

# Data Center Industry

## Frequently Asked Questions

### What is a data center?

A data center is a facility that centralizes an organization's IT operations and equipment for the purposes of storing, processing, and disseminating data and applications. Data centers are designed to support business applications and provide services, such as data storage, productivity applications, such as email, high volume e-commerce transactions, and machine learning and artificial intelligence.

### Where are data centers presently located?

Data centers are located throughout the United States in many cities and communities, often operating completely unnoticed to the general public. The top data center markets in the U.S. include Northern Virginia, Dallas, Silicon Valley, Los Angeles, New York City, Chicago, Atlanta, and Phoenix. In fact, Northern Virginia is home to the greatest concentration of data centers on Earth.

### Why are data centers needed?

As the world continues to rapidly utilize new and existing forms of technology, data must be stored and transmitted more often and at larger capacities/volumes. As such, more facilities must be established to manage the rapid increase in global data. The United States is home to the greatest share of data centers in the world, with Virginia being home to the largest data center market in the world. In fact, close to 70% of the world's internet traffic flows through fiber optic networks and data centers located in Virginia. Additionally, Virginia is home to 35% (almost 150) of all known hyperscale data centers worldwide.

### How large are data centers?

Data centers can vary significantly in size and shape. Small data centers can operate in spaces as small as 1,000 square feet or less, while large data centers may operate in one million square feet or more. It is common to see data centers operate in spaces between 50,000 to 250,000 square feet.

### Do data centers presently operate within Hanover County?

Hanover County has not historically been an epicenter of data centers; presently only one small data center operates within the County. In the Richmond Region, the larger data center projects have traditionally located in Henrico County where ample land with significant power, water, and fiber optic infrastructure has been present.

# Data Center Industry

## Frequently Asked Questions

### What do data centers need to be successful? Why is Hanover potentially a good fit for this sector?

Paramount to all other factors, data centers need abundant and reliable power. While high voltage transmission lines may be an impediment to other types of developments, they are critical for successful operation of data centers. These facilities utilize significant power and must be operational 24/7/365 to keep data flowing.

Hanover has been identified as a great fit for this sector because the community has tracts of land which have been in the Suburban Service Area (SSA) for many years, and identified in the Comprehensive Plan for potential business development dating back to 2007 and before. In addition, these tracts of land are adjacent to high voltage transmission lines with water/sewer, fiber, and natural gas nearby.

### What exactly is a fiber optic cable, and how critical is it to the data center sector?

A fiber optic cable is a network cable that contains strands of glass fibers inside an insulated casing. They are designed for long distance and high-performance data networking and telecommunications. Unlike wired cables, fiber optic cables provide higher bandwidth and transmit data over long distances.

Fiber is critical to the success of a data center. In fact, the facilities cannot operate without robust fiber networks! It is important these facilities never go offline, therefore, they need to be located near significant fiber networks. Some of the largest trans-oceanic and trans-continental fiber lines in the world come through Hanover County on the way to Northern Virginia, which is the epicenter of the data center world. This makes the County very attractive to the data center sector.

### Data centers have traditionally been an enormous user of water. Is this still true?

Historically, data centers have utilized high volumes of water for cooling operations. Large numbers of servers within data center buildings generate significant heat, and the efficiency of these servers decreases as temperatures increase above 80+ degrees. Therefore, significant cooling is required, especially during summer months.

Emergent methods and technologies related to cooling have dramatically reduced the demand for water in new, modern data centers. For example, a facility which may have required one million gallons of water per day for cooling just 10 years ago may only need 100,000 gallons per day utilizing modern cooling methods.

# Data Center Industry

## Frequently Asked Questions

### **As heavy users of power, do data centers consider renewable energy sources to decrease their dependence on traditional forms of power generation in order to lessen their carbon footprint?**

Data centers have become very aware of concerns related to pollution/environmental impacts of utilizing significant power, and as such, are on the forefront of renewable energy technologies. Many data center companies have pledged to be net zero carbon within the next few decades and are working with utilities to incorporate a variety of renewable energy sources. Many data centers incorporate renewables into their campus design, such as rooftop solar, and partner with existing and future energy projects in the community. Modern data centers also utilize advanced technologies to help increase their efficiency with energy use.

### **In some communities, it is common to see data centers with limited/nonexistent buffers located adjacent to noncomplimentary uses such as schools and residential. Is this model being replicated by current and future data centers?**

Absolutely not! The data center industry has evolved over the years and desires to be a good fit for a community. Oftentimes, this means a more campus-style layout respective of significant natural buffers, heavy tree cover in green/undeveloped areas, landscaped stormwater ponds, and awareness of sightlines. In fact, due to privacy and security concerns, modern data centers prefer to be in locations where they are not easily seen or heard.

### **How secure are these facilities? What security protocols do they utilize?**

Storing and processing consumer data requires exceptional security, therefore, data centers must utilize all modern security protocols available. This starts with the outside of the building where access is highly restricted utilizing fencing and access gates, which are manned 24/7/365. Access throughout buildings is also highly restricted with utilization of security badges and biometrics. Because of the nature of security on these campuses, they are not generally open to the public or for tours, which limits visitor access and traffic. This is another reason why modern data center campuses prefer thick buffers of natural vegetation, so they are not as visible from a security standpoint.

### **What about noise? Are modern data centers loud?**

Due to the number of servers and requirements for temperature/humidity control, substantial cooling is required within the building. As such, large cooling devices are required for efficient operation of the facility. This is especially critical during warm, humid months. Modern cooling technology has greatly reduced the amount of noise these facilities generate. In addition, a number of data centers operate at warmer temperatures than in the past thereby reducing cooling demand. Modern building codes and utilization of insulative construction materials helps reduce internal noise related to servers from escaping the building. The thick, natural buffers that modern data campuses request also help significantly reduce noise traveling from the campus.

# Data Center Industry

Frequently  
Asked  
Questions

## What fiscal impacts, in terms of tax revenue, do data centers bring to a community?

Tax revenue generated by data centers is substantial. For example, Loudoun County, Virginia, is home to one of the largest concentrations of data centers in the United States. Taxes generated from this sector alone in 2022 exceeded \$650 million. Depending on project size and investment, a single data center campus can result in many millions of dollars of tax revenue to the community every year. This is revenue that the local government can use for services for community residents, including but not limited to building new schools, expanding recreational opportunities, and supporting Fire/EMS/Sheriff operations.

## Are data centers major job generators? What kind of jobs and wages do they provide?

Data centers are not significant job generators. For example, even a large campus of several million square feet of space may employ only 100 or fewer individuals. With properties staffed 24/7/365, there is a minimal number of people on site per square foot of building compared to other industrial uses. Data centers create a variety of jobs, from landscaping to janitorial to office to computer programming/IT. While salaries can range across the board, IT positions in data centers routinely pay well above \$100,000 per year. In addition, construction of data centers provides significant opportunity for businesses currently located within the community for many years into the future, as these facilities provide long-term construction and up-fit projects for sectors such as contractors, electricians, HVAC, etc.

## Do data centers create significant truck traffic?

Construction of a data center campus does initially require a number of workers and equipment as these are large buildings with very intricate utility designs. Hence, there is an increase of traffic associated with the facility during construction. Once the building is complete and data servers installed, truck traffic will be almost nonexistent. Over time, server performance decreases thereby decreasing overall efficiency. As such, it is common practice for data centers to replace servers every 3-4 years. During this time there will be period of increased truck traffic as new servers are installed and old servers removed from the building.



**Hanover County**  
**Department of Economic Development**

HanoverVirginia.com  
(804) 365-6464  
EconDev@HanoverVirginia.com