FORMAL COMMENT by Jeffrey Bogen, Des Moines Resident, 5/28/2026

Seattle-Area Metroplex (SAMP) Environmental Impact Statement

Health Effects of Aviation Noise: Deficiencies and Corrections

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Overview

The SAMP EIS contains two sections on Health Effects of Noise as well as a consult report from ME Eagan Consulting. The summary conclusion resulted in a No Significant Impact (NSI) based on SAMP projects exceeding the 1.5 dB threshold within the current FAA DNL 65 contours. While accurate in terms of FAA and EPA current regulations, **important recent health-effects studies are absent from this report**. Furthermore, **the required SAMP EIS findings on cumulative noise effects have not been correctly assessed**.

What is missing are the additive, cumulative health impacts of all health stressors combined. This should include not just current and proposed area project construction, but also traffic, aircraft noise, and socioeconomic factors. When these exposures are considered in an additive and interactive fashion, the result is a higher cumulative health burden. SAMP's overall cumulative effects **do constitute a significant health impact** when incorporating more recent, peer-reviewed research on the potential health effects of aviation noise exposure.

SAMP Health Impact Findings: Deficiencies

The SAMP EIS, and specifically the associated consultant's report, states that **"no studies indicate a causal cardiovascular problem"** and that **"results generally do not support a relationship between aviation noise and CVD."**

The science has advanced on several fronts simultaneously — epidemiological, mechanistic, and clinical. That advancement is precisely what should have been highlighted in the *Health Effects Sections* of the SAMP EIS and more thoroughly reviewed in the associated consultant's report. Large, peer-reviewed studies that directly contradict SAMP's cardiovascular non-findings include the following.

Key Omitted Studies

WHO Systematic Review Update (2022)

Environmental Noise and Effects on Sleep: *An Update to the WHO Systematic Review and Meta-Analysis. Environ Health Perspect, 2022 Jul;130(7).* This systematic review and meta-analysis, updating the WHO evidence base through the most recent studies, concluded that transportation noise is negatively associated with self-reported sleep, with sleep-disturbance findings comparable to the original WHO review at low nighttime noise levels. This large, peer-reviewed study is not mentioned in the consultant's report.

Cardiac MRI Study — Aircraft Noise and Heart Structure (JACC, 2025)

Higher Aircraft Noise Exposure Is Linked to Worse Heart Structure and Function by Cardiovascular MRI. Journal of the American College of Cardiology, Volume 85, Number 5, 2025. This study found that higher aircraft noise exposure, especially at night, is associated with adverse cardiac remodeling in the form of concentric left ventricular hypertrophy and reduced left ventricular systolic function, independent of clinical and environmental confounders.

HYENA Project (Hypertension and Exposure to Noise near Airports, 2008)

One of the largest multi-country European epidemiological studies, the HYENA Project found associations between aircraft noise exposure and both heart disease and stroke in populations residing near airports. While older, this foundational international study and others with similar conclusions are notably absent from the SAMP EIS discussion of international evidence.

SAMP Health Effects: Misleading Information

The FICAN studies and associated noise-exposure curves widely cited in the SAMP EIS have been subjected to substantial methodological criticism since publication. Notably absent from the SAMP EIS is a 2013 peer-reviewed paper in the *Journal of the Acoustical Society of America* (J. Acoust. Soc. Am. 2013, Nov;134(5):3645–53) that concluded the FICAN approach was fundamentally flawed due to its reliance on interpolated data rather than actual noise-event data at high values of SEL.

For example, the SAMP EIS §§3.2 (Noise Disturbance) specifically highlights the following FICAN finding:

> *"…at an indoor SEL of 100 dB, the probability of awakenings would be expected to exceed 15 percent for a new noise source; yet for long-term noise sources, the probability of awakening is expected to be less than 10 percent."*

This result was **never actually measured in the study — it was extrapolated**. That the SAMP EIS would include and highlight a now-scientifically-questioned finding is misleading at best. An indoor SEL of 100 dB corresponds to approximately 83 dBA — comparable to a loud truck or motorcycle passing close by indoors. The claim that a noise event at that level would awaken fewer than 15% of sleeping people strains credibility.

The inclusion of this study in the SAMP EIS is a historical footnote at best. It demonstrates how poor-quality, extrapolated data can impede the critical updating of FAA regulations, and it **should not be used in the current EIS or propagated to the public**.

For instance, simply using the FAA's 65 DNL noise threshold for sound insulation abatement is not sufficient to reduce aircraft SEL noise to low health effect levels based on scientific, peer reviewed national and international studies and reviews. Furthermore, noise impacted communities outside of the 65 DNL contour boundary, particularly in near proximity of this boundary, have SEL noise values that routinely exceed 90 dBA - far above these provided studies' recommendations The SAMP should comprehensively include this analysis and respectively, where needed, recommend the required additional noise mitigation to keep these affected SEA community members safe from increased cardiovascular risks.

Conclusion

This comment presents sufficient evidence showing that sleep disturbance is an important causal intermediate between aviation noise exposure and increased cardiovascular risk. When combined with anticipated increases in traffic, air pollution, and the well-documented socioeconomic challenges of near-airport communities, the overall cumulative health effects are even more compelling.

Therefore, the SAMP EIS cumulative health effects analysis **imposes a significant health effect that must be accurately characterized and highlighted with appropriate mitigations provided in the final SAMP EIS**. The current treatment of health effects is factually incomplete, relies on outdated and methodologically criticized studies, and omits substantial peer-reviewed international evidence that directly contradicts its conclusions.