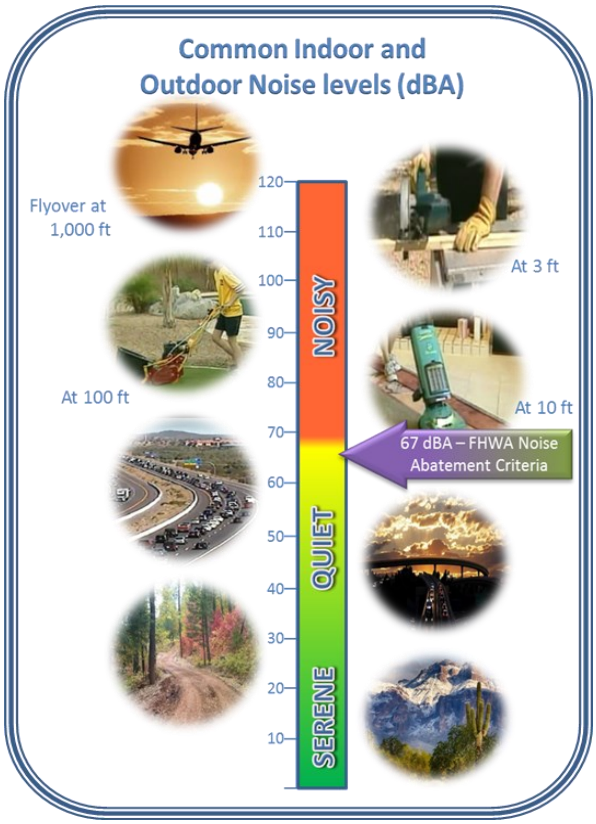
ADOT Environmental Planning

NOISE INFORMATION SHEET
Facts about traffic noise

2017

What is noise?

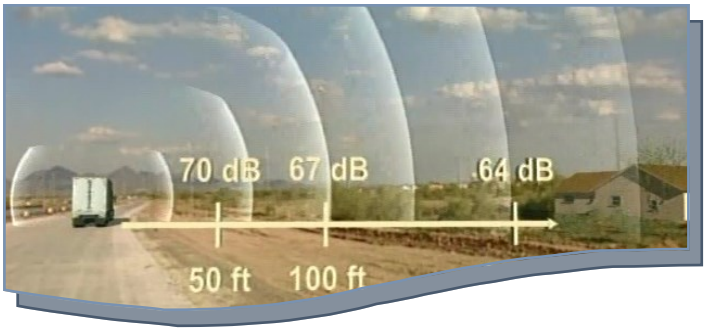
Noise is defined as unwanted sound and is perceived differently by every individual. Traffic noise is a combination of the noises produced by vehicles' engine, exhaust, and tires.



A receptor is any location where people are affected by the traffic noise. Traffic noise is measured in decibels, A-weighted (dBA), on a logarithmic scale. *23 Code of Federal Regulation (CFR) 772* is a Noise Standard. It is FHWA's view that the noise analysis performed to satisfy the requirements of *23 CFR 772* generally satisfies the requirements under *National Environmental Protection Act (NEPA)*. To meet requirements of *23 CFR 772* and *NEPA*, ADOT has developed *Noise Abatement Requirements*, in cooperation with FHWA Arizona Division, that apply to all federally and ADOT-funded projects that involve construction of a highway on new alignment or, a significant change in the horizontal or vertical alignment of an existing highway or adding new through lanes to an existing highway. If the project results in predicted noise levels at or above 66 dBA, ADOT considers it an impact. Anytime an impact occurs, noise abatement measures must be considered; however these measures must meet all acoustic and engineering feasibility, and reasonableness criteria before proposing it.

How to reduce noise?

Sound propagation is affected by distance between source and receiver, and any obstruction on the path. As distance increases, the sound waves are dispersed. For a line source, the noise level decreases by 3 dBA per doubling the distance.



ADOT uses noise barriers to brake the line of sight between the source and the receiver, reducing noise by 5 dBA. Noise barriers can be a vertical wall, an earthen berm, or a combination of a wall and a berm. By adding 2 ft in height of the barrier, we get another 1 dBA in reduction. Quiet pavement can also reduce tire noise by an average of 4 dBA. It takes only ½ to 1 inch of rubberized asphalt on the road surface to achieve this benefit although it does not qualify as a noise abatement.

Did you know?

- Increasing traffic by 20% will increase the Traffic noise, from all vehicle engines, exhaust, fans, bearings, and tires, by just 1 dBA. Doubling the traffic will increase the noise by 3 dBA.
- A human can detect a variation of sound level in 3 dBA.
- An increase of 10 dBA would be perceived by a human as twice as loud noise.
- Vegetation should be at least 15 ft high, 100 ft in depth, and highly dense to reduce noise by 5 dBA.
- One truck can produce noise levels of 10-13 automobiles combined, depending on the speed.