

Silent Aircraft Initiative

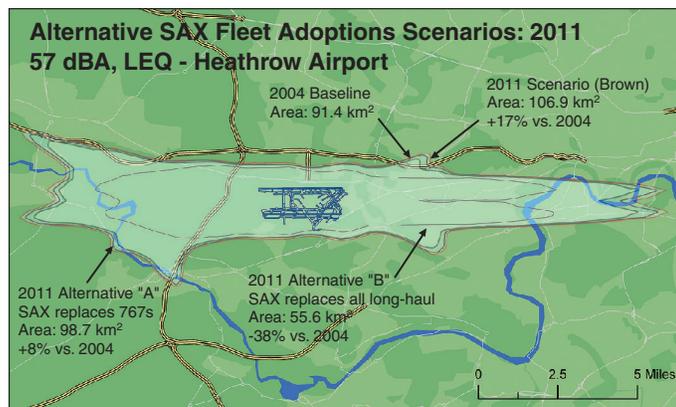
...a new approach

Aviation Growth, Airport Noise, and Regional Economic Development: An Integrated Analysis

Research Team:* Professor Ian Waitz, Professor Karen R. Polenske, Dr. Peter Belobaba, Ryan Tam, Gregory Zerbib

As part of a larger effort to design a functionally silent aircraft, an interdisciplinary team of researchers is assessing airport noise within the context of aviation growth and regional economic development. The team is examining the relative sensitivity of silent aircraft operating characteristics and noise footprints within a range of aviation system and environmental policy scenarios focused around case studies of London's Heathrow Airport and Nottingham East Midlands Airport.

The team is modeling the **airport noise impacts** around London Heathrow using flight operations data and the FAA's Integrated Noise Model (INM). Noise contours are generated for different scenarios of aviation growth and silent aircraft fleet adoption. These contours are applied to a hedonic price model to identify the economic benefits associated with reduced noise blight on housing values.



One scenario of aviation growth would lead to a 17% increase in the area affected by airport noise, but alternatives with silent aircraft could dramatically reduce these impacts.

Source: SAI calculations based on FAA and UK CAA data.

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Silent Aircraft Design Concept

The researchers are also conducting a **regional economics study** to identify the wider benefits from a silent aircraft. The team is using the sophisticated REMI-ECOTEC Policy Insight model to simulate the catalytic economic linkages between aviation and industrial productivity, and to identify the subsequent impacts on the regional economy. Using this model, the benefits from reduced airport noise impacts will be compared against the regional benefits of aviation growth.

To complete the analysis, the team has also developed an **airline business model** to evaluate whether or not the operating economics of the silent aircraft would be attractive to an airline. The model compares the relative profit per aircraft per year between the silent aircraft and similar-sized aircraft such as the 767, A330, and 787-8 under various commercial and environmental and regulatory scenarios at London's Heathrow Airport.

This research will be completed in late Summer 2006.

