SOUND AND CALIFORNIA’S HIGH-SPEED TRAINS

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- We understand that sound is a key concern.
- The Federal Railroad Administration has rigorous procedures to measure sound that the Authority will follow.
- The Authority will work with the public and partner agencies to consider ways to mitigate significant sound impacts.
**Rolling** – sound from the wheels as trains move along the tracks.

**Propulsion** – sound from motors and gears that make the train move.

**Equipment** – sound from cooling fans and air conditioners.

**Aerodynamics** – sound from the flow of air moving past the train at high speed.
How does the sound from high-speed trains measure up?

Maximum level in decibels (single event)

120
110
100
90
80
70
60
50

Automobile 70 mph at 50 ft
Commuter Train 79 mph at 100 ft
High-Speed Train 220 mph at 100 ft
Diesel Truck (not muffled) at 50 ft
Power Lawn mower at 3 ft
Commuter Train with Horns at 100 ft
Chain saw at 3 ft
Jet aircraft at 500 ft
THOROUGH ENVIRONMENTAL ANALYSIS

The review will look at two key measurements:

- **One-Hour Equivalent Sound Level**, which measures the moment-to-moment fluctuations in sound over a single hour – taking into account both the number of trains and the time they take to pass by – the best measure for assessing the impacts on offices, schools and libraries.

- **Day-Night Sound Level** looks at sound fluctuations over a full 24 hours, taking into account the heightened sensitivity in residential areas to sounds made late at night.
For offices, schools and libraries:

- In urban and highly developed suburban areas, a high-speed train traveling 125 mph will produce an hourly equivalent sound level of about 73 decibels from a distance of 100 feet – less than a commuter train with a blowing horn.
For residential neighborhoods:

- In downtown city settings, high-speed trains – even at top speed – will be **within the existing noise levels** from traffic and other sources.

- In noisy urban residential areas, high-speed trains – even at top speed – will be **within existing noise levels for everyone except listeners within 250 feet of the tracks**.

- In quiet residential areas, high-speed trains – depending upon speed – could affect noise levels for listeners **within 1,000 feet** of the tracks.
A train moving at 220 mph – the top speed of California’s high-speed trains – will be heard for about **four seconds**.

By comparison....

A 50-car freight train traveling at 30 mph can be heard for **one minute**.
COMMITMENT TO SOUND MITIGATION

Operations

• In major urban areas (Bay Area, Los Angeles and San Diego) high-speed trains will mostly run at speeds of 125 mph or less.

• High-speed trains won’t have scheduled passenger service between midnight and 5 a.m.

• Grade-separated system will eliminate the need for blaring horns.

Technology

• Newer high-speed trains quieter than earlier models and conventional trains

• Electrically powered, no noisy diesel engines

Rhine River Viaduct, Germany

SCNF High-Speed Train System, France
Engineering and design will make a big difference

- Sound engineers and train builders have over 40 years experience – and good mitigation measures are working around the world.

- For a train traveling less than 160 mph, a six to 12-foot sound barrier will reduce noise by five to nine decibels (the human ear perceives a 10-decibel reduction as cutting the sound in half).

- The sound from a high-speed train operating on an aerial structure could be one or two decibels higher than at ground level.

- The sound from a high-speed train operating in an open trench could be five to seven decibels lower than at ground level.
GET INFORMED AND BE HEARD

- The California High-Speed Rail Authority has issued a detailed fact sheet and posted it on our website so that people concerned about these issues can understand them and participate in the process.
- Your feedback will help make sure California’s high-speed train project becomes a good neighbor to the communities it serves.

www.cahighspeedrail.ca.gov