

Noise and Health Reader’s Guide

This guide is intended to assist readers in locating information within the Environmental Impact Statement (EIS) related to potential health effects of noise. This list is organized by topic and includes where to find information on the latest science related to noise and health, standards the Navy uses to assess potential impacts, and potential impacts of the Proposed Action.

Page Number

1. Noise Metrics and Modeling

- a. General discussion of the types of noise metrics and modeling used to assess noise impacts can be found in the following EIS sections:
 - i. 3.2.1 Basics of Sound and the A-weighted Sound Level..... 3-15
 - ii. 3.2.2 Noise Metrics and Modeling 3-17
 - iii. 3.2.3 Noise Effects 3-20
 - iv. Appendix A - Aircraft Noise Study, Section 2.2 A-21
 - v. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Sections A1.1.1 and A1.1.2..... A1-11, A1-14

2. DNL Noise Contours

- a. Estimation of the population and acreage affected by noise can be found in the following EIS sections:
 - i. 3.2.4.1 DNL Noise Contours (No Action Alternative) 3-28
 - ii. 4.2.2.1 Projected DNL Contours, Alternative 1 4-29
 - iii. 4.2.3.1 Projected DNL Contours, Alternative 2 4-77
 - iv. 4.2.4.1 Projected DNL Contours, Alternative 3 4-122
 - v. 3.5.2.4.1 DNL Noise Contours (Land Use Compatibility Assessment)..... 3-93
 - vi. 4.5.2.1.3 Land Use in the Noise Environment 4-222
 - vii. Appendix A - Aircraft Noise Study, Section 5.4, 6.4, 7.4, and 8.4 A-60, A-92, A-140, A-190
 - viii. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo Scenarios A7-1
 - ix. Appendix E - Land Use Data, High-tempo FCLP Year..... E-1

3. Single Event Noise

- a. Analysis of single event noise, a composite metric that represents both the intensity of sound and its duration, at several Points of Interest in the vicinity of the Proposed Action, can be found in the following EIS sections:
 - i. 3.2.4.3.1 Single Event Noise and Number of Events Above (No Action Alternative) 3-38
 - ii. 4.2.2.2.1 Single Event Noise, Alternative 1 4-46
 - iii. 4.2.3.2.1 Single Event Noise, Alternative 2 4-95
 - iv. 4.2.4.2.1 Single Event Noise, Alternative 3 4-139
 - v. Appendix A - Aircraft Noise Study, Section 5.4.1, 6.4.1, 7.4.1, and 8.4.1 A-62, A-101, A-150, A-200

- vi. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Sections A.1.2 and A.1.3 A1-16, A1-21
- vii. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo ScenariosA7-1

4. Speech Interference (Indoor)

- a. General discussion of the science and standards used to assess annoyance and, specifically, speech interference, can be found in the following EIS sections:
 - i. 3.2.3.1 Annoyance 3-20
 - ii. 3.2.3.2 Speech Interference (Indoor) 3-20
 - iii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.2A1-28
- b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
 - i. 3.2.4.3.2 Speech Interference (Indoor) (No Action Alternative) 3-44
 - ii. 4.2.2.2.2 Speech Interference (Indoor), Alternative 1 4-55
 - iii. 4.2.3.2.2 Speech Interference (Indoor), Alternative 2 4-101
 - iv. 4.2.4.2.2 Speech Interference (Indoor), Alternative 3 4-145
 - v. Appendix A - Aircraft Noise Study, Section 5.4.4, 6.4.4, 7.4.4, and 8.4.4 A-67, A-112, A-161, A-211
 - vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo ScenariosA7-1

5. Classroom/Learning Interference

- a. General discussion of the science and standards used to assess classroom/learning interference can be found in the following EIS sections:
 - i. 3.2.3.3 Classroom/Learning Interference..... 3-20
 - ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.7.1A1-50
 - iii. Appendix I - Community Health and Learning..... I-1
- b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
 - i. 3.2.4.3.3 Classroom/Learning Interference (No Action Alternative) 3-46
 - ii. 4.2.2.2.3 Classroom/Learning Interference, Alternative 1 4-59
 - iii. 4.2.3.2.3 Classroom/Learning Interference, Alternative 2 4-105
 - iv. 4.2.4.2.3 Classroom/Learning Interference, Alternative 3 4-149
 - v. Appendix A - Aircraft Noise Study, Section 5.4.5, 6.4.5, 7.4.5, and 8.4.5 A-69, A-115, A-164, A-214
 - vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo ScenariosA7-1
- c. Presentation of local school district test scores and graduation rates can be found in the following appendix:
 - i. Appendix I - Community Health and Learning (Section 3, Local School District Test Scores and Graduation Rates) I-8

6. Sleep Disturbance

- a. General discussion of the science and standards used to assess sleep disturbance can be found in the following EIS sections:

- i. 3.2.3.4 Sleep Disturbance 3-21
 - ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.3A1-31
 - b. Discussion of existing environment and potential impacts of the Proposed Action can be found in the following sections:
 - i. 3.2.4.3.4 Sleep Disturbance (No Action Alternative) 3-47
 - ii. 4.2.2.2.4 Sleep Disturbance, Alternative 1 4-63
 - iii. 4.2.3.2.4 Sleep Disturbance, Alternative 2 4-109
 - iv. 4.2.4.2.4 Sleep Disturbance, Alternative 3 4-152
 - v. Appendix A - Aircraft Noise Study, Sections 5.4.3, 6.4.3, 7.4.3, and 8.4.3 A-66, A-109, A-158, A-208
 - vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo ScenariosA7-1

7. Outdoor Speech Interference

- a. General discussion of the science and standards used to assess potential noise effects on outdoor activities can be found in the following EIS sections:
 - i. 3.2.3.5 Outdoor Speech Interference: Potential Noise Effects on Recreation and Outdoor Activities 3-21
 - b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
 - i. 3.2.4.3.5 Outdoor Speech Interference: Potential Noise Effects on Recreation and Outdoor Activities (No Action Alternative) 3-49
 - ii. 4.2.2.2.5 Outdoor Speech Interference: Potential Noise Effects on Recreation and Outdoor Activities, Alternative 1 4-67
 - iii. 4.2.3.2.5 Outdoor Speech Interference: Potential Noise Effects on Recreation and Outdoor Activities, Alternative 2 4-113
 - iv. 4.2.4.2.5 Outdoor Speech Interference: Potential Noise Effects on Recreation and Outdoor Activities, Alternative 3 4-156
 - v. Appendix A - Aircraft Noise Study, Sections 5.4.6, 6.4.6, 7.4.6, and 8.4.6 A-71, A-121, A-170, A-220
 - vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling Output for High-tempo ScenariosA7-1

8. Potential Hearing Loss

- a. General discussion of the science and standards used to assess potential hearing loss can be found in the following EIS sections:
 - i. 3.2.3.6 Potential Hearing Loss 3-22
 - ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.4A1-34
 - b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:
 - i. 3.2.4.3.6 Potential Hearing Loss (No Action Alternative) 3-51
 - ii. 4.2.2.2.6 Potential Hearing Loss, Alternative 1 4-72
 - iii. 4.2.3.2.6 Potential Hearing Loss, Alternative 2 4-118
 - iv. 4.2.4.2.6 Potential Hearing Loss, Alternative 3 4-161
 - v. Appendix A - Aircraft Noise Study, Sections 5.4.2, 6.4.2, 7.4.2, and 8.4.2 A-64, A-106, A-155, A-205

vi. Appendix A - Aircraft Noise Study, Appendix A7, Other Modeling
Output for High-tempo ScenariosA7-1

9. Nonauditory Health Effects

a. General discussion of the science and standards used to assess nonauditory health effects can be found in the following EIS sections:

- i. 3.2.3.7 Nonauditory Health Effects 3-23
- ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.5A1-41

b. Discussion of existing environment and potential impacts of the Proposed Action can be found in the following sections:

- i. 4.2.2.3 Nonauditory Health Effects, Alternative 1 4-76
- ii. 4.2.3.3 Nonauditory Health Effects, Alternative 2 4-121
- iii. 4.2.4.3 Nonauditory Health Effects, Alternative 3 4-164

c. Literature Review

- i. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.5A1-41
- ii. Appendix A - Aircraft Noise Study, Appendix A8, Literature Review ProcessA8-1
- iii. Appendix I - Community Health and Learning, Section 4 (Comparison of a Health Impact Assessment and Environmental Impact Statement and Review of Other Health Impact Assessments) I-10
 - 1. Appendix I, Section 4.1, Comparison of the HIA and NEPA Processes with Respect to this EIS..... I-11
 - 2. Appendix I, Section 4.2, Review of Industry Practices in the Preparation of HIAs..... I-13
 - 3. Appendix I, Section 4.4, A discussion of How Public Health Practitioners View Available Literature I-18

d. Other

- i. Appendix I - Community Health and Learning
 - 1. Appendix I, Section 2, Island County Health Factors I-5
 - 2. Appendix I, Section 4.3, Agency Consultation I-17

10. Vibration Effects from Aircraft Operations

a. General discussion of the science and standards used to assess vibration effects from aircraft operations can be found in the following EIS sections:

- i. 3.2.3.8 Vibration Effects from Aircraft Operations 3-24
- ii. Appendix A - Aircraft Noise Study, Appendix A1, Discussion of Noise and Its Effect on the Environment, Section A1.3.9A1-55

b. Discussion of the existing environment and potential impacts of the Proposed Action can be found in the following sections:

- i. 4.2.2.4 Vibration Effects from Aircraft Operations, Alternative 1 4-76
- ii. 4.2.3.4 Vibration Effects from Aircraft Operations, Alternative 2 4-121
- iii. 4.2.4.4 Vibration Effects from Aircraft Operations, Alternative 3 4-164

11. Noise Impacts to Specific Populations

- a. Executive Order 13045, Environmental Health Risks and Safety Risks to Children, requires each federal agency to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Environmental health risks and safety risks to children are discussed in the following EIS sections:
 - i. 3.3.1.4 Environmental Health Risks and Safety Risks to Children (Regulatory Setting)..... 3-57
 - ii. 3.3.2.4 Environmental Health Risks and Safety Risks to Children (No Action Alternative)..... 3-64
 - iii. 4.3.2.4 Environmental Health Risks and Safety Risks to Children (Alternatives 1 through 3) 4-178
- b. Environmental Justice
 - i. 3.11.1 Environmental Justice, Regulatory Setting..... 3-220
 - ii. 3.11.2 Environmental Justice, Affected Environment 3-220
 - iii. 4.11.2.3.1 Aircraft Noise (No Action Alternative) 4-400
 - iv. 4.11.3.3.1 Aircraft Noise (Alternatives 1 through 3) 4-433
 - v. Appendix F, Environmental Justice Data, High-tempo FCLP Year F-1

12. Noise Mitigation

- a. General discussion of existing, future, and potential mitigation measures at NAS Whidbey Island
 - i. 3.2.4.2 Existing Noise Mitigation..... 3-34
 - ii. 4.2.6 Noise Mitigation (This section outlines several elements that the Navy either has implemented, is planning to implement, or is considering for future implementation as part of its expansive noise abatement and noise mitigation program.) 4-168
 - iii. Appendix H - Noise Mitigation H-1
 - iv. Appendix H, Section 2.2.1, Air Installations Compatible Use Zone Program H-8
 - v. Appendix H, Section 2.2.3, Encroachment Partnering Efforts (including the Readiness and Environmental Protection Integration [REPI] program) H-11
- b. Alternatives Considered: It should be noted that the Navy considered many alternatives to the Proposed Action; however, most would result in relocating noise and other environmental impacts from one community to another.
 - i. 2.5 Alternatives Considered but Not Carried Forward for Further Analysis..... 2-16
 - ii. 2.5.2 Moving Some or All of the Growler Community Aircraft Elsewhere 2-16
 - iii. 2.5.3 Conducting FCLP Elsewhere 2-21
 - iv. Appendix G, Civilian Airfield Analysis G-1

13. Agency Coordination and Public Participation

- a. The following sections are related to agency coordination and public participation in the EIS:
 - i. 1.8 Agency Participation and Intergovernmental Coordination 1-12
 - ii. 1.9 Public Participation: Scoping 2013 and Scoping 2014..... 1-13

- iii. 1.10 Public Participation: Draft EIS Review 1-20
- iv. 1.11 Public Participation: Comment Themes 1-28
- v. 1.12 Other Reports (reports provided in public comments for the Navy’s consideration in preparation of the Final EIS, including reports on noise, hearing protection, and public health-related concerns) 1-42
- vi. Appendix C, Federal and State Agency Coordination..... C-1
- vii. Appendix M, Draft EIS Public Comment and Response Key.....M-1

14. Other Noise and Health-related Sections Contained in the EIS

- a. NEPA Process
 - i. 1.5 Scope of Environmental Analysis 1-8
 - ii. 1.7 Relevant Laws and Regulations 1-11
 - iii. 1.13 Clarification and Changes to the Environmental Impact Statement 1-60
- b. Health Impact Assessments
 - i. Appendix I, Section 4.1, Comparison of the HIA and NEPA Processes with Respect to this EIS I-11
 - ii. Appendix I, Section 4.2, Review of Industry Practices in the Preparation of HIAs I-13
 - iii. Appendix I, Section 4.4, A discussion of How Public Health Practitioners View Available Literature I-18
- c. Other Community and Health-related Topics
 - i. Appendix H, Section 2.2.3, Encroachment Partnering Efforts (including the Readiness and Environmental Protection Integration [REPI] program) H-11
 - ii. Appendix I, Section 2, Island County Health Factors (general health and well-being of Island County) I-5
 - iii. Appendix I, Section 3, Local School District Test Scores and Graduation Rates (general academic success of Island County) I-8
 - iv. 3.3 Public Health and Safety (Affected Environment) 3-53
 - v. 4.3 Public Health and Safety (Environmental Consequences) 4-173
 - vi. 3.4 Air Quality (Affected Environment) 3-68
 - vii. 4.4 Air Quality (Environmental Consequences) 4-195
 - viii. 3.16 Climate Change and Greenhouse Gases (Affected Environment) 3-252
 - ix. 4.16 Climate Change and Greenhouse Gases (Environmental Consequences) 4-467
 - x. 3.5.2.2 Regional Land Use and Land Use Controls 3-81
 - xi. 3.5.2.4.2 Accident Potential Zones (Affected Environment) 3-95
 - xii. 4.5.2.1.3.2 Accident Potential Zones (Environmental Consequences) 4-259
 - xiii. 3.10.2.1 Population, Affected Environment 3-193
 - xiv. 4.10.2.1 Population Impacts (Alternatives 1 through 3) 4-370
 - xv. 3.10.2.3 Housing, Affected Environment 3-206
 - xvi. 4.10.2.3 Housing Impacts (Alternatives 1 through 3) 4-378
 - xvii. 4.10.2.4 Property Values (Alternatives 1 through 3) 4-380
 - xviii. 3.10.3 Community Services, Affected Environment 3-214

xix. 4.10.3 Community Services Impacts, Alternatives 1 through 34-382
xx. 3.10.3.3 Fire and Emergency Services, Affected Environment3-218
xxi. 4.10.3.3 Fire and Emergency Services (Alternatives 1 through 3)4-384

15. Conclusions Regarding Noise-related Topics

a. 4.2.5.3 Noise Conclusion, Alternatives 1 through 34-168
b. 4.17 Summary of Potential Impacts to Resources (Table 4.17-1)4-482
c. 5. Cumulative Impacts5-1
d. 5.4.2. Noise Associated with Aircraft Operations (Cumulative Impacts)5-16

This page intentionally left blank.