



Data Center Sustainability: Addressing New Metrics Around Carbon Intensity



The growth of data centers to power everything from online transactions to AI searches is unprecedented. A recent study by the Electric Power Research Institute (EPRI), estimates that data centers could consume up to 9% of U.S. electricity generation by 2030¹, more than double today's usage.

At a recent seminar hosted by the Green Building Initiative (GBI), extensive conversations centered on selecting and aligning metrics essential for achieving sustainability in data centers. Energy consumption, increased greenhouse gas emissions and high carbon footprints were some of the key challenges discussed at the seminar.

Evolving Metrics for Data Center Sustainability

Discussions about metrics are ongoing. At the Seminar for Advancing DataCenter Sustainability, discussion centered around what is being measured today and future strategies for enhancing sustainability.

While power usage effectiveness (PUE), the ratio of total energy used by the data center to the energy used by IT equipment, is a common metric today, there remains ongoing debate about whether additional metrics are needed to better achieve sustainability goals.

Embodied carbon intensity (ECI) measures the carbon emissions associated with raw material extraction, processing, and product disposal². Infinitum's electric motors, nearly 50% lighter, have an 18% lower embodied carbon footprint compared to typical induction motors due to their innovative PCB

stator, reducing ECI. Designed with circularity in mind, each motor component can be reused, extending its lifecycle and avoiding landfill waste.

Operational carbon intensity (OCI) measures carbon emissions over the data center's operational life. To minimize OCI, data centers invest in energy efficient equipment and collaborate with suppliers during construction to design low-power-demand facilities, as they rarely operate at full load. Infinitem supports this by installing motors optimized for efficient operation at lower loads and speeds, resulting in energy savings of 20% or more depending on the application.

Looking to the future

As the demand for data center capacity continues to soar, addressing their environmental impact is more crucial than ever. Infinitem is at the forefront of this effort, providing innovative, energy-efficient electric motors that not only reduce emissions but also promote sustainability through their lightweight, resource-efficient design with an emphasis on repairability to keep motors in service and out of landfills.

¹ [EPRI Home. \(n.d.-b\).](#)

² [Carroll, A. \(2024, May 14\). Embodied carbon vs. operational carbon. *Embodied carbon vs. operational carbon*.](#)