

# Noise Exposure: Health Effects & Equity

Truax Field in Madison, WI is under consideration by the Air National Guard to replace its current F-16 fighter jets with F-35A aircrafts.



Replacing F-16 fighter jets with F-35s will cause an increase in noise exposure due to an increase in overall flight activity.

- ◆ A **long-term increase** in noise exposure of approximately **27%** above current levels of activity is expected.
- ◆ A **short-term increase** in noise exposure of approximately **47%** is expected during the transition period.



Exposure to noise has a risk of adverse health effects.

- ◆ The **potential health risks** of long-term exposure to noise levels similar to those expected from the F-35 include **sleep disturbance, decreased school performance, increased stress levels, annoyance, hearing impairment, hypertension, and heart disease** (see back page for more information).



The Federal Aviation Administration has determined that noise exposure at or above the 65 dB Day-Night Average Sound Level (DNL) may result in the land being incompatible with certain types of residential, public, and recreational use.

- ◆ The number of households located within the 65 dB DNL area would **increase by nearly 1,200** and the number of people exposed would **increase by more than 2,200**. The housing in this area is significantly more **affordable** than the City as a whole.
- ◆ **142** households (over **300** persons) would be newly located in the 70-75 dB DNL area where the noise exposure levels would **require significant sound mitigation**.
- ◆ A mobile home park with **312** residences will be newly located in the 65-75 dB DNL area which has been designated as **incompatible with housing**.
- ◆ **People with low incomes, persons of color, and children** would experience **significant disproportionate impacts**.
- ◆ Eligibility for federal funding for sound mitigation or abatement is only available for properties within a 65 dB DNL area or higher. **Public housing, schools, and concentrations of poverty and people of color** are located just outside of the 65 dB DNL area; these would have **limited to no options for federal sound mitigation funding** even though they may experience significant impacts.

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## Examples of Long-Term Effects Related to Noise Exposure:

Effect	Exposure	Measure*	dB	Location of assessment
Hearing Impairment	Environmental	L <sub>aeq</sub> (24 hr avg)	70	Indoors
Hypertension	Environmental	L <sub>dn</sub> (24 hr avg)	70	Outdoors
Ischemic Heart Disease	Environmental	L <sub>aeq</sub> (24 hr avg)	70	Outdoors
Annoyance	Environmental	L <sub>dn</sub> (24 hr avg)	42 <sup>#</sup>	Outdoors
Performance	At School	L <sub>aeq</sub> (avg during school day)	70	Outdoors
Disturbance of Sleep Pattern	During Sleep	L <sub>aeq</sub> (overnight avg)	<60	Outdoors
Sleep Quality	During Sleep	L <sub>aeq</sub> (overnight avg)	40	Outdoors
Mood Next Day (sleep disturbance)	During Sleep	L <sub>aeq</sub> (overnight avg)	<60	Outdoors

Note: The information contained in this table was derived from Passchier-Vermeer and Passchier (2000). The numbers are examples of noise exposure in general and not specific to the F-35.

\* Noise levels presented in this table are presented as an equivalent sound level (L<sub>aeq</sub>) measured over a period of time and day-night level (L<sub>dn</sub>) which measures sound level over 24 hours with sound levels during the night.

# The dB level causing annoyance is approximately 12 dB lower for impulse noise.

**65 dB**

Is comparable to a dishwasher constantly running.

**70 dB**

Is comparable to the constant sound of a vacuum.



These numbers represent **averages**; when jets are directly overhead, the noise at that point in time may be **much louder**.