



## CASE STUDY

Compass and Vertiv make  
a small change leading to a  
marked improvement for  
data center neighbors





BACKGROUND

Compass Datacenters designs and constructs data centers for some of the world’s largest hyperscale and cloud companies. While the business has changed a lot since our founding in 2011, our core convictions have been a consistent cornerstone.

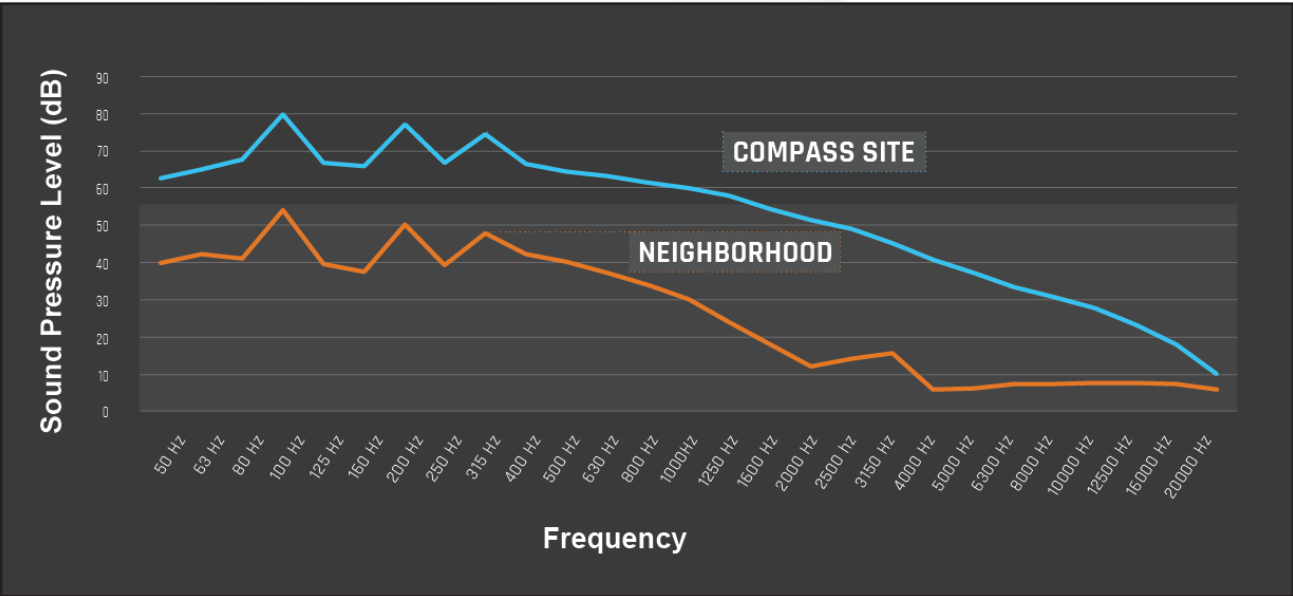
One of these convictions is “Actions and Words Are One.” This requires us to follow through, with integrity and consistency, on our commitments, including our commitment to being a good neighbor. Therefore, when a few residents near our campus in Northern Virginia elevated a sound concern, the team sprung to action with the support of our cooling technology partner, Vertiv.

As an immediate first step, Compass deployed specialists to study the sound from various points on and around the campus, including nearby neighborhoods. The first round of sound studies showed that at nearby residences the sound level was as low as 25-35 decibels, comparable to a whisper and well below the 55 decibels permitted by Loudoun County.

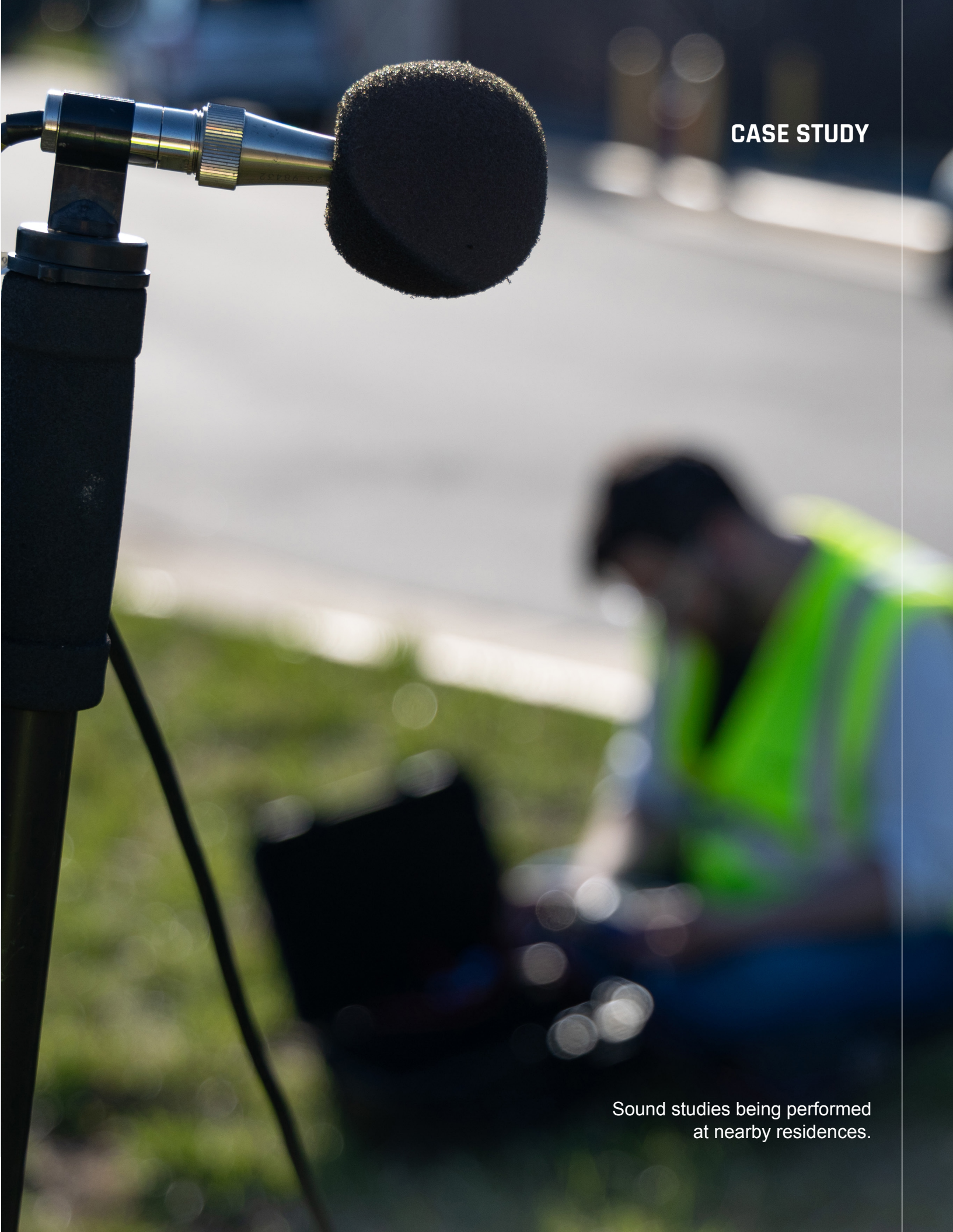
While the two teams were able to rule out overall volume as the source of concern, they kept searching for the issue.

SOUND STUDY

Sound specialists identified decibel peaks at lower frequencies creating an elevated pitch.



CASE STUDY



Sound studies being performed at nearby residences.



# CASE STUDY

# CHALLENGE

Sound testing engineers identified decibel peaks at certain lower frequencies, which created a problematic pitch. This information was subsequently validated by the Vertiv engineering and testing team. From there, the group set out to identify the source of these peaks.

In short order, the joint team of sound engineering and infrastructure experts discovered the decibel peaks were the result of a disruption in the flow of intake air. Vertiv identified a cutout in the middle fan support bracket that was interfering with airflow, causing it to become turbulent and creating an elevated pitch.



Vertiv engineer testing equipment.



SOLUTION

Following this discovery, the teams set about redesigning and testing potential solutions.

Through a long-term partnership with Vertiv, Compass has standardized on the [Vertiv™ Liebert® DSE](#) packaged free-cooling solution across all our data centers. The Liebert DSE solution provides high efficiency, water-free economization, low peak power and maintenance — benefits which align nicely with the company’s focus on sustainability.

Vertiv engineers suggested enlarging the cutout in the support bracket to reduce the turbulence. After several trials, with a few hits and misses, the teams arrived at the optimal size to deliver maximum results.

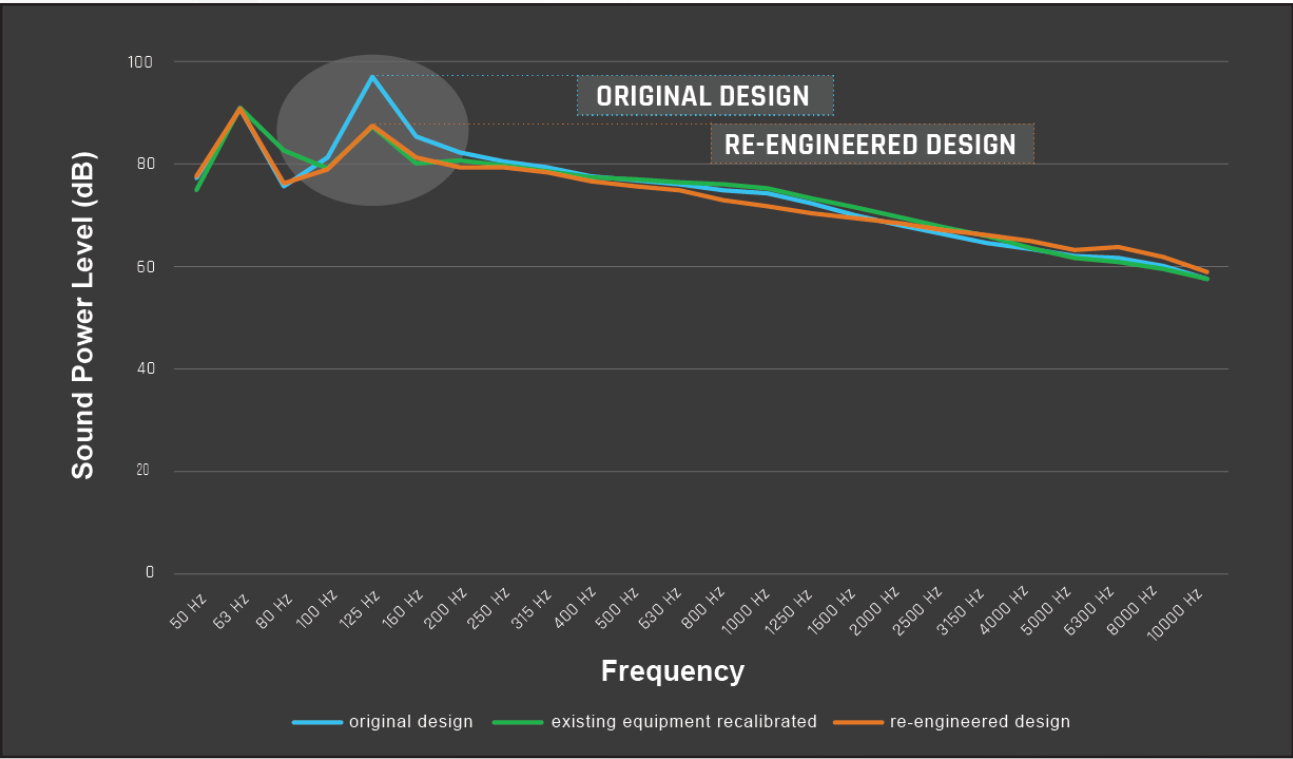
The two companies then tested a host of attenuation solutions for the units already deployed at the Compass campus and developed a software adjustment which was implemented in March 2024.

“It’s refreshing to learn about the mitigation efforts. Not just any company would put in that level of effort to be good neighbors. We really appreciate it.”

Stephanie Choi Brookes,  
Compass neighbor

RE-ENGINEERED DESIGN

New bracketing solution reduces pitch.



CASE STUDY



Attenuation solution implementation.





“Our longstanding partnership with Vertiv makes continuous improvement possible. This small change, made possible by clever and collaborative teams, will have a positive impact for our neighbors and the future of our industry.”

Chris Crosby,  
CEO, Compass Datacenters

## RESULTS

In the end, a small change to fan mounts will have an outsized impact for Compass neighbors.

- At the single unit level, the improvement yielded 3 to 10% lower frequencies.
- At site level, the change drove up to a 20% improvement around certain low frequencies.

Attenuation of the units already in operation also drove significant improvement.

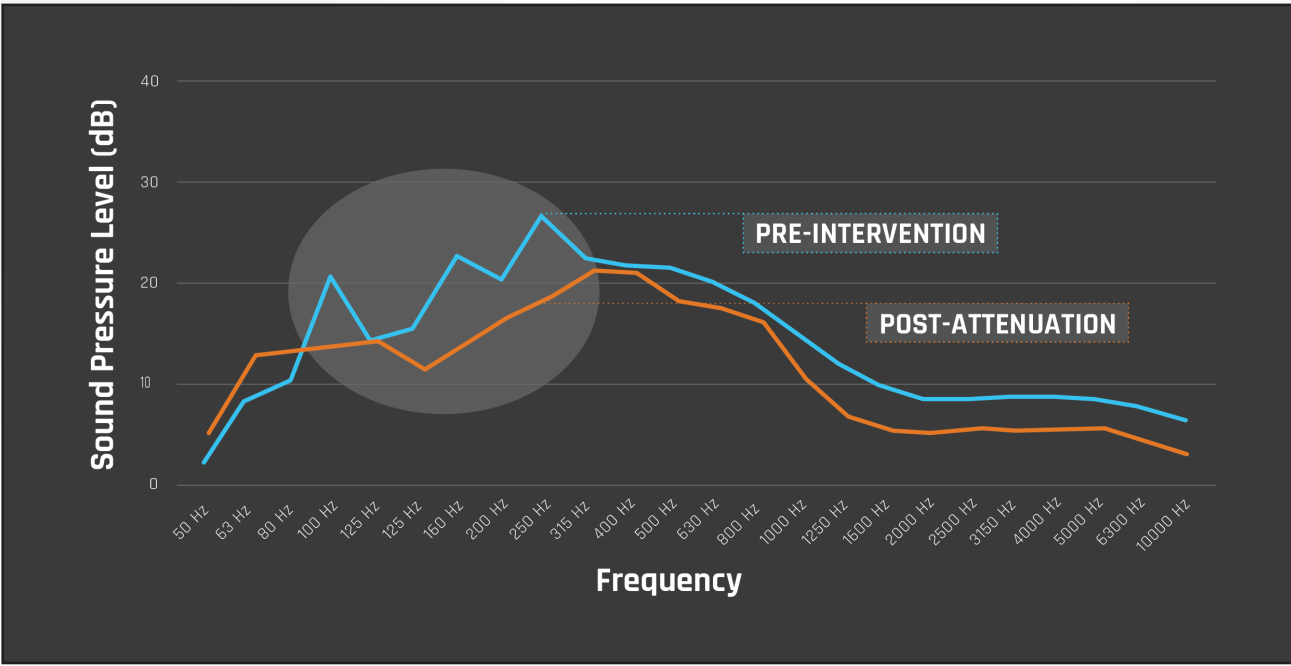
- At the building level, there was a ~15% reduction in sound pressure at the lower frequencies after implementing software adjustments.
- At the street in front of the campus, a reduction of ~21% in sound levels was measured.
- At the nearby neighborhood, data indicates no tonality following attenuation solution implementation.

By taking a slow and incremental approach to the challenge, Compass and Vertiv delivered large, cumulative change. Changing how the middle fans of these cooling systems are supported and operated will have big impacts for Compass, the industry and our neighbors for years to come.

[VIEW VIDEO CASE STUDY](#)

### ATTENUATION IMPROVEMENT

Attenuation solution applied to existing units eliminates pitch at neighborhood site.







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