DATA CENTER ALLIANCE OF MARYLAND
Powered by the Maryland Tech Council

Backup Power & Emissions Standards: A Data Center Primer

What is a Tier 4 Compliant Backup Generator?

Data centers support mission-critical services relied on by hospitals, first responders, energy systems, and national security agencies. Even brief power disruptions can interrupt life-saving care or essential communications. Backup generators ensure uninterrupted, 24/7 operations and are a foundational element of data center resilience.

EPA Emissions Standards

The U.S. Environmental Protection Agency (EPA) regulates diesel engine emissions through a four-tier system. Tier 4 is the most stringent and current standard for stationary diesel engines and represents the cleanest diesel technology available.

Tier 4 Compliant Generators

Tier 4 certified generators can present reliability challenges for critical facilities, as emissions control failures may trigger reduced power modes or shutdowns.

To avoid this risk, it is common for data centers to deploy Tier 4 compliant generator systems — integrated generator and emissions-control packages that:

- Meet the same EPA Tier 4 emissions standards
- Avoid automatic shutdowns
- Ensure continuous backup power for critical services

There is **no difference** in environmental performance between Tier 4 certified and Tier 4 compliant systems.

Emissions Performance

Compared to other tiers, Tier 4 compliant generators achieve the cleanest emissions:

- 90% reduction in nitrogen oxides (NOx)
- 80% reduction in carbon monoxide (CO)
- 40% reduction in volatile organic compounds (VOC)
- 70% reduction in particulate matter (PM)

Verification & Oversight

- Emissions performance is verified through facility-specific permits and field testing
- A representative sample of generators is tested to confirm Tier 4 compliance
- Generators are used infrequently, averaging less than 15 hours per generator per year
- Dedicated on-site environmental professionals manage compliance, training, reporting, and coordination with all regulatory agencies

Commitment

Tier 4 compliant generators reflect a balanced commitment to environmental stewardship and reliable backup power, delivering the cleanest diesel emissions available while ensuring the resilience required for mission-critical infrastructure that we all rely on.

Learn more about Maryland Tech Council's Data Center Alliance of Maryland (DCA-MD)