Citizens of the Ebey's Reserve
For a Healthy, Safe and Peaceful Environment
P.O. Box 202
Coupeville, WA 98239-0202

Memorandum:

TO: Island County Community Health Advisory Team and the Board of Island County Commissioners

FROM: Citizens of Ebey's Reserve

DATE: April 22, 2025

SUBJECT: Recommendations for Community Health Improvement Plan (CHIP) Update & County Action

BACKGROUND

The Board of County Commissioners (BOCC) recognizes five Guiding Principes, the first being to "*[p]rovide for the long term health and safety of the people, the economy and our natural resources*."[1] Numerous contemporary studies have affirmed the link between noise and detrimental health outcomes, e.g., this 2022 study reporting that "*noise pollution not only drives hearing loss, tinnitus, and hypersensitivity to sound, but can cause or exacerbate cardiovascular disease; type 2 diabetes; sleep disturbances; stress; mental health and cognition problems, including memory impairment and attention deficits; childhood learning delays; and low birth weight.*[2]"

Island County residents are acutely aware that military jet noise is a significant health and well-being problem. For example, a 2015 survey of Island County residents found that aircraft noise (which is almost all Growler noise) was the highest or within the top 3 daily or health challenges[3]. Similarly, in a 2021 survey by the town of Coupeville examining livability in central Whidbey,[4] one of the questions asked was "What are you most concerned about for Coupeville"? The top concern was the impact of military jet noise. And a 2025 survey

1 https://www.islandcountywa.gov/226/Board-of-Island-County-Commissioners
2 https://magazine.hms.harvard.edu/articles/noise-and-health
3 https://www.islandcountywa.gov/DocumentCenter/View/4106/2015-Island-County-Community-Health-Survey (pages 23–27 and 39).
4 https://townofcoupeville.org/wp-content/uploads/2022/01/Workshop-Presentation-Slides.pdf (see page 4).

conducted by Whidbey Environmental Action Network found that "82.39% said they were very or somewhat concerned about Navy aircraft noise[5]."

Citizens of Ebey's Reserve (COER) was formed in 2012 to advocate for Whidbey Island citizens and the environment detrimentally affected by Growler noise. Subsequently realizing that residents in the areas beyond Whidbey Island were also impacted, COER organized and brought those groups together as a consortium forming Sound Defense Alliance (SDA). Through our years of work with affected residents and communities; local, state, and federal elected officials; the Federal Aviation Administration and Occupational Safety and Health Administration; the Washington Department of Health; and environmental attorneys seeking solutions through the legal system, we have garnered extensive and unique knowledge we believe important to provide here as a resource for Island County's Community Health Improvement Plan (CHIP) with regard to the issue of military jet noise.

Given the current state of scientific enlightenment on noise and human health and the County's charge to protect the wellbeing of its citizens, the time has come for the County to act on the Growler noise problem. In February and March, COER met with Commissioner Janet St. Clair to explore options and feasibilities of actions within the County's authority and responsibility that can be brought to bear on that problem.

The purpose of this report is to provide an analysis of the problem and a synthesis of actions the county can take to mitigate the serious impacts of Growler noise upon the health and wellbeing of its citizens.

Many of the potential actions noted below involve negotiation with the Navy and the exercise of persuasive influence. As such, not all actions are expected to advance or be particularly successful. County action, however, will assure impacted constituents that the County is actually trying to address the harm being done to its citizens.

FINDINGS OF FACT

(Myth versus Reality)

1. Recognition of the noise problem

In years past, Island County government has avoided acknowledging that military jet noise was a problem, in part because the scientific evidence was somewhat lacking. That is no longer the

[5] https://www.whidbeynewstimes.com/news/survey-responses-shape-comprehensive-plan-update/

case. While the noise controversy gave rise to patriotic slogans, like "The Sound of Freedom" and "Jets = Jobs," the contemporary reality is that Jet Noise = Harm.

The worldwide scientific consensus today is that noise from jet aircraft, and in particular military jet aircraft, is indeed harmful to humans. This is no longer debatable. In 2024 the University of Washington Department of Environmental & Occupational Health Sciences completed a noise study specifically looking at the health impacts associated with the EA-18G "Growler" on Whidbey Island. The definitive findings of that study have been peer reviewed and published.[6] This study identified significant noise-related health risks for over 72,000 people in the region of Naval Air Station Whidbey Island (NASWI).

An even more recent 2025 publication revealed that "*[s]trong, consistent exposure-response patterns...were found for most health impacts, perceptions, and concerns. The likelihood of adverse impacts...was greatest in respondents exposed mainly to military aircraft*."[7]

The CHIP must acknowledge and reference the scientific consensus that military jet noise is harmful to the health and wellbeing of county residents.

2. Stop hiding behind the mantra that the county has no authority over the Navy

County government has been avoiding the jet noise issue, both on health and on childhood learning impacts, by rationalizing that the county has no legal authority over the U.S. Navy. Although this is technically true, it belies that the county has moral and persuasive authority, and that it can and should take policy positions on the issue. By refusing to acknowledge the problem, and by not establishing policy positions calling for the amelioration of the problem, the county becomes complicit in the harm being done by the Navy. Furthermore, the county gives the Navy a safe harbor to continue harming the residents of Whidbey Island when it does not use its *politically persuasive authority* to demand action and solutions. Whether or not the county government can compel the Navy to do anything is not the point. The county can and should take a stand on behalf of protecting the health and wellbeing of its residents.

3. "Who was here first" and Navy economic contributions do not justify continuing to turn a deaf ear to the health impacts of Growler noise

Two of the main arguments made in support of supporting Growler training over civilian areas of Whidbey Island, and Island County in general, are that: (i) the Navy base was here first; and

6 See https://www.nature.com/articles/s41370-024-00670-1
7 See https://www.nature.com/articles/s41370-024-00737-z .

(ii) the Navy is the single largest contributor to the county economy. Both of these arguments are subject to dispute.[8] Regardless, for purposes of protecting and promoting public health in Island County these arguments are little more than *red herrings*. Whether validated or disputed, neither argument justifies the county's failure to examine, report and act to mitigate the impacts and harms upon the public health and wellbeing caused by Navy jet noise.

County government has an absolute obligation to its residents to be open and honest about Growler health impacts. Even if every single resident had moved here after the Growlers started training at the OLF; or even if 100% of the county economy came directly from the Navy, the county would nevertheless have a fundamental obligation to its citizens to be honest about the health impacts and costs, to discuss them publicly, and to try to do whatever it could to mitigate them. Ignoring the problem so as "*not to rock the boat*" is a failure of government. Failing to notify the public of the extent of the problem actively contributes to and exacerbates the harm. Island County Public Health must fulfill its obligations to inform and take all possible steps to protect the people.

4. State noise laws apply to Island County

WAC 297-817 requires the county, as an employer, to protect workers by determining noise exposure levels and, if over threshold, requires the posting of noise-warning signage, mandating the use of hearing protection, and complying with a variety of other health related safeguards.[9] Island County workers currently perform outdoor jobs[10] which directly expose them to hours of Growler noise in excess of state law. Although many of these jobs and workers cannot be relocated away from Growler noise, this does not relieve the county of its obligations under state law to protect its employees. Neither is the county relieved of its obligations because the harm is caused by the actions of a federal agency – the Navy. Island County has an absolute duty to comply with Washington State law and to protect its employees.

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[8] For instance, the plat for the Admirals Cove subdivision was recorded with Island County before the Navy ever flew the first jet aircraft at the OLF. Moreover, in July 1963 when the subdivision plat was recorded the Navy was selling off outlying fields around the region and offered to transfer the Coupeville OLF to Island County. Accordingly, a valid argument can be made that Admirals Cove predated Navy jets.

Similarly, the amount of the Navy's economic contribution to Island County has always been factored in terms of total Navy payroll at NASWI. An independent economic analysis was conducted by Michael H. Schumann in February 2017.That study (Shuman, M.H. 2017. The Hidden Costs: the $127 Million Dollar Price Tag for NASWI) clearly showed that a valid economic benefit analysis of the Navy's presence on Whidbey is much more complicated. In reality, there has never been a comprehensive analysis performed to date of the benefits and detriments associated with the Navy presence on Whidbey Island.

[9] https://app.leg.wa.gov/wac/default.aspx?cite=296-817-20020

[10] Cf. Coupeville recycling and transfer center; Island County bus barn.

Analogously, the same protections afforded to county workers by Washington State law, should also be applied by the county, where appropriate, to all of its residents and visitors. The value of Island County's children, residents, and visitors is no less than that of its workers. Taking no protective action is not an option. Many county-owned public areas[11] regularly expose users to Growler noise levels that, with short exposure times (a few overflights), can permanently damage hearing. Failing to warn and protect the public from this danger is another failure of county government.

4. Health and learning impacts upon children

Coupeville's elementary, middle and high schools, as well as a large daycare center, are located in close proximity to Growler training paths exposing children to dangerous Growler noise levels. After-school activities located at Rhododendron Park increase dangerous noise exposures as well. Today it is well-documented that excessive noise exposure while at school, at home, or at play reduces cognitive learning and interferes with concentration.

Recent studies reveal wide-ranging impacts of aircraft noise on human health, which often affects mental acuity and learning in adults and children. Viet et al. (2014) present a strong review of the literature regarding health impacts of noise on children. They assume that vulnerability to hearing loss in children is similar to that of adults but found no studies of support. In addition to hearing loss, they report that "*noise exposure is associated with negative birth outcomes, reduced cognitive function, inability to concentrate, increased psychosocial activation, nervousness, feeling of helplessness, and increased blood pressure in children.*" (Abstract)

Noise studies reveal young children are particularly at risk from noise. Hahad et al. (2025) examined compelling and conclusive findings on the detrimental effects of noise on the brain and mental health, which confirm that exposure to noise, particularly from sources such as traffic, can harm the central nervous system. Those harms are manifest as depression, anxiety, suicide, and behavioral problems in children and adolescents. The investigations point to "*direct adverse phenotypic changes in brain tissue by noise (e.g. neuroinflammation, cerebral oxidative stress), in addition to feedback signaling by remote organ damage, dysregulated immune cells, and impaired circadian rhythms, which may collectively contribute to noise-dependent impairment of mental health.*"

[11] For example, Driftwood, Rhododendron, and Patmore parks.

Noise studies in aggregate reveal young children are particularly at risk from noise. Hahad et al. (2025) examined compelling and conclusive findings on the detrimental effects of noise on the brain and mental health, which confirm that exposure to noise, particularly from sources such as traffic, can harm the central nervous system. Those harms are manifest as depression, anxiety, suicide, and behavioral problems in children and adolescents. The investigations point to "*direct adverse phenotypic changes in brain tissue by noise (e.g. neuroinflammation, cerebral oxidative stress), in addition to feedback signaling by remote organ damage, dysregulated immune cells, and impaired circadian rhythms, which may collectively contribute to noise-dependent impairment of mental health.*" Addressing the impacts of noise on fetal development, they report a number of health harms from noise.

> Chronic maternal exposure to airport noise during pregnancy has been shown to result in vasoconstriction which subsequently leads to decreased utero-placental blood flow, and possibly increased fetal hypoxia [24]. The stress of chronic elevated noise can lead to increased maternal blood pressure, greater secretion of maternal epinephrine and norepinephrine, and decreased human placental lactogen [24,25]. Exposure of pregnant women to airplane noise has been associated with a decrease in body weight of newborn babies; and the height of 3-year-old children was shown to be significantly decreased with higher noise levels [25]. Human fetal exposure to noise has been linked with decreased birth weight and length, and increased incidence of birth defects, specifically cleft lip, cleft palate, anencephaly and spinal bifida [24,26,27]. (p. 4; numbers are references)

They further report that noisy environs have been linked to non-auditory health effects in children that include, "*reduced cognitive function, inability to concentrate, increased psychosocial activation, nervousness, and helplessness [23,26,35]...an increase in stress [36]*[,]... *a small but positive relationship between aircraft noise exposure and blood pressure...[, and] a stronger positive relationship with systolic blood pressure* [for highway noise]....(p. 4; numbers are references).

Specific to the NASWI Growler noise in the greater Whidbey Island area, a 2024 University of Washington study (Jacuzzi, G. et al. 2024) reported on health and educational impacts. It determined that Growler noise:

- Poses a substantial health risk and impact on 74,316 Washingtonian adults and youths being routinely *"exposed to noise levels associated with adverse health effects*."
- Exposes nearly 12,500 residents to average noise levels incompatible with residential land use per regulations set by the Navy, FAA, and HUD,

- Is so loud in one community near Outlying Field Coupeville that just seconds of exposure can cause "*direct, acute mechanical damage to the inner ear*."
- Jeopardizes the health of nearly 85% of residents of the Swinomish Indian Tribal Community, Swinomish Reservation.
- Exposes numerous schools to noise levels known to interfere with student and teacher conversation and comprehension (not to exclude homework time).
- Can activate stress hormones, which after prolonged exposure, heightens health risks, like cardiovascular and mental health issues.

A study of over 1.4 million children born between 1986 and 2008 showed increased risk of hearing dysfunction for those whose mothers were exposed to noise levels of 85 dB during their pregnancy (Selander 2016). The military does not allow pregnant women to work in such locations yet has taken no action to protect citizens as collateral jet noise damage. Extreme noise has been found to decrease birth weight (Selander et al. 2019) and create pregnancy complications that can increase the risk of preeclampsia, i.e., serious health problems for the mother and infant (Wang et al. 2022). Additional studies revealing impacts of noise on children's health and wellbeing and, hence ability to learn, are presented in Appendix A.

5. Air quality and electromagnetic exposure levels

There are additional dangers to the health and wellbeing of Whidbey Island residents from low-level Navy jet training. In addition to the risks associated with a Growler crash, Whidbey Island residents are also exposed to jet aircraft exhaust and Growler electromagnetic radiation. Neither of these sources of potential toxic contamination have been tested or studied at the OLF or at Ault Field. Nevertheless, air pollution and radiation exposure are both generally acknowledged in the scientific and health communities to be harmful to human health. Pending scientific study and analysis specific to Growler emissions, Island County should at least alert the public to the potential danger.

WHAT SHOULD ISLAND COUNTY DO TO ADDRESS THESE CONCERNS?

Initiate Problem-Solving Negotiations with the Community and Navy

The County should ramp up proactive discussions on the noise problem with the Navy and impacted stakeholders. The Navy needs to be confronted with the harms it is inflicting.The County's charge demands they confront the Navy forcefully and realistically about those

harms, and that reduced FCLP training at Ault Field and the OLF is the only realistic solution. It is not sufficient for the Navy to listen to the problem and do nothing about it. Rather, the Navy needs to be the "good neighbor" who cares enough to find and use alternative FCLP training venues that would bring noise levels down to habitable levels on Whidbey (and allow other parts of the country to share the patriotism of living with FCLPs).

Specific actions the county should take

1. Given the county's duty to protect its citizens and visitors, the CHIP needs to acknowledge the relationship of jet noise to harms to health and wellbeing and thereby establish a basis and justification from which to advance strategies that can reduce the detrimental impacts.

2. The County should lean on the Navy to diminish FCLP operations at the OLF by redistributing them to other airfields. The goal should be to bring noise levels down at the OLF to levels that comply with the military's own thresholds for acceptable residential use.[12]

3. Due to the proximity of OLF track #32 to Coupeville schools, the county should urge the Navy not to fly FCLPs on runway #32 when schools are in session.

4. Install sound insulation at Coupeville and Oak Harbor schools significantly affected by Growler noise or not fly when school is in session.

5. Encourage the Navy not to flying during hours that youths are engaged in activities outside the school buildings.

6. Work with the Navy to limit night operations to 2 hours after sunset to provide quiet needed for students with homework and, to ensure proper sleep, eliminate flying after 11:00 pm.

7. Pressure the Navy not to fly at the OLF during scheduled youth events at Rhododendron Park.

8. Come into compliance with all Washington State laws regarding the protection of employees, and in particular with exposure to noise laws and regulations.

[12] Section 7 in, https://media.defense.gov/2022/Apr/18/2002978898/-1/-1/1/NASWI%20AICUZ_FINAL_29JAN2021.PDF

9. Mirror for residents and visitors the protections Washington State law affords Washington workers. At a minimum, post factual warning signs at all public places where noise levels can exceed 100 decibels, including schools, Keystone Hill Road, Rhododendron Park, etc., to protect uninformed adults and children.

10. Urge the Navy to provide real time FCLP flight information to help folks avoid at least some exposures and unnecessary disruption (see **Appendix B**). At NAS Patuxent the Navy realizes the problems FCLPs create and has taken steps like those suggested here: "FCLPs are [are] limited to 45 minutes and we typically schedule only two periods per day....Also, whenever we conduct FCLPs, we try and get the word out to the surrounding communities to keep them aware of our operations, especially those that are not routine to NAS Patuxent River." [https://www.navair.navy.mil/node/6056]

11. Strongly request the Navy limit its night operations to 2 hours after sunset to protect against sleep disturbance.

12. Develop air quality data and strongly urge the Navy to cease low-level flight operations during air quality alerts, e.g., during summer fire smoke alerts.

13. Lobby Washington's congressional delegation to compel the Navy to do a bona fide air quality analysis of the areas subjected to Growler training. Similarly, lobby the delegation to require the Navy to hire an independent contractor to perform a bona fide study of the electromagnetic radiation levels at homes around the stationary emitter at the OLF.

14. Install Navy "purple" air monitors at the OLF and at Ault Field to continuously monitor air quality in populated neighborhoods.

15. Importantly, the County could host regular meetings between the Navy, County health officials, Whidbey Environmental Action Network, SDA, and COER to share information, monitor progress, and consider helpful suggestions aimed at achieving effective mitigation.

Persuasive Negotiations with the Navy

While the County cannot legally make the Navy do anything it does not want to do, it can remind the Navy that the County's consistent support rests largely with the Navy showing itself to be the good, truthful, and well-meaning neighbor it proposes itself to be.

If the County advances that forthrightly, forcefully, and in compliance with its charge to protect its citizens from harm, then all the specific recommendations for interactive negotiations with the Navy addressed above become credible and worth the County's vigorous pursuit.

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– Appendix A –

Banks, J.L., O'Rourke, B.P. 2025. Community impacts of aviation noise: a pilot survey. Journal of Exposure Science and Environmental Epidemiology 35, 80–90.

https://doi.org/10.1038/s41370-024-00737-z

In a survey of 1452 individuals, Banks and O'Rourke (2025) found, "*Respondents report experiencing loud, repetitive, low-altitude aircraft noise - day and night - causing stress and negative effects on mental and physical health. For many, "annoyance" did not adequately describe their experience. Strong, consistent exposure-response patterns for weekly flight frequency (<100 to, >1000 flights) were found for most health impacts, perceptions, and concerns. The likelihood of adverse impacts and heightened perceptions and concerns was greatest in respondents exposed mainly to military aircraft.*"

The authors concluded that, "*Aviation-impacted communities are experiencing mental and physical health impacts that extend beyond annoyance...Aviation noise policy should be updated to account for those factors and focus on reducing public health impacts and their human and economic costs.*"

Park, Je., Muennig, P.A. and Zafari, Z. 2025. Projecting the economic burden of health impacts of aircraft noise: a case study of Baltimore Washington International Thurgood Marshall Airport. Journal of Exposure Science and Environmental Epidemiology 35, 107–117 (2025).

https://www.nature.com/articles/s41370-024-00685-8

Park et al. (2025) examined the health and related economic burden related to aircraft noise over periods of 10, 20 and 30 years. Health impacts included cardiovascular disease, anxiety disorders, noise annoyance, and low birth weight associated with day-night noise levels <55 dB DNL, 55–60 dB DNL, 60–65 dB DNL, >65 dB DNL). A Monte Carlo simulation and sensitivity analyses estimated that aircraft noise exposure would produce incremental mortality costs of $362 million, morbidity costs of $336 million, and losses of 15,326 Quality-Adjusted Life Years over the next 30 years. [emphasis supplied]

Constantin Cristian Topriceanu, et al. 2025. Higher Aircraft Noise Exposure Is Linked to Worse Heart Structure and Function by Cardiovascular MRI. Journal of the American College of Cardiology. Archive, 85 (5).

HTTPS://WWW.JACC.ORG/DOI/10.1016/J.JACC.2024.09.1217

In this recent study Constantin et al. (2025) examined aircraft noise effects on the heart at four United Kingdom airports. They found frequent exposure to aircraft noise caused the muscle to grow stiffer and thicker, reducing its ability to pump blood effectively, quadrupling the risk of heart attacks or strokes. The authors concluded that "*Overall, a hypothetical individual experiencing the typical CMR* [cardiovascular magnetic resonance] *abnormalities associated with a higher Lnight exposure may have a 4 times higher risk of MACE* [major adverse cardiac events; i.e., heart attack or stroke]....*Higher aircraft noise exposure associates with adverse LV* [left ventricle] *remodeling, potentially due to noise increasing the risk of obesity and hypertension. Findings are consistent with the existing literature on aircraft noise and cardiovascular disease, and need to be considered by policymakers and the aviation industry*."

Osborne, MT, et al. 2020. A neurobiological mechanism linking transportation noise to cardiovascular disease in humans. European Heart Journal. 41 (6). pp 772–782.

https://academic.oup.com/eurheartj/article/41/6/772/5643958

Osborn (2020) examined the neurobiological mechanisms linking transportation noise with major adverse cardiac events (MACE). The authors found "*that noise exposure associates with MACE via a mechanism that begins with increased stress-associated limbic (amygdalar) activity and includes heightened arterial inflammatio*n." The amygdala influences in the brain's response to environmental stressors, like noise. Amygdala activity correlates with perceived stress and is increased in stress-related disorders.

Fink, D. 2025. What is the safe noise exposure level to prevent noise-induced hearing loss?. Journal of Exposure Science and Environmental Epidemiology 35, 124–128.

https://doi.org/10.1038/s41370-024-00660-3

Fink (2025) concludes that "*the safe noise exposure level to prevent NIHL is about 55–60 dB time-weighted average for a day. Since any temporary auditory discomfort, tinnitus, or NITTS likely indicates that permanent auditory damage has occurred, it is possible that the safe noise exposure level for impulse noise is also only 55 dBA. These sound pressure levels are radically*

lower than current occupational noise exposure recommendations, the EPA's calculated safe noise level, or any published guidance for public noise exposure."

Stansfeld, S., and C. Clark 2015. Health Effects of noise exposure in children. Current Environmental Health Report. 2 (2). pp 171-178.

https://pubmed.ncbi.nlm.nih.gov/26231366/

Stansfeld et al. (2015) reviews impacts of environmental noise on children and concludes that "*Environmental noise exposure, such as road traffic noise and aircraft noise, is associated with a range of health outcomes in children. Children demonstrate annoyance responses to noise, and noise is also related to lower well-being and stress responses, such as increased levels of adrenaline and noradrenaline….There is robust evidence for an effect of school noise exposure on children's cognitive skills such as reading and memory, as well as on standardised academic test scores*." [emphasis supplied]

Bigham, P.M. 2025. Neurodevelopmental costs of noise pollution–is history rhyming again?. Journal of Exposure Science and Environmental Epidemiology. 35, 34–36.

https://doi.org/10.1038/s41370-024-00725-3

Bingham (2025) analyses decades of research that "*attest to the deleterious neurodevelopmental effects of excessive noise exposure in children...*[whose] *auditory perceptual skills appear to be more vulnerable to background noise compared to adults*." [emphasis supplied]

Bingham goes on to note that "*Policy-makers, scientists, and the public will first need to recognize and address the neurotoxic effects of noise on infants and children more directly*," and that numerous studies "*have documented alterations in the `normal activity' of children's nervous system due to noise, including hearing loss, impaired attention span and reading.*

Bingham further notes, *"`Natural experiment' community studies and `dose-response' associations provide strong causal evidence of noise effects on children's behavior and cognition.*"

Münzel, T., Daiber, A., Engelmann, N. et al. 2025. Noise causes cardiovascular disease: it's time to act. Journal of Exposure Science and Environmental Epidemiology. 35, 24–33.

https://www.nature.com/articles/s41370-024-00732-4

Munzel et al. (2025) reviewed past and current (post 2018) studies and meta-analyses on the adverse effects of transportation noise on health. They reported that exposure to high levels of road traffic noise over just several years lead to numerous adverse health issues, including premature deaths, ischemic heart disease (IHD), chronic sleep disturbances, and increased annoyance. The mechanistic cause was attributed to noise triggering "*oxidative stress, inflammation, endothelial dysfunction, and circadian rhythm disruptions...*[which] *involve the activation of NADPH oxidase, mitochondrial dysfunction, and nitric oxide synthase uncoupling, leading to vascular and cardiac damage.*" They further found that "*chronic noise exposure does not result in habituation, and susceptible individuals, such as those with pre-existing CVD, are particularly vulnerable*."

Hahad, O., Kuntic, M., Al-Kindi, S. et al. 2025. Noise and mental health: evidence, mechanisms, and consequences. Journal of Exposure Science and Environmental Epidemiology. 35, 16–23.

https://doi.org/10.1038/s41370-024-00642-5

Hahad et al. (2025) examined compelling and conclusive findings on the detrimental effects of noise on the brain and mental health, which confirm that exposure to noise, particularly from sources such as traffic, can harm the central nervous system. Those harms are manifest as depression, anxiety, suicide, and behavioral problems in children and adolescents. The investigations point to "*direct adverse phenotypic changes in brain tissue by noise (e.g. neuroinflammation, cerebral oxidative stress), in addition to feedback signaling by remote*

organ damage, dysregulated immune cells, and impaired circadian rhythms, which may collectively contribute to noise-dependent impairment of mental health."

Zafari, Z. et al. 2025. Different considerations in economic impacts of aircraft. Journal of Exposure Science and Environmental Epidemiology. 35, 104-106.

https://doi.org/10.1038/s41370-024-00688-5

> The economic impacts of aircraft noise include direct costs, indirect costs, intangible costs, and non-health-related economic impacts. Were we able to precisely estimate these costs and apply them to a given airport, we would be able to provide policymakers with the magnitude of investment required to mitigate the health problems in an economically tenable way. In some extreme cases, it may be cost-beneficial to move the airport out of a city. In others, mitigation efforts such as sound insulation may be more tenable. Other solutions such as altering flight procedures and operations (e.g., changing flight paths) and technological advancements and retrofitting older planes can also help with noise mitigation.

Selander, J. et al. 2016. Maternal Occupational Exposure to Noise during Pregnancy and Hearing Dysfunction in Children: A Nationwide Prospective Cohort Study in Sweden. Environmental Health Perspectives. 124 (6), 855-860.

> **Conclusions** This nationwide population-based study supports the hypothesis that occupational noise exposure during pregnancy is associated with future hearing dysfunction in children. Taken together with previous epidemiological and experimental studies as well as mecha-nistic data, the available data indicate that pregnant women should not be exposed to high levels of noise at work.

Viet, S.M., et al. 2014. Assessment of Noise Exposure to Children: Considerations for the National Children's Study. Journal of Pregnancy and Child Health. 1 (1), 1-14.

https://pmc.ncbi.nlm.nih.gov/articles/PMC4390126/#S9

Viet, S.M., et al. (2014) present a strong review of the literature regarding health impacts of noise on children. They assume that vulnerability to hearing loss in children is similar to that of adults, but found no studies of support. In addition to hearing loss, they report that "*noise exposure is associated with negative birth outcomes, reduced cognitive function, inability to*

concentrate, increased psychosocial activation, nervousness, feeling of helplessness, and increased blood pressure in children." (Abstract)

Addressing the impacts of noise on fetal development, they report a number of health harms from noise.

> Chronic maternal exposure to airport noise during pregnancy has been shown to result in vasoconstriction which subsequently leads to decreased utero-placental blood flow, and possibly increased fetal hypoxia [24]. The stress of chronic elevated noise can lead to increased maternal blood pressure, greater secretion of maternal epinephrine and norepinephrine, and decreased human placental lactogen [24,25]. Exposure of pregnant women to airplane noise has been associated with a decrease in body weight of newborn babies; and the height of 3-year-old children was shown to be significantly decreased with higher noise levels [25]. Human fetal exposure to noise has been linked with decreased birth weight and length, and increased incidence of birth defects, specifically cleft lip, cleft palate, anencephaly and spinal bifida [24,26,27]. (p. 4; numbers are references)

They further report that noisy environs have been linked to non-auditory health effects in children that include, "*reduced cognitive function, inability to concentrate, increased psychosocial activation, nervousness, and helplessness [23,26,35]...an increase in stress [36]*[,]... *a small but positive relationship between aircraft noise exposure and blood pressure...[, and] a stronger positive relationship with systolic blood pressure* [for highway noise]....(p. 4; numbers are references).

– Appendix B –

Soundoff Published in Whidbey News Times, August 2023

As many know, Citizens of Ebey's Reserve (COER) and Washington's Attorney General sued the Navy over its failure to meet the requirements of the National Environmental Policy Act. The judge found against the Navy on four counts and ordered the plaintiffs and the Navy to negotiate interim remedies to be in effect until a revised EIS is put in place. The Navy has rejected all remedies suggested by COER.

The extremely loud carrier land practice sessions ignite trauma in veterans with PTSD, compromise at-home businesses, interfere with youngsters doing homework and diminish their cognitive function, aggravate dissociative reactions in autistic children, and diminish and intimidate at-home livability to such an extent that many have been forced to relocate, creating dysfunctional turnover neighborhoods.

One remedy COER suggested was to provide real-time information on carrier landing practice—that is, for a given day, Navy would inform, once determined, on the runway flight path to be used and how many practice sessions would occur at what time of day and with how many jets (1 to 5). If initiated, that would enable residents to consider ways to avoid at least some of the noise-debilitating practice sessions. COER's request was similarly reiterated in a letter from Sound Defense Alliance to base commander Captain Hanks.

The Navy rejected those requests, as explained in a March 10, 2023, response from Captain Hanks: "*Detailed flight information...could reveal national security vulnerabilities,* [which] *...would likely disrupt, destroy or damage operations, property, or facilities, and pose an unacceptable risk to men and women in uniform*….[O]*ur adversaries can use detailed flight information, when aggregated, to assess Growler readiness and...inflict significant harm*."

More bark than bite, his explanation appears strained and without substance. That is, anyone on the ground by simple observation can easily tally and aggregate actual landing practice data and provide that to whoever. If our men and women in uniform can actually be put in jeopardy by aggregating observable practice flights, then to protect them those practices needed to be moved to a non-public venue. That argument is a red herring.

But really, what possible benefit can an adversary gain by knowing a few hours ahead of time which of two flight patterns will be used when in just a few more hours all that and more become self-evident through simple observation?

Captain Hanks further contended that real-time information cannot be revealed because the flight operations have many variables that make practices “fluctuate” from the weekly schedule. However, the inaccuracy of the schedule is exactly the problem that real-time information would fix. So here too, that argument is cockeyed.

The schedule inaccuracies compromise “work-around” planning for residents. This past January to June, 93 out of 130 weekdays (72%) were scheduled for practice at the OLF, but about 20% of the flying was canceled. When residents, who arranged their day to avoid the jets, often at great inconvenience, subsequently discover that flying was canceled, it naturally foments anger, frustration, and resentment. Real-time information would mitigate that. Even changes posted just a few hours ahead of flying would enable residents to attempt to adjust their activities accordingly, if they can.

This small and doable ask of the Navy would benefit many trying to live and cope with the jets. The Navy’s nonsensical rejection of the request raises serious questions as to their motive(s) and taints their self-promotion as a “good neighbor.” The Navy should reconsider.