retail and office space to house local businesses. Numerous businesses and properties are owned or occupied by immigrant and historically underserved community members. Many residents who live within these tracts also work at Sea-Tac International Airport or at one of the many surrounding businesses. Additional housing development is necessary to better serve the growing need for available workforce housing. The infrastructural advantages of SeaTac's extensive highway connectivity and the presence of the international airport, uniquely position the City for continued significant public and private investments. Almost $4 billion in capital improvements to public infrastructure and facilities has been spent in SeaTac in the last 15 years. Capital projects worth nearly $2 billion are included in the Port of Seattle's Sustainable Airport Master Plan.

Among many other private sector and public projects within these tracts, the City has completed the Angle Lake Station Overlay District. To further stimulate economic development in the area, the City has also revised its Comprehensive Plan and the Zoning Map to accommodate higher density and more flexibility. To promote change, the City is currently preparing to sell off strategic pieces of city-owned property to private developers. The Reserve is a recently completed a $32 million 289-unit affordable senior housing project, which replaced a rental car lot.

SeaTac offers housing options to suit nearly every income, from an energetic mix of multi-family residential to single family homes in quality neighborhoods. Residents share in cultural and community events found in the Seattle southside region: the Fourth of July week Fireworks and Carnival, the Theatre in the Park, summer concert series, and the International Festival. The city also features seven large parks, a swimming beach, two community centers, a senior center, visitor center, several soccer fields, disc golf course, dog park, Highline SeaTac Botanical Garden.

In order to ensure equitable distribution of the positive impacts on the surrounding communities, we urge the Governor and Department of Commerce to designate these three LIC tracts as an Opportunity Zone.

2. **Investment opportunity. Please explain how designation as an Opportunity Zone will help attract new private investment to the area over the next three to five years, including how your organization and any partners anticipate promoting investment opportunities in the area. If specific projects are in the pipeline, including but not limited to new housing, industrial facilities, or commercial development, please discuss those projects and describe any other sources of funding that are anticipated to be leveraged, in addition to investments from Opportunity Funds. (250 words)**

Investing in historically distressed and underserved areas usually poses an extra level of risk. Designation of these tracts as Opportunity Zones makes investment here more attractive will help mitigate risk.

The City plans to work with existing partner organizations to promote and attract private investment through dissimilation of information to the resident, business and investor community. (See Section 5).

Immediate impacts and opportunities for private investment are presented by the transit-oriented redevelopment projects within the Angle Lake Station area. The City of SeaTac is preparing the disposition of a half an acre site within these tracts. The city-owned parcel and other privately owned sites' proximity to the light rail station and rapid-ride bus service, positions the properties for mixed-use transit-oriented development of commercial, residential and public uses.

Capital projects include the planned SR509 Completion and the Federal Way Link Extension of the light rail. Both of these projects will run through the southern part of the City, impacting areas which many of the residents call home. Although these infrastructure changes spur new opportunities and economic development, additional incentives from Opportunity Zones designation will help maximize the positive impacts on the local communities and businesses. The objective is to stimulate additional private sector investment and facilitate nearby relocation options for impacted businesses and residents.

Other sources of funding and incentives may include: Multi Family Tax Exemption, offering qualified developers an 8-12 year tax exemption for new development in residential targeted areas and New Market Tax Credits.

3. **Economic need and impact. Please describe recent changes in economic activity, such as business openings or closings within the area, and the anticipated economic impact that will result from private investment in this area. Be as specific as possible about anticipated impacts, such as employment or wage growth, new or expanded businesses, etc. (250 words)**

The current economic boom in the greater Seattle area has drastically increased the prices of real estate, impacting both purchase and lease rates. This trend has displaced many residents and businesses, forcing them to look for more affordable accommodations elsewhere, including the City of

SeaTac. Additionally, the SR509 and light rail extension projects have displaced, or are in the process of displacing approximately 15 businesses in the immediate area of these three tracts. With approximately 10 businesses opening per month and many existing businesses seeking to grow or relocate, the demand for space and further development is outpacing the supply.

Based on in-person interviews with many of the local businesses, a common barrier to further expansion and growth is access to private investments. Some examples include: physical space restrictions, ability to add equipment, challenges accommodating recruitment of new employees and lack of quality workforce housing. We anticipate more than 225 businesses may benefit from additional access to private investment. Of the approximately 260 total businesses employing over 5,270 people within these tracts, about 175 or 66% currently have 10 or fewer employees. Increasing the total employment within these tracts by 5% would result in close to 260 additional jobs. Additionally, the Sea-Tac International Airport is undergoing expansion, adding approximately 125 new businesses within the airport. This will further increase demand for local workforce and additional housing needs.

4. **Social equity. Please describe how designating this area as an Opportunity Zone will or will not improve social equity, i.e., the fair, just, and equitable distribution of resources. In particular, please describe how designation will promote development of affordable housing, or services or employment opportunities for traditionally underserved or marginalized populations. (250 words)**

Designating this area as an Opportunity Zone will definitely improve social equity. With the surrounding development of private and public projects, resources and opportunities are currently not evenly distributed among the impacted stakeholders. It is not uncommon that during the development and redevelopment process, many businesses are displaced by new facilities. Although this is a natural market occurrence, some businesses and residents lack the same networks and access to resources.

Some possible outcomes include; real estate development that increases the supply of retail, office, multifamily and workforce housing. Some mixed-use projects are likely to spur interactions with other like businesses. Increasing the interaction of the local businesses through place-making and promotion of development. This should expand the employment opportunities and inter-connect the traditionally underserved populations. Additionally, the members of the local business and resident communities will be incentivized to reinvest in the other local businesses and projects. This will increase the involvement of local stakeholders and expand the reach of their financial investments through the Opportunity Zones Funds.

Finally, adding the Opportunity Zone designation will expand the financing options of high quality and attainable housing, mixed-use projects and other commercial development. Allowing more stakeholders to participate in the investment and receipt of the Opportunity Zone Funds, further increases the feasibility of more projects and distributes the potential gains among a broader group of stakeholders.

5. **Partnerships. Please describe any partnerships you have formed with other organizations that are in support of this application, such as other units of state, local, or tribal government; private- or non-profit organizations; or other community groups. Please particularly note any partnerships with organizations that may be likely to form Opportunity Funds to invest in the area, including community banks and CDFIs. NOTE: Be sure to attach a letter of support from each group listed. (250 words)**

The City of SeaTac has long established working relationships with multiple partners in the private, non-profit organization and the public sectors. It is our goal to ensure and broaden access to resources and information for our local residents and business community.

These partnerships include:

- Economic Development Council of Seattle & King County (EDC) – The EDC will send out letters of support for all King County competitive applications
- Seattle Southside Chamber of Commerce – serving the local business community
- Global to Local – develops programs and interventions to improve health, lower the cost of care, and empower underserved communities across the country
- Port of Seattle and their Economic Development Division – workforce training and facility development
- City of Burien and City of Tukwila – partner cities on planning and development
- Small Business Development Center (SBDC), Start Zone and Highline College – on providing advising and resources to the local underserved business community and workforce training

In preparation for future steps, the City of SeaTac has made initial contact with a few organizations that may be likely partners to form and administer the Opportunity Zone Funds.

- Enterprise Community Partners – nonprofit organization that works with partners nationwide to finance, build and advocate attainable workforce housing

Due to the unknowns surrounding the implementation timeline, at this time, official letters of support are not available for the below two organizations

- Craft 3 CDFI and Boeing Employee Credit Union (BECU) with their Community Programs Division to potential form and administer the Opportunity Zone Fund and other financing options

SECTION 4: ATTACHMENTS

Only the following types of attachments should be submitted:

1. **An official letter of support from the lead applicant's legislative authority, chief executive officer, or chief economic development officer. Each letter of support should identify the census tracts proposed for nomination. Applications without an official letter of support will not be considered.**
2. **Official letters of support from any partner organizations. Each letter of support should identify the census tracts proposed for nomination**
3. **If this application is seeking to nominate tracts that are not LIC or contiguous tracts shown on the Treasury list, an attachment documenting how the tracts qualify, based on 2012-16 ACS data as discussed in the guidance available here: https://www.irs.gov/pub/irs-drop/rp-18-16.pdf NOTE: Commerce strongly encourages entities to nominate only LIC or contiguous tracts shown on the Treasury list, as there is no guarantee that other tracts will be accepted.**

To ensure that all attachments that accompany this application have been received, please list any attachments that you are submitting with this application. Attachments should be emailed to opportunityzones@commerce.wa.gov as discussed further in Section 5. Additional rows may be added to the table if needed.

Attachment file name	Description
City of SeaTac Official Application Cover Letter for SeaTac's Opportunity Zone Application SOUTH	*Letter of support from lead applicant*
Opportunity Zones Letter of Support SeaTac SOUTH from Chamber	*Letter of support from Seattle Southside Chamber of Commerce*
Opportunity Zones Letter of Support SOUTH SeaTac Request G2L	*Letter of support from Global 2 Local – Non-Profit partner*
Opportunity Zones Letter of Support SeaTac Request Port of Seattle-Final	*Letter of support from Port of Seattle – Partner in economic development*
Opportunity Zones Letter of Support SeaTac SOUTH from Burien	*Letter of support from City of Burien – neighbor city and partner*
Opportunity Zones Letter of Support for SeaTac SOUTH from Tukwila	*Letter of support from City of Tukwila – neighbor city and partner*
Opportunity Zones Letter of Support SeaTac SOUTH Highline College	*Letter of support from Highline College – Also SBDC and Start Zone – Partner organization*
Opportunity Zones Letter of Support for SeaTac SOUTH from Enterprise Community Partners	*Letter of support from Enterprise Community Partners – non-profit*
Opportunity Zones Letter of Support SeaTac SOUTH from SSRTA	*Letter of support from Seattle Southside Regional Tourism Authority – partner organization*

SECTION 5: SUBMITTAL

Complete applications, including all required letters of support or other attachments, must be submitted no later than 5 p.m., Monday, March 26, 2018.

Please submit this application form as a Word document (rather than .PDF). Attachments may be submitted in any common file format.

Commerce encourages you to submit your applications early. We will review applications as they are received, and will contact you if any information is missing or incomplete to the extent time and staff resources permit.

Applications, including all attachments, should be submitted by email to opportunityzones@commerce.wa.gov.

Please email questions about this application to opportunityzones@commerce.wa.gov. For urgent matters, you may call Sarah Lee at (206) 898-2025 or Jaime Rossman at (360) 725-2717. More information is available at http://www.commerce.wa.gov/growing-the-economy/opportunity-zones/.

NOTE: Information submitted after the 5 p.m., Monday, March 26, 2018 deadline will be excluded from consideration, except under extraordinary circumstances at Commerce's sole discretion.

NOTE: Commerce is subject to the Public Records Act. Consequently, any information submitted in support of an Opportunity Zone nomination may be disclosed upon request. Please do not submit confidential or proprietary information.

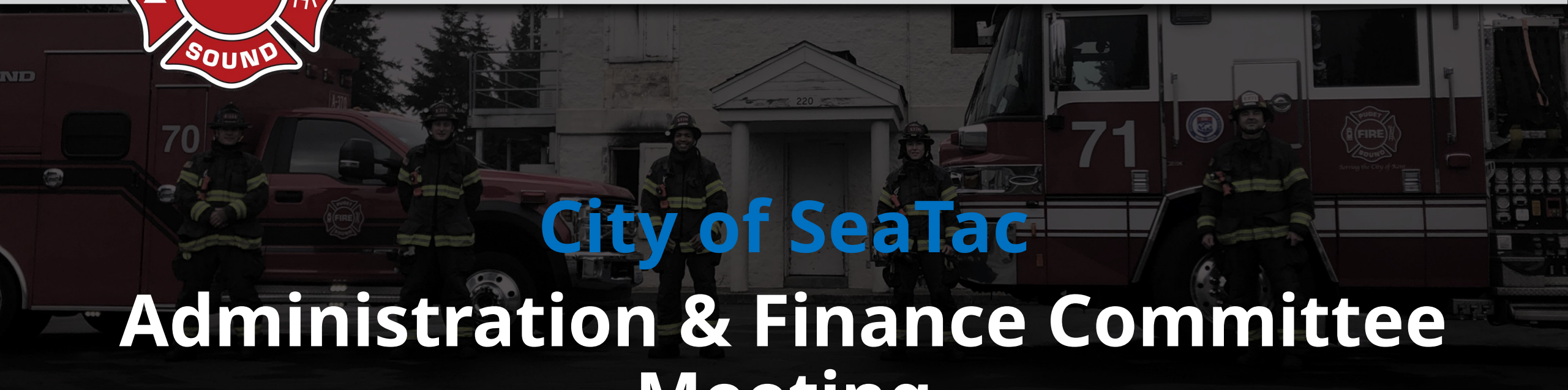
EXHIBIT E

Puget Sound Fire Services Presentation

Presentation to the SeaTac Administration and Finance Committee dated July 2, 2026.

PUGET SOUND REGIONAL FIRE AUTHORITY

Professionally and compassionately helping people.



City of SeaTac

Administration & Finance Committee Meeting

July 2, 2026

An Overview of Fire Services provided by Puget Sound Fire

Puget Sound Fire

Organization History

2010 – City of Kent & City of Covington – Merger/Annexation/RFA

2011 – City of SeaTac – Contract for Fire Prevention & Public Education

2014 – City of SeaTac - Contract for all Fire Services

2018 – City of Maple Valley - Contract for Service (Voting on Annexation 2026)

2023 – City of Tukwila – Contract for Service (Annexed in 2024)

2026 – City of Maple Valley and City of Black Diamond vote on Annexation

Two-Part Funding Model

+ Contracts for Service

1. Fire Benefit Charge (FBC) – Fee

- **Correlates Fee to Risk**
- **Not Based on Assessed Property Value**

Does Not Apply to:

- **Open Land, Vacant, Undeveloped Property**

2. Fire District Levy

- **$1 per $1,000.**

Rate erodes with inflation

Can be restored by the Voters.

City of SeaTac

Stations & Units

Fire Station 45

Battalion 345

Engine 345





Fire Station 46

Engine 347 Brush 346

CARES 346 Ladder 346

PSF Provides for SeaTac

Response

- Fire
- Medical
- CARES
- Community Relations
  - Education
- Emergency Management
- Communications
- Training
- Health & Safety

Business

- Finance
- IT
- SPA
  - GIS
  - Accreditation
  - Data Service
  - IT
- Fire Prevention
  - Fire Marshal
  - Plan Review
  - Fire Investigation
  - Code Enforcement

Administration

- Fire Chief
- Human Resources
  - Recruiting
- Government Relations

Population

Jurisdiction	Population
City of SeaTac	32,990
City of Covington	22,160
City of Tukwila	22,960
City of Maple Valley	29,340
City of Kent	140,100
Puget Sound Fire	247,550

Data Example

			City of SeaTac	Puget Sound Fire
2023	Calls for Service		3,665	45,008
2024	Calls for Service		6,019	47,816
2025	Calls for Service		5,670	44,439
		Fire/Explosions	200	1,809
		EMS/Rescue	3,960	30,338
		Hazardous Condition	58	724
		Service Call	269	2,900
		Good Intent	401	3,945
		False Alarm	536	3,130
		Weather	1	6
		Special	225	1,236
		Other	20	0

Incident v. Response

House Fire = 1 Incident / 8 Responses

Battalion 345 = 1 Response

Battalion 352 = 1 Response

E345 = 1 Response

L346 = 1 Response

E347 = 1 Response

E377 = 1 Response

E354 = 1 Response

A374 = 1 Response

*** M4, MSO, Rehab, Safety, PIO, FM307**



Incidents per Resident (IPR)

Jurisdiction	IPR
City of SeaTac	6
City of Covington	9
City of Tukwila	4
City of Maple Valley	13
City of Kent	7
Puget Sound Fire	7

Low IPR = 9

High IPR = 16

The Higher the Number, the less Calls for Service

SeaTac is Above Average

City of SeaTac	
Population	32,990
Incidents	5,670
Incidents per Resident	6
Expected Incidents	4,713
Delta	957
Cost per Incident	$2,716
Cost of Excess Incidents	$2.6M

PSF Average Incidents per Resident is 7

Contract for Services cost of $15.4M

Worker Flow



How many SeaTac residents Work in SeaTac?

How many SeaTac residents Work outside of SeaTac (Leave to Work)?

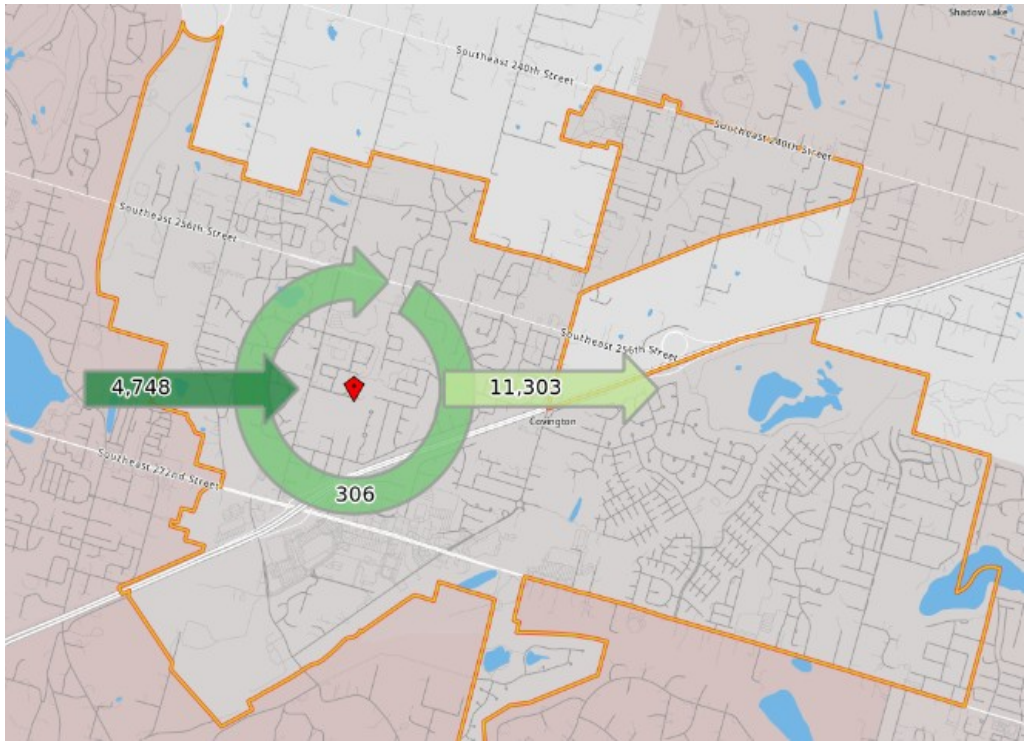
How many workers Travel into SeaTac for Work?

SeaTac & Covington

Worker Flow

SeaTac Inflow of 29,308





Covington Outflow of 29,308

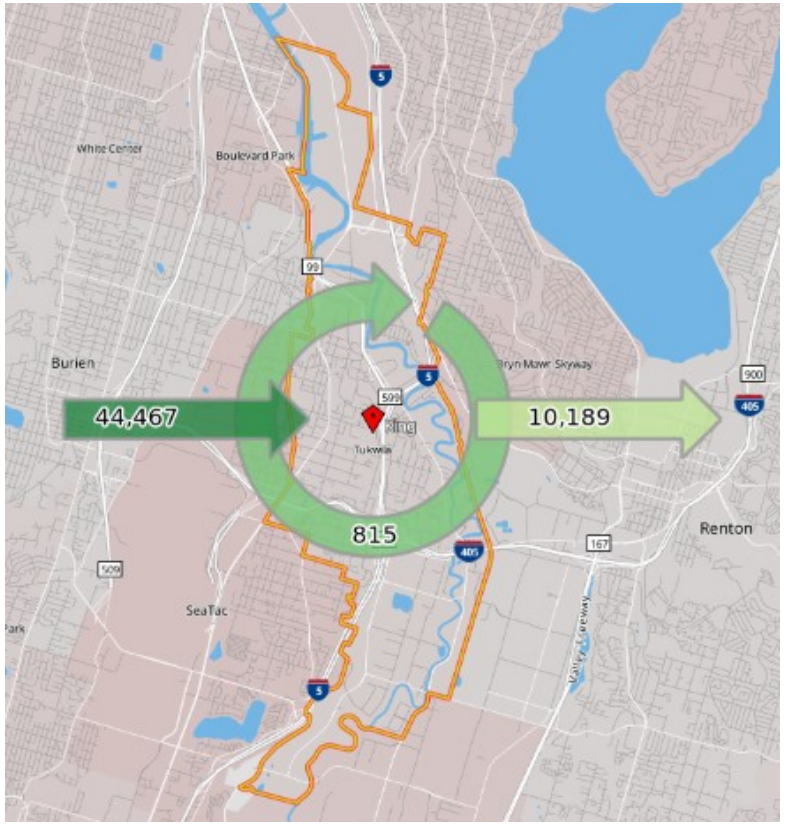
Source: https://onthemap.ces.census.gov/

SeaTac & Tukwila

Worker Flow

SeaTac Inflow of 29,308





Tukwila Inflow of 34,278

Source: https://onthemap.ces.census.gov/

SeaTac & Maple Valley

Worker Flow

SeaTac Inflow of 29,308



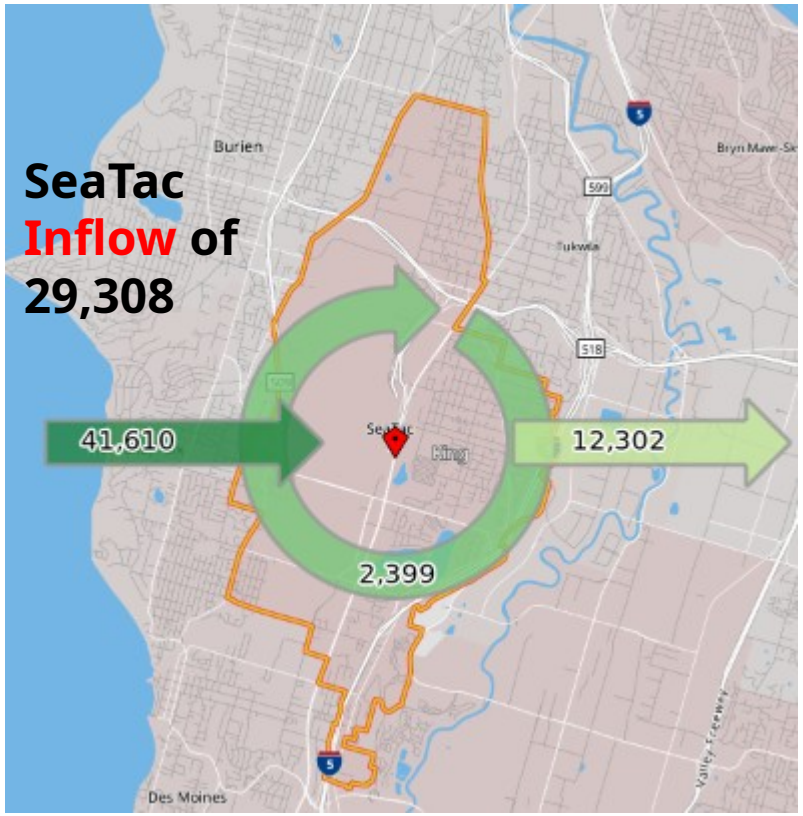
Source: https://onthemap.ces.census.gov/



Maple Valley Outflow of 8,396

SeaTac and Kent

Worker Flow





Kent
Inflow of
14,962

Source: https://onthemap.ces.census.gov/

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Questions & Comments