

04 / COMPARISON LAB

Noise

Start with plain-language planning profiles when sound data is unknown, or enter measured or modeled dBA and dBC values for the same receptor.

Controls

Help me estimate

Choose what the area is like today and what sound information the project has provided. The lab loads visible screening assumptions for both dBA and dBC.

I have sound values

Enter measured or modeled ambient and facility dBA and dBC at the same receptor, time, and operating condition.

dBA and dBC

dBA emphasizes general audible sound and is common in local limits. dBC retains more low-frequency hum and rumble. The lab calculates them separately and never combines the two units.

Solid barrier and treatment reductions

Illustrative source reductions. Values may overlap and should not be assumed to stack fully without an acoustic study.

Starting values

Help me estimate; area unknown using 45 dBA / 52 dBC; no sound study using 55 dBA / 63 dBC; barrier 8 dB; and no treatments selected.

Correct calculation sequence

1. Controlled facility level = facility source - barrier - selected equipment reductions

2. Receptor total = $10 \times \log_{10}(10^{(\text{ambient}/10)} + 10^{(\text{controlled facility}/10)})$

The lab performs this sequence separately for dBA and dBC. It never adds dBA and dBC into one number.

Why the sequence matters

Ambient sound is not reduced by a facility barrier or equipment treatment. Subtracting controls from the already combined ambient-plus-facility total can understate the final receptor level.

Default dBA example

Facility 55 dBA - 8 dB barrier = 47 dBA. Combining 47 dBA with 45 dBA ambient produces about 49.1 dBA at the receptor.

How to read the result

- Combined totals: Show the logarithmic receptor totals after facility-source controls.
- Facility-source card: Shows the reduced facility contribution before it is combined with ambient.
- Reduction cards: Distinguish the selected source reduction from the smaller change in the combined receptor total.
- Energy cards: Express the final receptor total relative to ambient.

Recommended use

- Use Help me estimate when project values are unavailable, and identify the values as screening assumptions in the saved brief.
- Use values from the same receptor, time period, unit, and operating condition.
- Enter ambient and facility dBA and dBC separately.
- Select only controls supported by the actual design and equipment or acoustic data.
- Compare the result with the local ordinance, nighttime limit, tonal requirement, and octave-band study.

Limit

Real performance depends on height, length, openings, terrain, source geometry, frequency, reflections, and operating conditions. Require an equipment-specific acoustic study and post-construction verification.