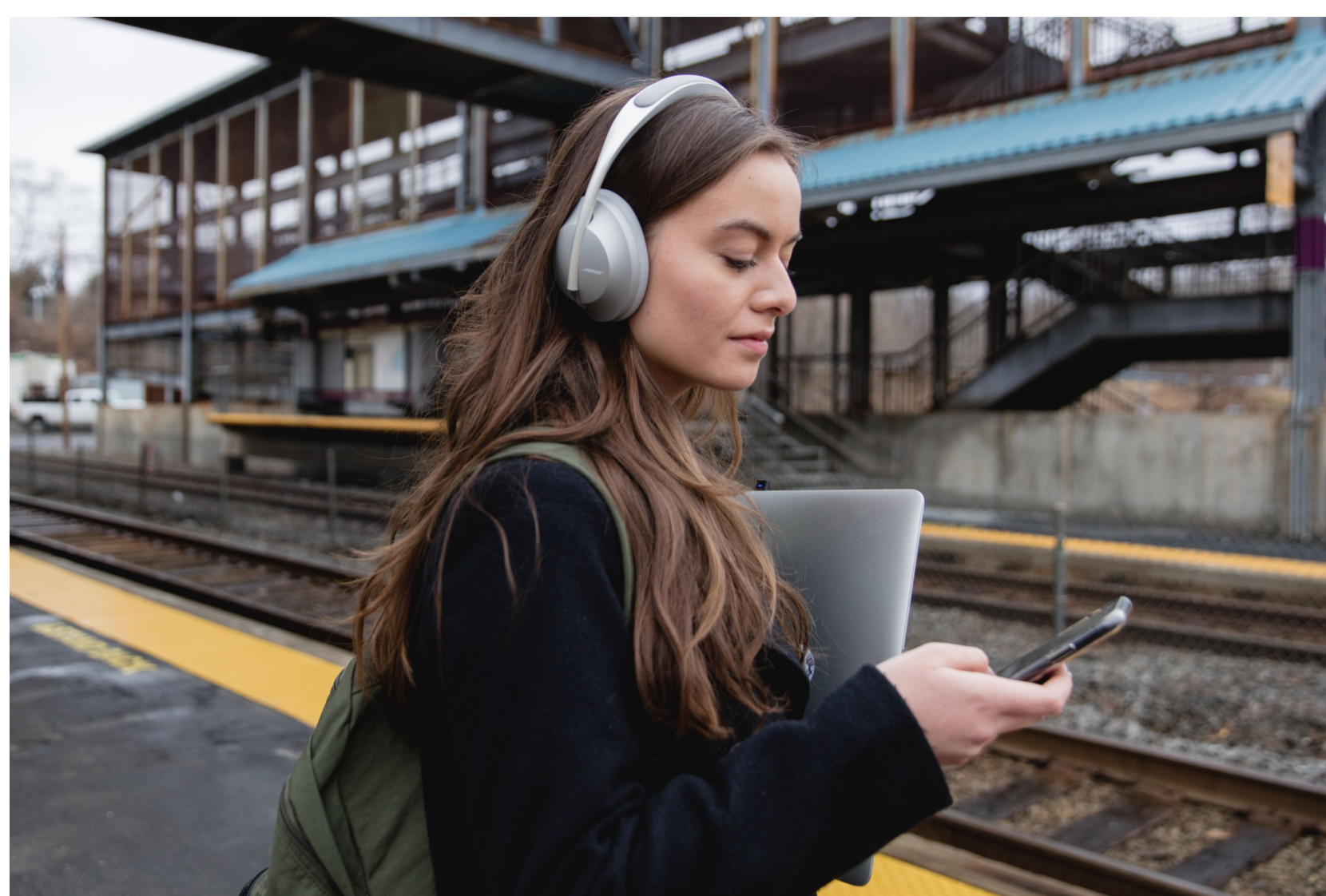




# Noise blocking, noise cancelling, and noise masking

What are the key differences between the types of noise-reduction technology?



If you're searching for your next pair of headphones, chances are you're coming across a lot of technical terms that sound very similar but are just different enough to confuse you. Do I want to cancel noise or block noise? Do I need noise cancelling or noise masking? And is there really a difference? The answer is yes. Knowing the right terms to search for is essential and will lead you to the right tech, the best product to get the job done, and, hopefully, the experience you seek. Whether you want to tune in and focus, drown out the world, or cover up distracting sounds that keep you awake, we're here to put you on the right path.

There's a magnitude of technical jargon that's used interchangeably, and it shouldn't be. So we're going to clear up the confusion with some simple, straightforward explanations. We've broken it down to three distinct approaches for managing noise with headphones or earbuds — **noise cancelling, noise masking, and noise blocking**. We'll explain what they are, how they are different, and what they're best suited for — without getting too technical or making your eyes glaze over.



## NOISE BLOCKING

Also known as passive noise reduction or noise isolation

A term like noise blocking sounds like a high-tech solution, but it's actually very low tech. In fact, noise blocking can be as simple as sticking your fingers in your ears. Try that the next time you hear a siren and notice how it creates a physical barrier between you and the offending noise. This is known as passive noise reduction, another term you'll probably come across in your search. Anything that covers your ears can passively block noise. There's nothing electronic about passive noise reduction, which means there's no built-in technology or microphone and nothing to be powered on.

As low tech as it is, noise blocking is an integral part of headphone design because, when done right, it's the first line of defense against unwanted sounds. That's why having a good seal on an earcup or a snug fit with an earbud can make a huge difference in performance. In this case, the science is more about biology than technology. There are so many shapes and sizes of the human ear to be studied, measured, and tested. We've scanned hundreds in the pursuit of better fit and comfort to ensure optimal noise blocking. The latest Bose StayHear™ Max tips used with our true wireless earbuds are a testament to the importance of human form factors in our innovations.

**The bottom line: While noise blocking is effective, it needs to work in tandem with a technology, like active noise cancellation or noise-masking tech, in order to lead you to a more sophisticated solution.**

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## NOISE CANCELLING

Also known as active noise cancelling or active noise reduction

Noise cancelling is a common term and may be the very thing you're looking for. It's different from noise blocking and passive reduction because it involves active technology. Bose was the first to use Acoustic Noise Cancelling™ or ANC in headphones when we invented the category over 20 years ago — a legacy that will always be tied to our brand. We could talk ANC all day long, but let's cover the basics.

Noise cancelling headphones have powered tech, which means energy (like a rechargeable battery) is needed in order for them to work. Remember, even without power, you're getting the physical benefit of noise blocking by simply wearing the headphones. When you turn them on, that's when the technology kicks in.

### How does noise cancelling work?

Noise cancelling headphones monitor the sound around you, preventing the unwanted noise from ever reaching your ears. Miniature microphones in the earcups or earbuds listen to the outside noise frequencies and emit the exact opposite signal to effectively "cancel out" both sets of sounds when the soundwaves collide. Our acoustic engineers explain that it's a bit more complicated than that since battery power, signal processing, and noise blocking all have their place in creating the greater system that is "noise cancelling." But you get the gist, right?

**Where noise blocking is a physical barrier to keep out sound, noise cancelling happens silently in the background, creating an audio "barrier."**

When are the best times to wear noise cancelling headphones or earbuds? This tech is perfect for situations when you're serious about enjoying your music, audiobooks, podcasts, shows, or movies without external noise getting in the way. Noise cancelling headphones are becoming a part of everyday life, with more and more people using them for work, calls, travel, and focused time at home.



## NOISE MASKING

Also known as sound masking

Now we know that noise blocking is a physical barrier and noise cancelling is a silent audio barrier. So, what is noise masking all about? The science of masking noise is different than cancelling it. Instead of using electronics to combat disruptive sounds, noise masking works with how your brain actually perceives sound. Masking introduces another sound at the same time to cover the noise. This turns out to be very effective because of the way different sounds combine in our inner ears; a constant, steady sound at just the right frequencies can make an irregular, distracting sound less perceptible to your brain. Over time, both sounds drift away from your consciousness. A good example of noise masking is a white-noise machine, which emits a soothing "static-like" sound that makes the external noise around you less noticeable.

### So why would you want noise masking instead of noise cancelling?

It all depends on what kind of noise you want to reduce. While no technology can completely eliminate noise, cancellation is most effective in environments with lots of constant low-frequency sound, like an airplane or a bus. For sudden bursts of sound — like a loud snore in the night — masking does a better job at making it less noticeable.

It's why Bose uses noise-masking technology in Sleepbuds™ II, which are designed to create a better experience for sleep sufferers. The noise-blocking effect of the earbuds combined with a soothing, noise-masking sound lets your brain ignore the things that may otherwise be a disruption, leading to peaceful relaxation and a restful sleep. And that's far better than putting a noise machine in the corner of your room, because the steady sound goes right into your ears.

Hopefully, we've untangled the differences between noise blocking, cancelling, and masking. Now that you have the right terms, finding the right tech all depends on how and where you want to manage the sounds around you.

*Product availability may vary by country.*

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