Microsoft Azure

On the road to net-zero, green backup is a big step forward

Going green doesn't have to mean starting from scratch. Switching to clean fuel is an easy first step.

Microsoft is already 98% more carbon efficient. We can help you get there, too.

Moving your workloads to Azure means your environmental footprint shrinks as datacenters move toward increasingly greener energy backup. While datacenter backup generators have historically run on diesel fuel, Microsoft will run more generators on less carbon-intensive fuels such as natural gas or synthetic diesel and is continually looking into new green methods for backup power. While we won't reach net-zero emissions overnight, every step we take together gets us closer to this fundamental goal.

Replacing fossil fuels

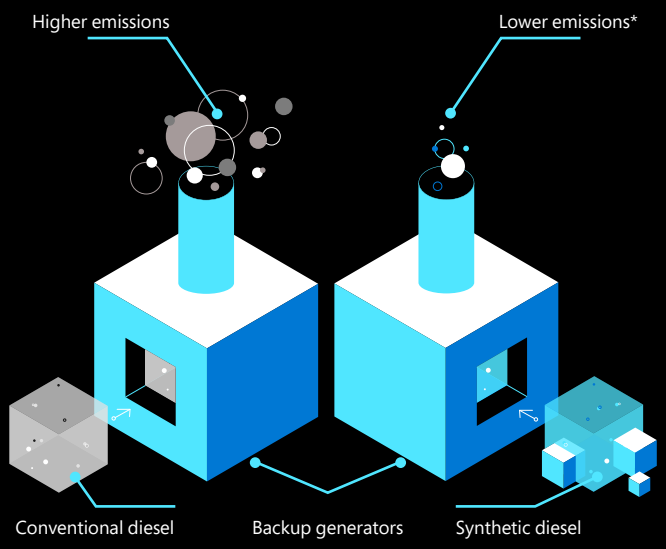
Current backup generators run on the combustion of fossil fuels, which vary in carbon emissions. Natural gas, however, is a step towards renewables, offering 30–40% lower full-scope emissions than conventional diesel.

Approaching carbon neutral

Synthetic diesel is close to carbon neutral, emitting little more carbon than is already extracted in the production of the base material. Synthetic diesel is sourced from biomass, like paper and pulp residue, and has lower lifetime carbon emissions compared to current backup generators.

Same generator, cleaner fuel

As a drop-in replacement for diesel, synthetic diesel doesn't require any alterations or modifications in the design of the generators that will run on them.



**As measured across entire lifecycle of fuel production*

Cleaner and more efficient than combustion

Fuel cells can generate electricity with almost two times more efficiency than combustion engines.

Providing clean backup with hydrogen

Hydrogen fuel cells provide another option for green backup energy to datacenters. These fuel cells are energy stores that use an electrochemical process to cleanly and efficiently capture energy and supply it to datacenters. Hydrogen fuel cells will produce short-term backup power under peak loads, reducing demand on the grid without emitting carbon into the air.

Powering through electrochemistry

In a fuel cell, hydrogen and oxygen are combined, creating an electric current that powers the datacenter and heat that can be captured and reused. This process produces only high-purity, food-grade steam.

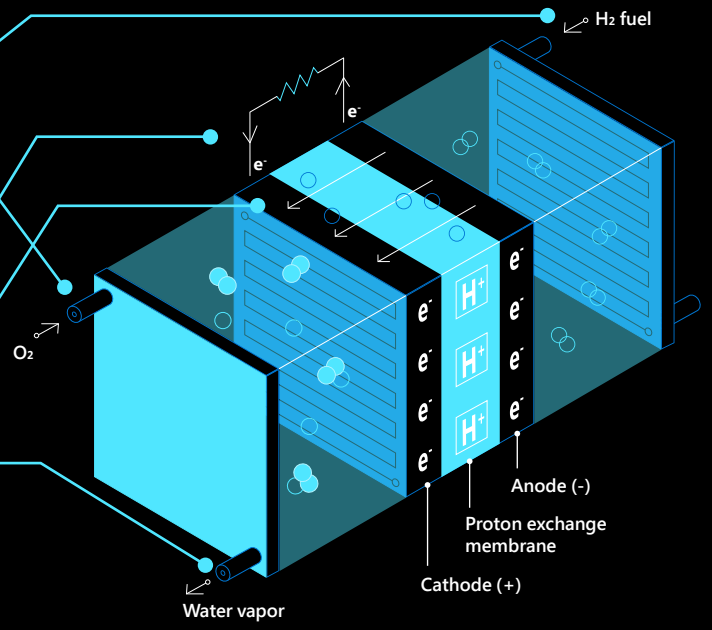
01 Hydrogen (H_2) is channeled through plates to the anode

02 Oxygen (O_2) is channeled to the cathode

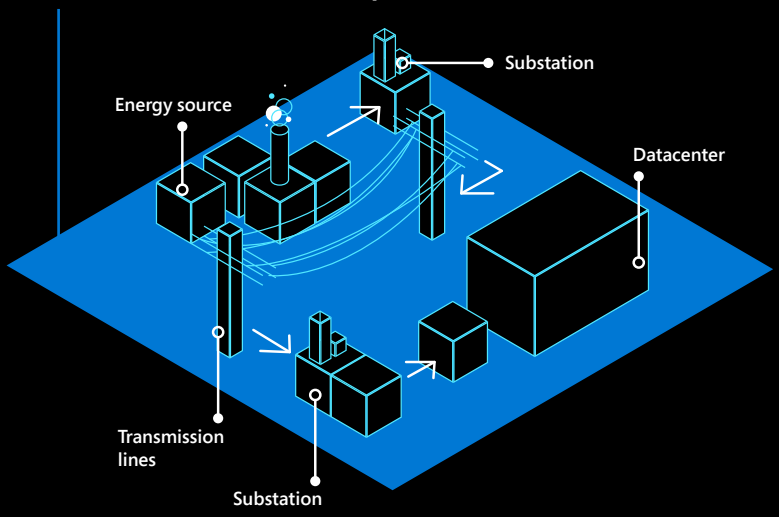
03 The hydrogen passes through the anode and its electrons are captured as energy

04 The hydrogen's protons pass through a proton exchange membrane before entering the cathode

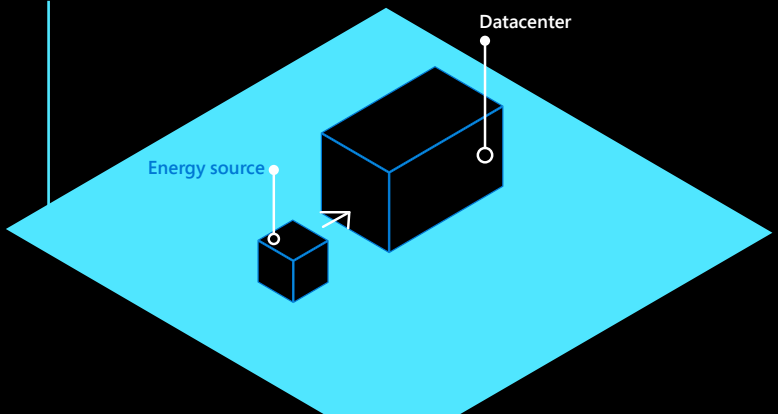
05 The hydrogen's protons separately enter the cathode to combine with the electrons and oxygen to form water vapor



Traditional datacenter power chain



On-site energy supply



Shifting to a direct green energy supply

We're moving towards a streamlined datacenter plan that will allow datacenters to:

- Remove embedded carbon
- Supplement power with on-site hydrogen fuel cells
- Reduce reliance on the grid
- Source cleaner energy more directly

Breathing easier

Businesses that use Azure will be running workloads that in rare emergencies, when generators are used, will emit less emissions, resulting in cleaner air for everyone.

Work with us toward a carbon-negative future.

Visit aka.ms/AzureSustainability