

Big Data Hubs Slow Green Shift

In Northern Virginia, increasing power demand means more fossil fuels

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LOUDOUN COUNTY, Va.— The cutting edge of technology is driving the power grid back to the 19th century.

An explosion of so-called hyperscale data centers in places such as Northern Virginia has upended plans by electric utilities to cut the use of fossil fuels. In some areas, that means burning coal for longer than planned.

These giant data centers will provide computing power needed for artificial intelligence. They are setting off a four-way battle among electric utilities trying to keep the lights on; tech companies that like to tout their climate credentials; consumers angry at rising electricity prices; and regulators overseeing investments in the grid and trying to turn it green.

Ground zero for the fight is Northern Virginia's "Data Center Alley." About 70% of global internet traffic passes through the area's data centers.

Amazon Web Services, **Amazon.com's** cloud-computing business, invested \$52 billion in Virginia from 2011 to 2021 and plans to invest a further \$35 billion by 2040. Loudoun County, Va., has nearly 37 million square feet of data-center space and 42 million square feet more has been proposed.

Data centers tend to cluster in places that have established networks and access to a plentiful energy supply. The rise of ChatGPT and similar large-language AI models, which require huge amounts of computing power, turbocharged data-center demand.

Many new data centers coming to Northern Virginia are known as hyperscale, or facilities that are far larger than previous generations of data centers. The big ones use as much power as the city of Seattle.

Utilities squeezed

For many utilities, the solution to rising demand is to keep coal-fired power plants burning for longer and add natural-gas power plants to balance big expansions of renewables.

Dominion Energy, which supplies electricity to most of the data centers in Virginia, expects their power use to quadruple over the next 15 years, representing 40% of the utility's demand in the state.

have to keep coal plants open.

Dominion Chief Executive Robert Blue said the utility expects its peak load to increase at least 5% each year for the next 15 years. "We're going to continue to be a big builder of renewables. We're building a big offshore wind farm. We're building a lot of solar. We're adding a lot of storage," Blue said. "But we also recognize that we're going to need some more natural gas in order to keep the lights on."

One of the great successes of the U.S. energy transition has been the steady elimination of coal power. About 10 gigawatts of coal power have been retired each year for a decade. That number will fall to about 6 gigawatts a year through 2030 because of higher demand, according to S&P Global Commodity Insights.

Green goals

Big tech companies such as

Alphabet, Microsoft and Amazon are among the biggest users of data centers. They also have committed to net-zero emissions worldwide in the coming decades.

Some are pushing back against the use of fossil fuels. Microsoft criticized Georgia Power's proposed gas expansion, saying the plans undervalue renewable energy's ability to meet demand. Tech companies have warned that utilities could lose customers if they burn more fossil fuels. Georgia Power said its portfolio protects reliability, supports economic development and includes renewables and battery storage.

"No data center wants to be tied to the need for new fossil resources, that's the problem," said Brian Janous, former vice president of energy at Microsoft. "You can't throw this much [data-center] capacity at the system and not have some degree of fossil resources to support it." Earlier this year, Janous helped launch **Clover--leaf Infrastructure**, which is helping large electricity consumers find power.

While data centers can be a boon for local governments, providing jobs and reliable tax revenue, residents complain about the constant buzzing that emanates from the hulking structures and the power lines that crisscross their neighborhoods.

One recent \$54.3 million proposal by Dominion would extend a transmission line 1.8 miles and build a substation to serve a



The rise of AI has added to the urgency to expand capacity in Virginia's 'Data Center Alley.' MELISSA LYTTLE FOR THE WALL STREET JOURNAL

buyer of renewable energy.

Data-center grid investments, paid for by all customers, are called unfair by community groups. Elena Schlossberg, grassroots coordinator for the Coalition to Protect Prince William County, compared it to splitting a restaurant bill. "They're ordering the \$200 bottle of red wine...and you're getting a Caesar salad," Schlossberg said.

Dominion also wants to build a 1,000-megawatt natural-gas plant, for times of high power demand, in Chesterfield County, where a coal plant closed last year. The utility is still removing millions of cubic yards of coal ash from storage ponds at the site.

Local resistance

Nicole Martin, president of the Chesterfield chapter of the NAACP, said the predominantly Black neighborhood had a fossil-fuel plant for nearly 80 years. "We're supposed to endure the health risks and the environmental risk when this power plant, this energy, is not even being used for us," Martin said.

Dominion says the plant is critically important for reliability. Grid investments, plus the new projects, would raise average utility bills for customers from around \$133 a month to \$174 over 15 years, the company projects. New transmission lines often attract other users, with data centers ultimately bearing more of the cost of such upgrades, the company said.

Wind and solar can't serve data-center demand around the clock, so growth will need to be supplemented by natural-gas-fired power generation, said Arshad Mansoor, chief executive of the nonprofit Electric Power Research Institute.

Utilities in Georgia and North Carolina are adding fossil- fuel power or considering delaying the shutdown of coal-fired plants to meet the demands of data centers and other industries. **Duke Energy** told regulators it needs three new gas-fired power plants in the Carolinas. Otherwise it says it will

planned Amazon datacenter campus. Amazon said it has enabled 19 solar farms in Virginia and is the world's largest corporate

“You can be an idealist,” Mansoor said. “But if you’re a realist, you’ll add a ton of solar and you can balance that with gas.” The only other option to new gas plants is delaying coal and nuclear-plant retirements, he said.

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