

# How do High-Speed Train Noise Levels Compare to Traditional Trains?

*Four major factors make high-speed trains operate at generally quieter levels than conventional passenger and freight rail services.*

## Duration of Noise Disturbance\*



### HIGH-SPEED TRAIN

TRAIN LENGTH: 1,300 FT.  
SPEED: 220 MPH



### FREIGHT TRAIN

TRAIN LENGTH: 1-MILE  
SPEED: 50 MPH

## 1 Train Speed

The duration of noise is brief for high-speed trains when compared to traditional train systems which take longer to pass.

## 2 Electric Trains

High-speed trains are powered by an electric propulsion system which, when compared to the more common diesel train engines, generate significantly less noise.

## 3 Auditory Warning Systems

Portions of high-speed train systems that operate on grade-separated track will not require sounding bells and warning horns that are necessary for traditional railroad crossings.

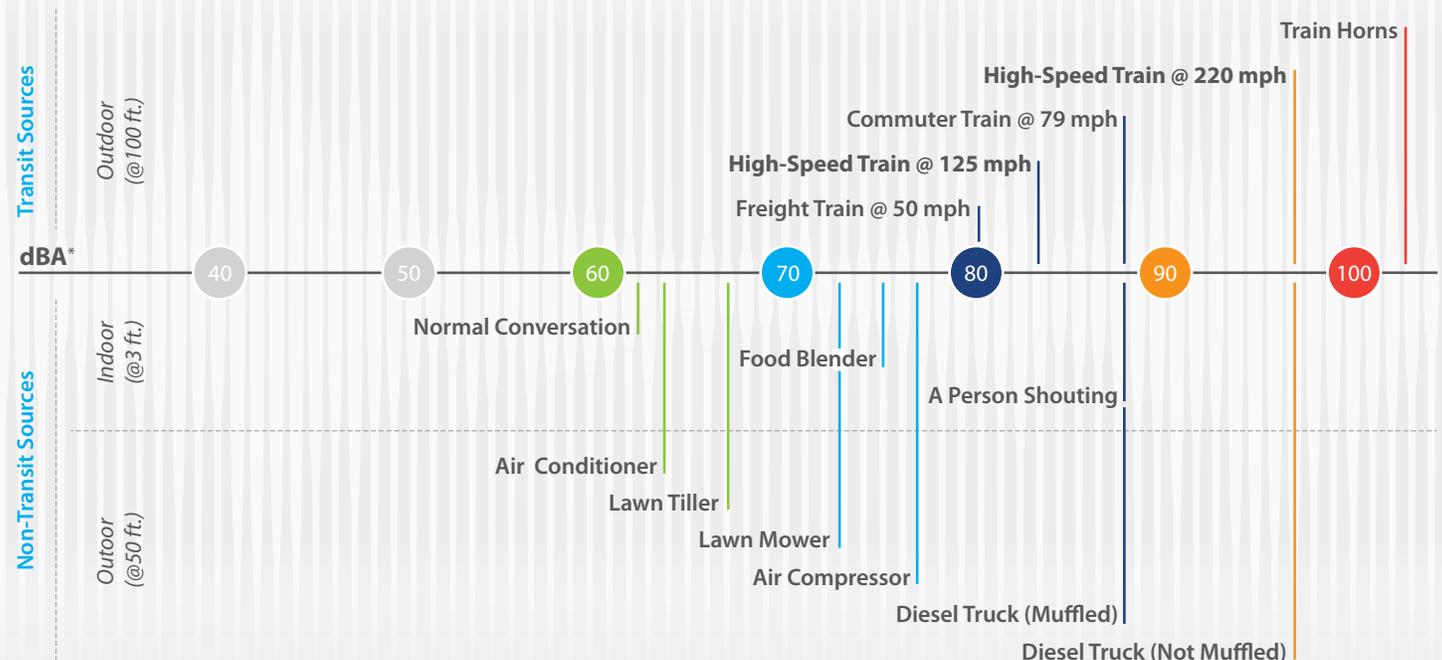
## 4 Hours of Operation

Unlike some passenger train services and many major freight routes which operate through the night, there will not be any high-speed rail service scheduled between the hours of midnight and 5 a.m. when people are most sensitive to noise.

\*Based on typical train-length and speed capabilities. High-speed rail will operate at slower speeds through urban corridors.

# The Sound of High-Speed Train Travel

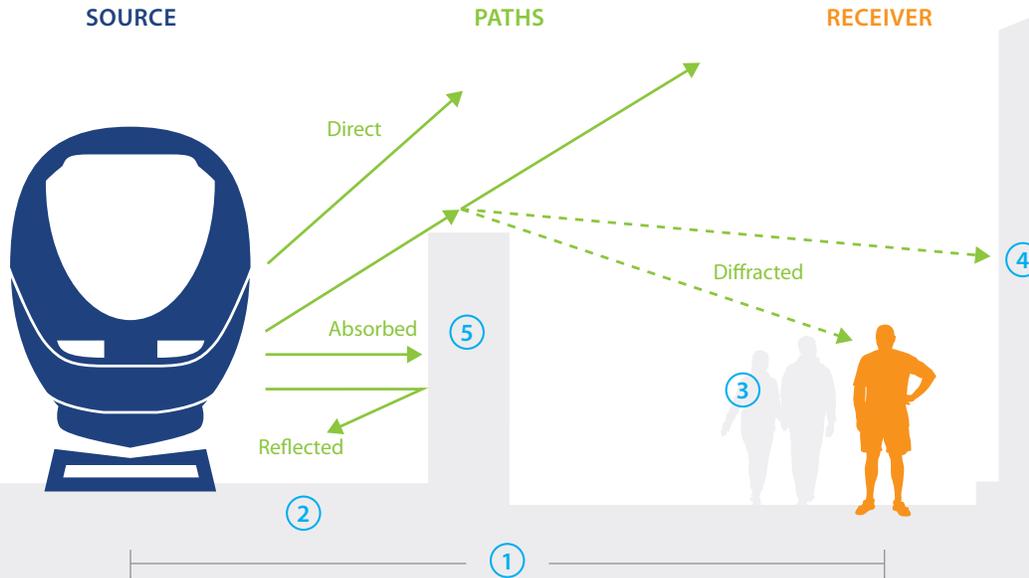
Typical Maximum Noise Levels Before Mitigation



\*A-weighted decibels (dBA) are an expression of the relative loudness of sounds in air as perceived by the human ear

# What Influences Noise Levels?

The **distance** (1) between the train tracks and the listener, the type of **ground surface** (2), **ambient noise** (3), and the presence of **buildings** (4) or **sound barriers** (5) will all influence the noise level that is heard by a listener at any given location.



## How to Minimize the Effects of Noise in Sensitive Areas

Sound walls, sound barriers (solid and/or transparent), or earthen berms built between the train tracks and residential or other noise-sensitive areas can help reduce noise disturbance caused by the train service. The Authority has committed to mitigating all noise impacts that are classified as severe under FRA guidelines.<sup>(1)</sup>

Additionally, at areas where the train will need to travel through at-grade crossings, the establishment of “quiet zones” where additional safety measures remove the need to sound train horns can help significantly reduce noise-disturbance.

<sup>(1)</sup> FRA High-Speed Ground Transportation Noise and Vibration Impact Assessment (2012)



\*Above images serve as examples of noise mitigation measures and are not an indication of a preferred method for use on the California High-Speed Rail project

