

Microsoft datacenters in Virginia

As more people and businesses rely upon technology to stay connected, informed, and productive, digital needs in Virginia and around the globe are growing. And that means the need for hyperscale datacenters is growing too.

Hyperscale brings hyper efficiency. Microsoft cloud services offer customers an energy efficient and carbon neutral alternative to running their own private datacenters. [Research](#) shows that Microsoft cloud services are up to 93 percent more energy efficient than traditional enterprise datacenters.

Microsoft strives to empower the communities where our employees live, work, and operate our datacenters. With that, it's important we share information to ensure you understand why datacenters are needed, Microsoft's approach for responsible operations, and the benefits of hosting a datacenter in your community.

[Why datacenters >](#)

[Microsoft commitments >](#)

[Community benefits >](#)

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The cloud powers our digital world

Cloud computing is the delivery of computing services over the internet. Common daily activities are made possible through cloud computing, such as:



Email



Online banking



File storage



Streaming videos



Collaboration



Online shopping



Mobile apps

Cloud computing can provide consumers and businesses with the benefits of enhanced security, privacy, compliance protection, lower costs, easier access, higher reliability, and a lower carbon footprint.

The Microsoft Cloud is for everyone

The Microsoft Cloud serves over 1 billion customers and 20 million companies worldwide.

Organizations in Virginia relying on the Microsoft Cloud are made up of a variety of sectors, such as large enterprises, startups, governments, hospitals, banks, schools, or other organizations that contribute to a modern society.

LIBERTY
UNIVERSITY

Hamilton Beach
BRANDS

Smithfield

When Microsoft joins a community, we bring our commitments for a better world

Support inclusive economic opportunity

Commit to a sustainable future

Earn trust



Microsoft datacenters are key to our sustainability goals

Carbon negative by 2030

For our datacenters in Virginia, Microsoft is procuring approximately **80 percent renewable energy** from solar, wind, and hydro resources. We have signed power purchase agreements with AES, EDF, EDPR, and Volt.

[Power usage effectiveness \(PUE\)](#) measures cloud energy efficiency. The calculation is total power consumption divided by IT power consumption. A lower PUE score indicates more energy-efficient datacenters, with a PUE of 1.0 being the best score. Our Boydton datacenters had a 12-month weighted average PUE of 1.18 for 2021. The new datacenters that commenced design January 2021 will have a **design PUE of 1.12**.

Globally, Microsoft datacenters use fossil fuel generators for backup power and account for **less than 1 percent of our overall emissions**. In specific regions, Microsoft is **piloting running backup generators with renewable blend, cleaner-burning fuels**, and is also **piloting the replacement of datacenter generators with long-duration batteries**.

[Leadership in Energy and Environmental Design \(LEED\)](#) is the world's largest green building certification program. LEED provides the framework for healthy, highly efficient, and cost-saving green buildings with lower carbon emissions. LEED

certification is a globally recognized symbol of sustainability achievement and leadership. **The majority of Boydton, Virginia datacenters are LEED certified** and moving forward, **new Microsoft datacenters being built are designed to earn LEED Gold certification**.

Microsoft operations in Virginia **comply with applicable air quality requirements**.

Water positive by 2030

Water usage effectiveness (WUE) is another key metric relating to the efficient and sustainable operations of our datacenters and is a crucial aspect as we work towards our commitment to be water positive by 2030. WUE is calculated by dividing the number of liters of water used for humidification and cooling by the total annual amount of power (measured in kWh) needed to operate our datacenter IT equipment.

Microsoft uses outdoor air with direct evaporative cooling at our Boydton datacenters. This method of cooling **uses outside air and zero water** for cooling when temperatures are below 29.4 degrees Celsius, reducing water for cooling to less than 15 percent of the year. This system is highly efficient, using less electricity and a fraction of water used by other water-based cooling systems, such as cooling towers.

During 2021, datacenters in Virginia had an operating WUE of 0.18 L/kWh. The new facilities are designed to have a WUE rate of **0.06 L/kWh**.

Zero waste by 2030

Microsoft has a goal to achieve 90 percent diversion of datacenter operational waste by 2030. To reach this goal, we're working closely with our waste haulers to optimize waste diversion programs across our global datacenter portfolio. We have achieved Zero Waste certifications for our San Antonio, Texas; Quincy, Washington; Boydton, Virginia; and Dublin, Ireland datacenter locations.

In January 2021, we opened a Microsoft Circular Center in our Boydton datacenter, which is designed to extend the life cycle of servers through reuse and to support a circular economy for the Microsoft Cloud. The Boydton Circular Center is able to process up to 12,000 servers per month for reuse.

Globally, Microsoft datacenters reuse **78 percent of our end-of-life assets and components; the remaining 22 percent of materials are recycled**. Additionally, Microsoft is conducting research and development to improve waste diversion by determining new recycling solutions for used air filters and fiber optic cables.

Since 2016, Microsoft has donated more than \$2.8 million across 91 projects supporting community-identified priorities in the Virginia counties of Mecklenburg, Halifax, Charlotte, Lunenburg, Brunswick, and Loudoun



Skill building for datacenter careers: In collaboration with SVHEC and SVCC in southern Virginia and the Loudoun Freedom Center in northern Virginia, Microsoft will facilitate workforce training through its flagship Datacenter Academy program. The program helps prepare students for careers in IT, including work in datacenters. Servers and other IT equipment were donated to the schools to build labs that emulate a working datacenter. Through this program, 195 participants completed training through the DCA student and scholarship learning pathways this year.

Centralized community connectivity: Microsoft and Mid-Atlantic Broadband Communities Corporate partnered to create the SOVA Innovation Hub in Southern Virginia. The Hub serves as a centralized location to encourage innovation, spur economic opportunity, and offer digital skills education and workforce training.

Helping to reduce food insecurity: Microsoft provided funding and volunteer support to Loudoun Hunger Relief to support families experiencing food insecurity. During the pandemic, funding helped replace a van used to transport food to those living outside of town.

Microsoft datacenters create family-wage operations and construction jobs as well as positive impacts to the local economy

Microsoft datacenters represent a capital-intensive investment and long-term commitment to the community. More than **800 full-time employees** and contractors work across our existing datacenter campuses in Virginia.

Since 2014, more than 9.6 million hours have been worked on construction projects, with an average of 500 construction jobs per year. For the new datacenters being built in Northern and Southern Virginia, we estimate it will require **1,250 annual construction roles** and approximately **5.1 million work hours** to complete construction.

Once operational, we anticipate an additional **2,000 full-time employees** will work at those facilities.



Construction jobs

- Electricians
- Plumbers and pipefitters
- Carpenters
- Structural iron and steel workers
- Concrete workers
- Earth movers



Datacenter operations

- Campus management
- People management
- Critical environment operations
- Learning and development
- IT operations
- Mechanical engineers
- Electrical engineers
- Security contractors
- Building maintenance