

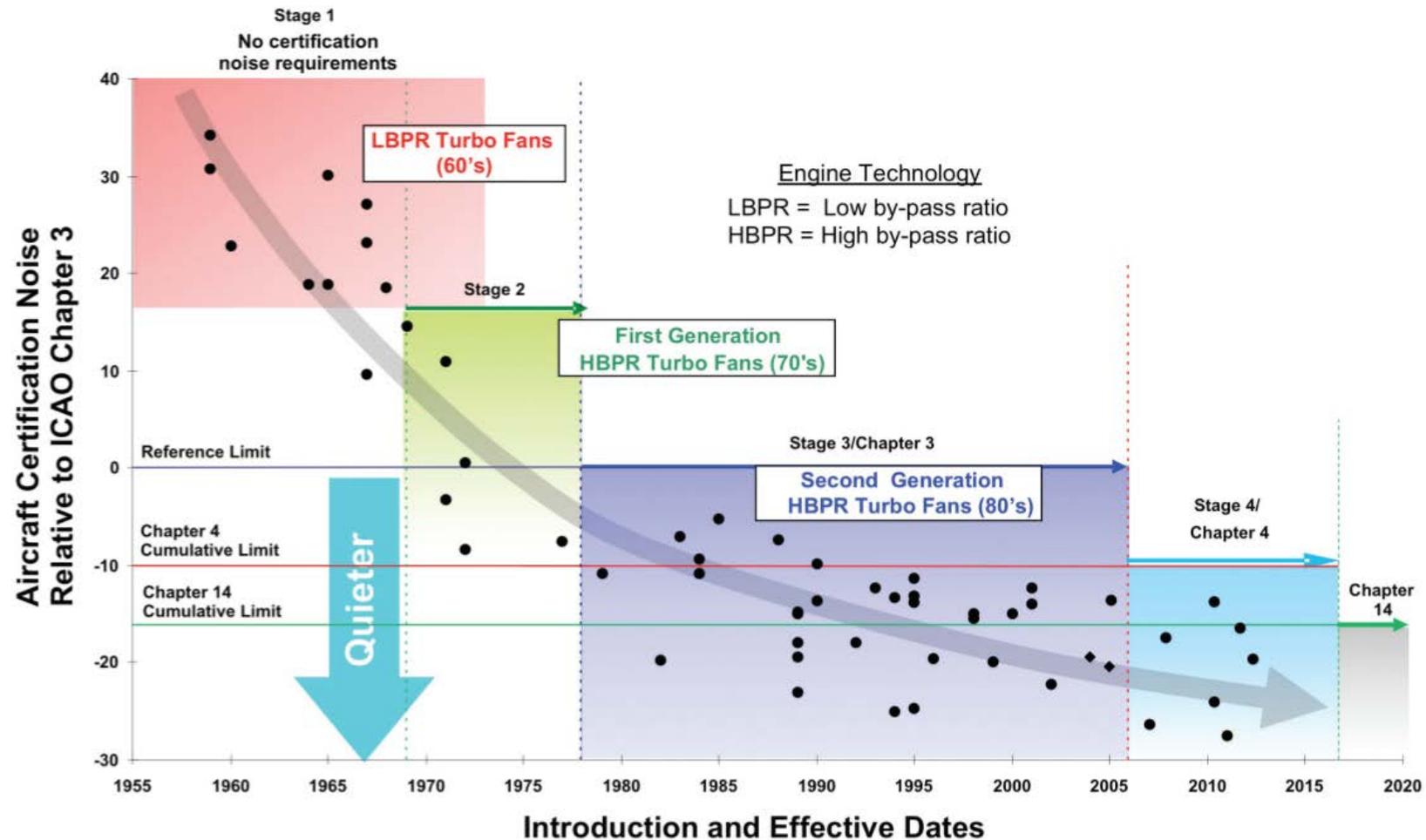
Airport Noise: overview of the challenge

Presentation to ICAO Green Airports Conference

Mary Ellen Eagan

May 9, 2019

Progress in Commercial Aircraft Noise Reduction



Source: Boeing

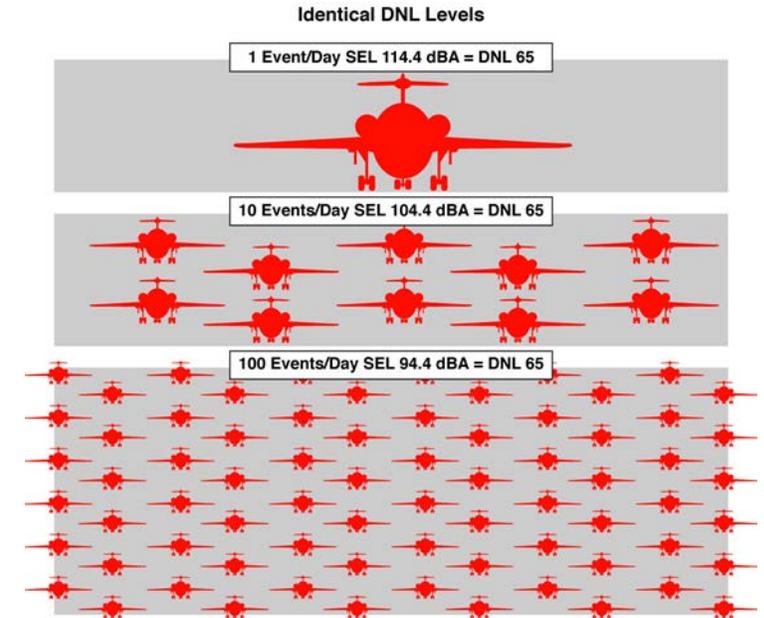
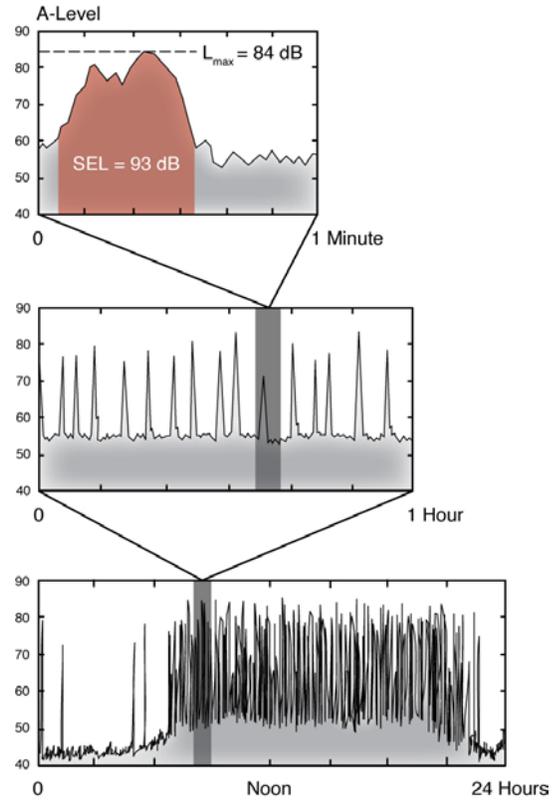
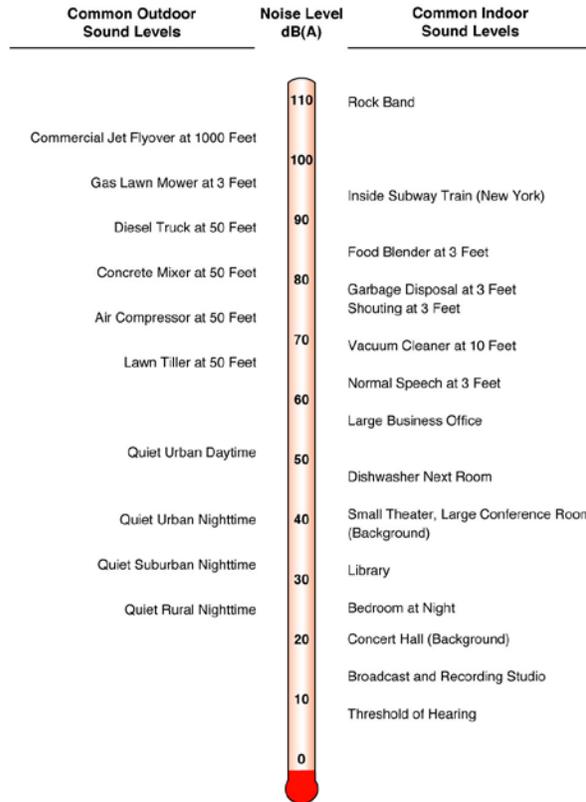


Topics

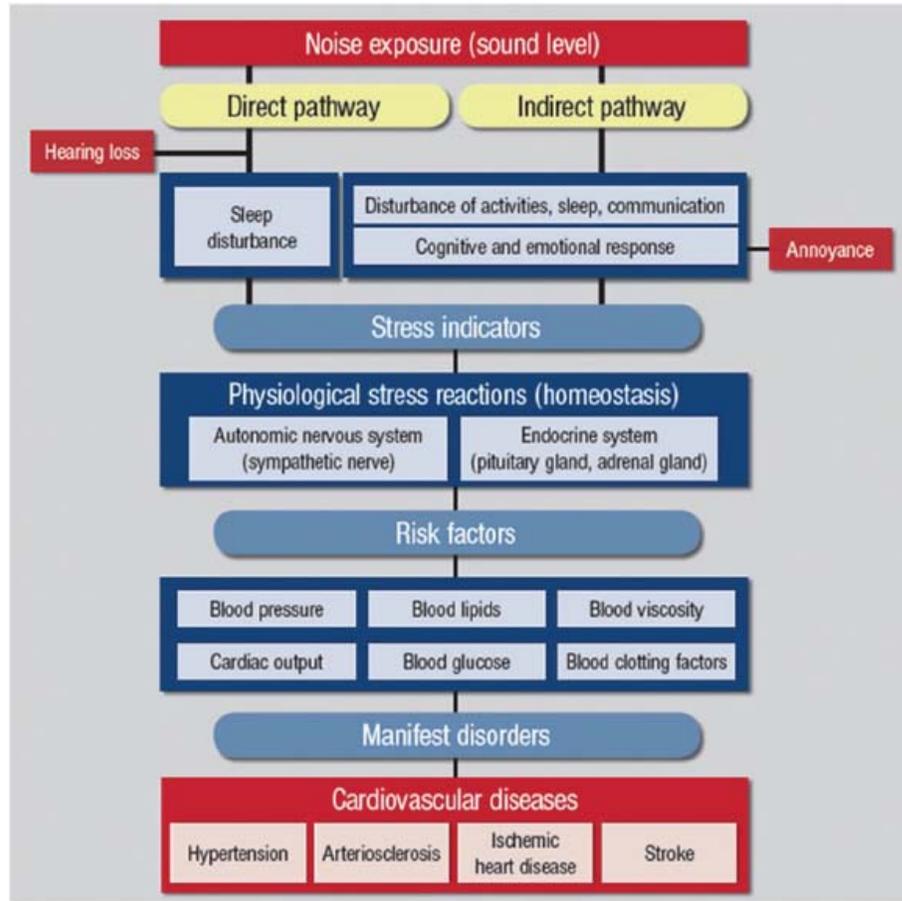
- Noise metrics
- Health effects
- ICAO's Balanced Approach
- Challenges faced by Airports



Noise Terminology



Potential Health Effects of Noise



Source: Cardiovascular Effects of Noise on Man – Wolfgang Babisch, 2015 ASA Meeting

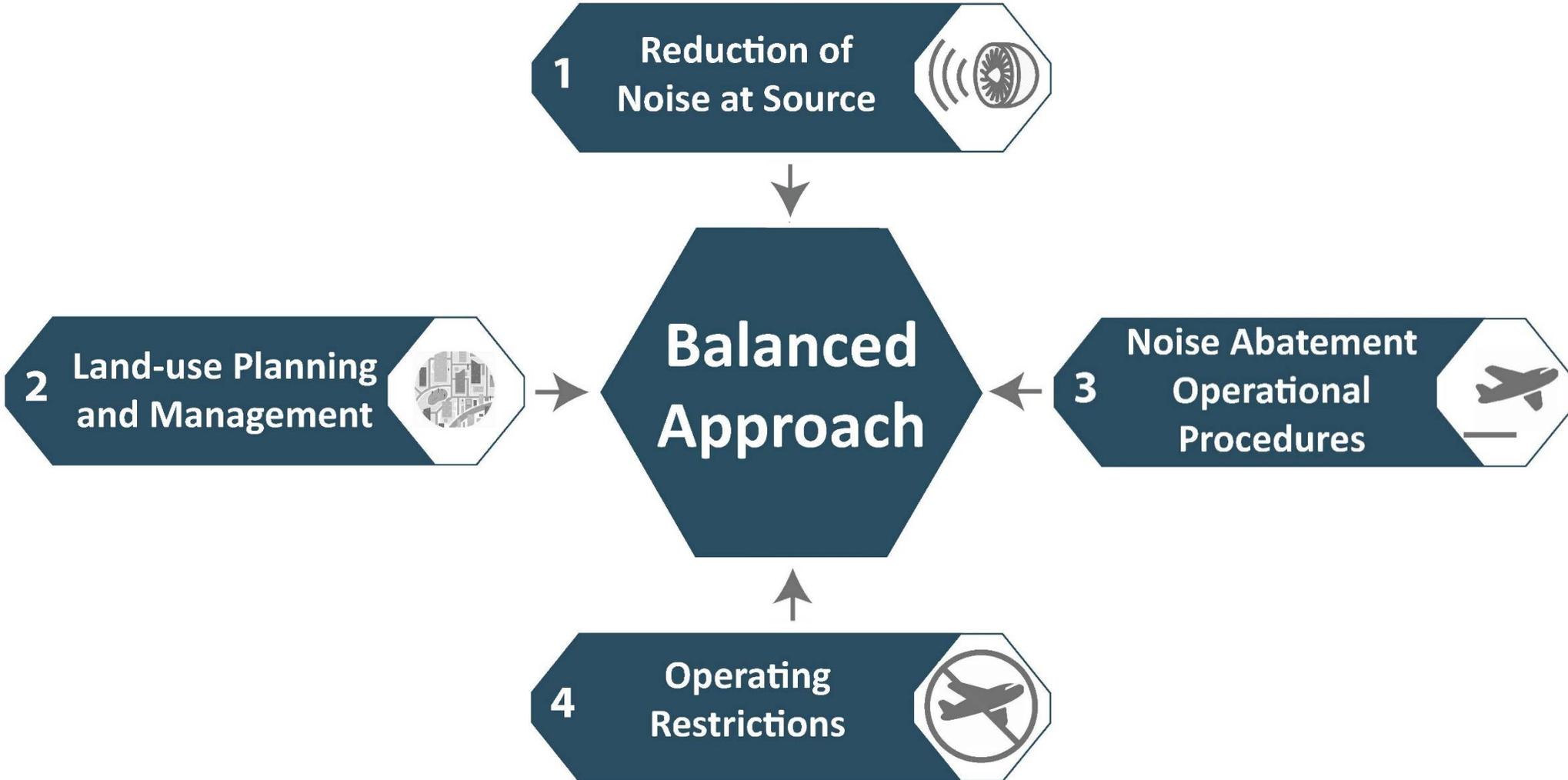
Auditory:

- Hearing loss

Non-auditory:

- Annoyance
- Speech disruption
- Sleep disturbance
- Learning/cognitive impacts

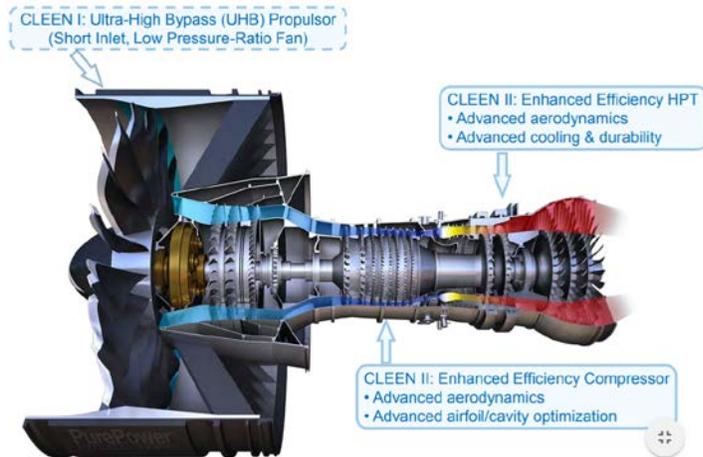
ICAO's Balanced Approach to Noise



Reduction of noise at the source

- Engine Technology:

- Ultra-high Bypass
- Enhanced efficiency compressor
- Enhanced efficiency high pressure turbine



Source: Pratt & Whitney, 2019

- Engine Technology:

- Ultra-high Bypass
- Enhanced efficiency compressor
- Enhanced efficiency HPT



Source: Honeywell, 2019

- Airframe technology

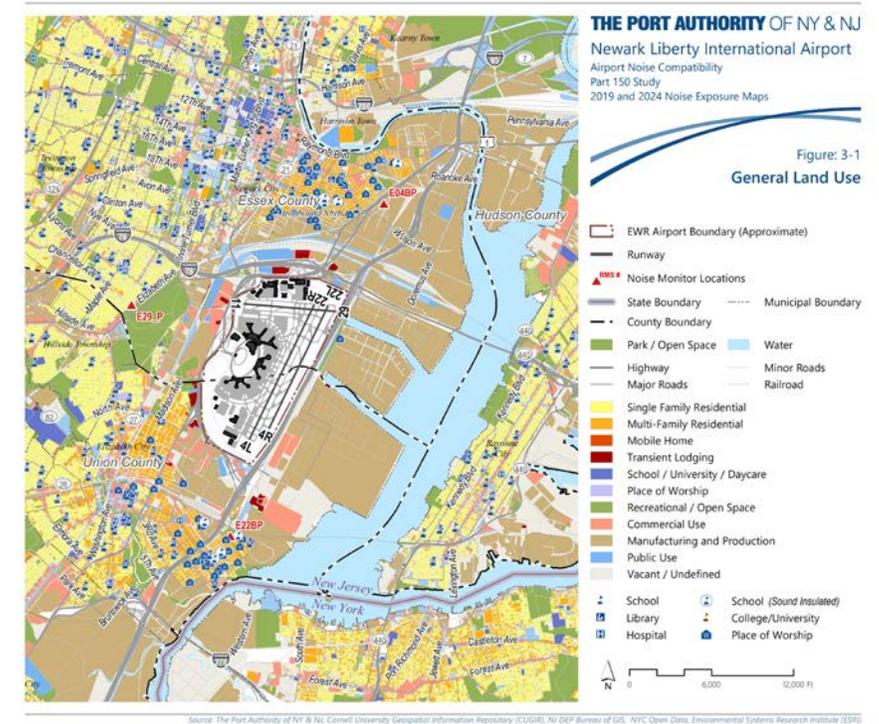
- Structurally Efficient Wing Technology



Source: Boeing, 2019

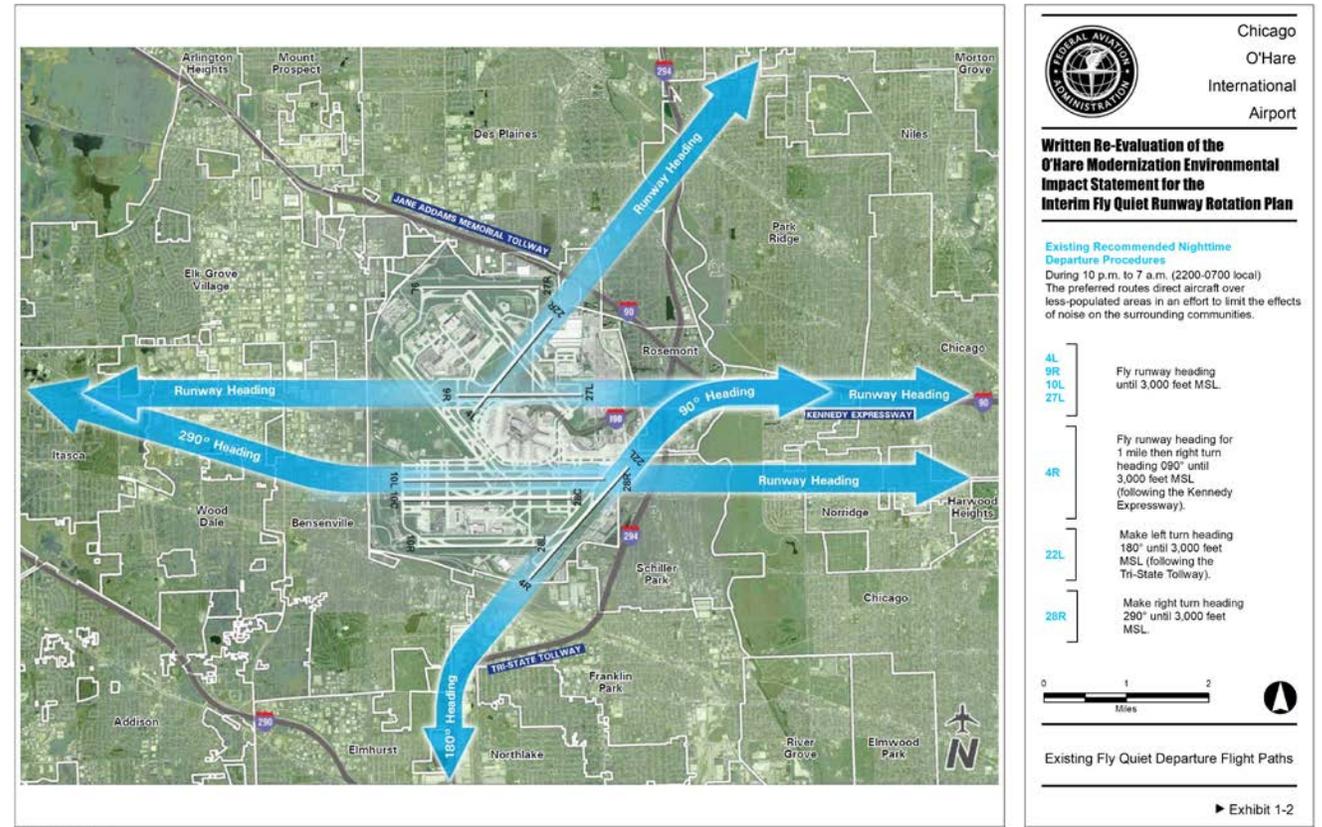
Land Use Planning and Management

- Local governments are usually responsible for land zoning
- Noise-sensitive areas should be avoided
- Air Navigation Service Providers should consider land use
- Aviation stakeholders must work with local governments
- Some governments have created national policy to restrict residential growth/encroachment near airports
- In high noise areas, existing homes and schools may be retrofitted with sound insulation and alternative ventilation
- Airport operators can purchase homes in high noise areas



Noise Abatement Operational Procedures

- Preferential flight track or runway use
- Performance-based navigation
- Noise abatement take-off or approach procedures
- Moving the nominal takeoff or landing points on the runway
- Restrictions on engine run-ups and/or ground equipment

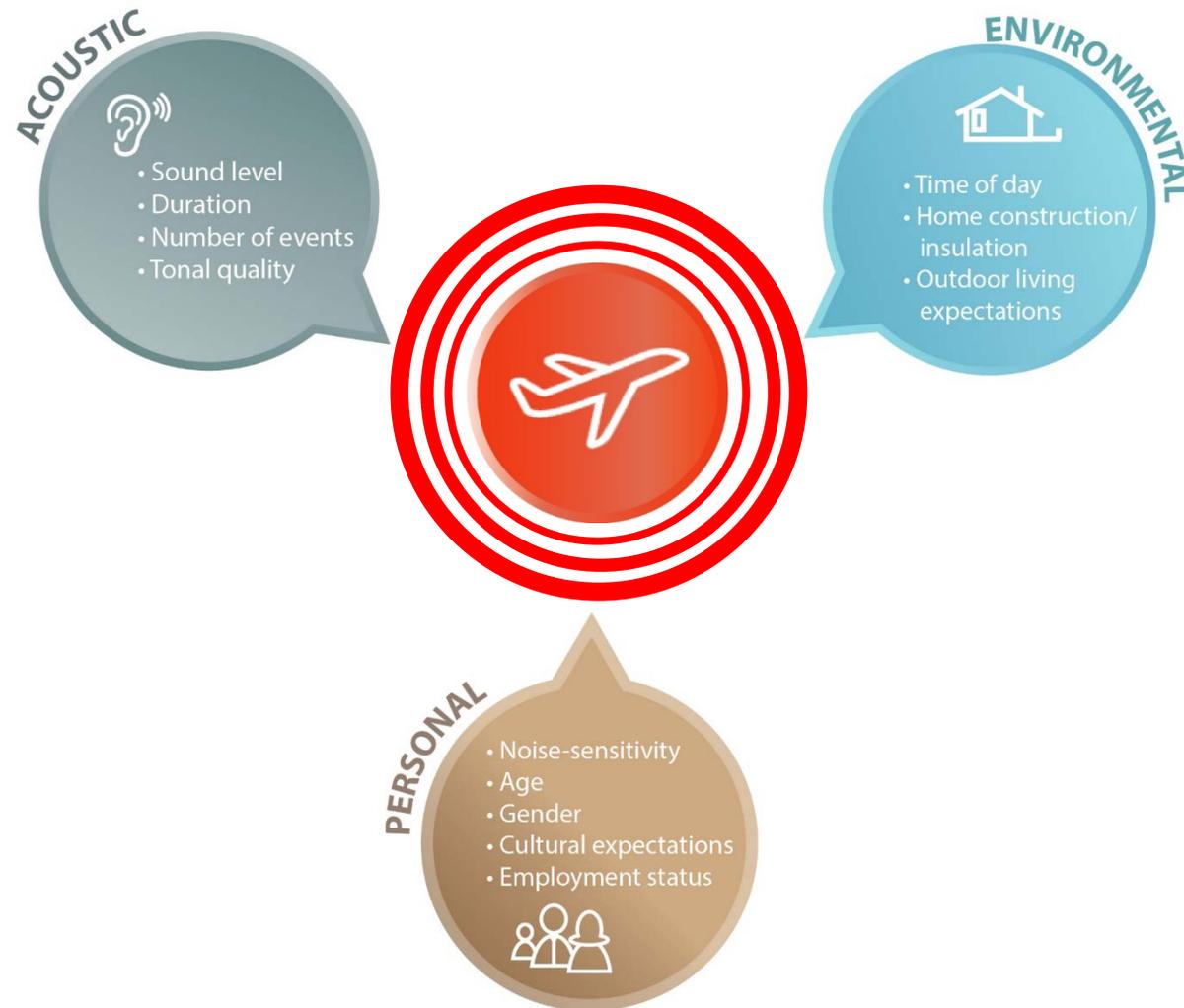


Operating Restrictions

- Curfews
- Operational noise limits i.e. nighttime restrictions
- Noise quotas/budgets/charges
- Cap rules and non-additional rules
- Preferential runways
- Restrictions related to the use of ground infrastructure



Aircraft Annoyance Factors



Thank you!

Mary Ellen Eagan

meagan@hmmh.com

+1.781.229.0707