Project Dreadnaught — Emissions Comparison

Solid Oxide Fuel Cells vs. Conventional Natural Gas Generation | lbs per MWh

The pollutants that drive local health concerns — particulate matter, NOx, and SO■ — are essentially eliminated with fuel cells.

Pollutant	Bloom SOFC Fuel Cell	Gas Turbine + SCR	Gas Engine (typical)	Advantage vs Turbine	Advantage vs Engine
NOx	0.003	0.078	0.085	**96% lower**	**96% lower**
SO■ / SOx	< 0.001 (negligible)	0.036	0.007	**>99.9% lower**	**>99.9% lower**
Particulate Matter	None (zero)	0.063	1.93	**100% lower**	**100% lower**
CO■	679 – 833	1,238	957	**14–34% lower**	**14% lower**
CO	0.013	Higher	Higher	**Significantly lower**	**Significantly lower**
VOCs	0.01	Higher	Higher	**Significantly lower**	**Significantly lower**

Why This Matters Locally

In the Ballast public hearings, the dominant health concerns raised by Timrod Road residents and others were particulate matter, NOx, and respiratory impacts. Fuel cells address those exact pollutants at the source — reducing them by 96–100% compared with the gas turbines and engines that would otherwise be the alternative on-site generation technology.

Cost Context (Accepting Project Assumptions)

Under the project structure — fuel cells and storage paired with a Rule 21-style flexible-load / behind-the-meter microgrid configuration — a minimum of 15% of the data center is treated as integral energy property. This brings 100% of the fuel-cell fleet, 100% of the battery storage, and at least 15% of the data center into the 30% ITC base. After the credit, the net capital cost of the cleaner architecture becomes significantly more competitive with conventional gas generation.

Source: *Bloom Energy "How Bloom Reduces Emissions" Technical Note (public comparison using CARB-certified emission factors vs. specific gas turbine + SCR and gas engine models currently deployed for onsite power). CO■ range reflects stated efficiency band (679–833 lbs/MWh).*