

Virginia: The Data Center Test Case

A standing, fully-sourced reference on data center development across Virginia

Figures current as of August 2026 and drawn from public sources. This field moves quickly and the numbers below will change — the Dominion queue figure alone rose from 47 GW to 70 GW in a matter of months. Each figure is labeled with its source. Verify against current sources before quoting, and please report anything that has become outdated.

Virginia hosts the largest concentration of data centers in the world. What happens here — whether a state can keep democratic control over its land, water, power grid, and public costs while private companies request infrastructure at an almost unimaginable scale — is being decided now, county by county. This document gathers the most reliable statewide figures in one place, so a resident, reporter, or official can carry them into a meeting.

Before the numbers: what they do and don't mean

Three cautions matter more than any single figure. First, a *request* is not a built or approved data center — the headline power numbers are largely applications, and many will be withdrawn, downsized, or delayed. Second, statewide *averages* can hide severe *local* impacts: a figure that looks small across Virginia can be decisive for one rural aquifer in August. Third, Virginia still lacks a complete, project-by-project public accounting of water, emissions, acreage, or subsidies — so even the best figures are estimates from partial data. Where that's true, this document says so.

Virginia at a glance

Measure	Best current figure	What it means
Operating electric load	~5 GW	JLARC estimate (2024), across ~340 data center buildings.
Dominion large-load queue	~70 GW requested	Mostly data-center requests (Dominion SCC filing, Feb. 2026); nearly 3x the grid's all-time peak. ~25 GW has projected connection dates by 2031; ~45 GW only under study. A request is not a built facility.
All-time system peak	24,678 MW	Dominion's record demand, Jan. 23, 2025 (for scale).
Existing land, statewide	7,200+ acres	JLARC (2024).
NoVA land, existing	~6,200 acres	Piedmont Environmental Council (2024), cited in a peer-reviewed 2026 assessment. ~80% of VA data centers are in Northern Virginia.
NoVA land, proposed	~21,000 more acres	Same source. Would more than triple the region's footprint if all built.
Water used, 2023	~2.1 billion gallons	Up 86% since 2019 (JLARC-derived).
Diesel backup generators	4,000+	Reported in a peer-reviewed 2026 health assessment (attributed to that paper).
Permanent jobs / facility	~50	About 25 direct + 25 contract at a typical 250,000 sq-ft site (JLARC); ~1 job per 5,000 sq ft.
State tax exemption, FY2023	\$928 million	Tax savings to data centers; ~90% of the industry uses it (JLARC).
Return to the state	~48 cents / \$1	State recovers ~48 cents per \$1 forgone; a net loss of ~52 cents on the dollar (JLARC).
Possible bill impact	+\$14 to \$37 / month	On a typical residential bill by 2040, absent ratepayer protections (JLARC estimate).

Power: the gap between requested and built

The single most important fact is the distance between what data centers are *asking for* and what exists. Facilities operating today draw about 5 gigawatts. Dominion's queue holds requests for roughly 70 — nearly three times the highest demand the system has ever recorded. That figure should never be reported as a certainty: about 25 GW has projected connection dates through 2031, 45 GW remains only under study, and developers routinely withdraw, downsize, or fail to secure financing, land, or power. But it is a real measure of the scale Dominion is being asked to plan for. JLARC's modeling found that unconstrained growth could roughly double Virginia's electricity demand within about a decade, with data centers the main driver, requiring new generation and transmission far above the state's historical pace.

Land: permanent conversion

Existing data centers occupy more than 7,200 acres statewide. In Northern Virginia the existing footprint is about 6,200 acres, with proposed projects adding close to 21,000 more — more than tripling the region's footprint if built (Piedmont Environmental Council, in a peer-reviewed 2026 assessment; estimates assembled in the absence of any complete state inventory). The lasting impacts are physical and permanent: farmland, woodland, and groundwater-recharge areas converted to buildings and pavement; a large share of each parcel hardened into impervious surface; new substations and transmission corridors; and steady pressure to rezone rural land.

Water: local and seasonal, not uniform

Statewide use was about 2.1 billion gallons in 2023, up 86% since 2019 — roughly 5.8 million gallons a day on average. But the average is the wrong instrument; the real risk is concentration. In the Potomac basin, which supplies 5 million people, data centers currently draw about 14 million gallons a day on peak hot days (ICPRB). Future peak projections vary by scenario: one ICPRB projection puts peak use near 58 MGD by 2035, with unconstrained scenarios toward 2050 running higher. Not in dispute: ICPRB forecasts data centers' share of the D.C.-metro region's water rising from ~8% in 2025 to ~25% by 2035, and river levels are lowest in July and August, exactly when cooling demand peaks.

Two honest caveats: about 40% of the Loudoun-cluster facilities use air cooling requiring virtually no water, so impact depends on the cooling design a facility chooses; and the ICPRB figures cover only public Potomac supplies — a facility on a rural aquifer could stress local groundwater in ways these numbers don't capture. A 2026 law will require water reporting, but waterworks reporting doesn't begin until January 2027, with the first state report due October 2027.

A caution on “waterless” cooling

When a facility uses air cooling instead of water, that is often presented as the greener choice. It avoids the water draw — but it does not make the heat disappear. Nearly all the electricity a data center consumes leaves as waste heat, and air cooling blows that heat into the surrounding air rather than evaporating it away. The first peer-reviewed field measurements (Arizona State University, 2026) found neighborhoods downwind of large facilities running roughly 1 to 2°F warmer on average, with a peak near 4°F, detectable up to about a third of a mile away; a single large campus can reject as much heat as the electricity use of over a hundred thousand households. (Some satellite studies report far larger figures — up to 16°F — but those measure ground-surface temperature rather than the air people breathe, and remain scientifically contested; this document uses the measured air-temperature findings.)

Two honest points follow. First, “waterless” is not automatically “harmless” — it trades a water impact for a heat impact, and which is worse depends on the place. Second, and more relevant to a rural community: every one of

these studies was conducted in dense urban settings. What concentrated waste heat does to a rural microclimate — to nearby streams and their temperature-sensitive life, to growing seasons, to the open land around a facility — has not been studied. This is not a claim that such harm will occur; it is the observation that the heat is real, it has to go somewhere, and no one has measured what it does in a rural setting. That absence of study is not reassurance. It is one more thing worth requiring be examined before a facility is built, not after.

Backup generators

Virginia's data centers have more than 4,000 diesel backup generators (figure from a 2026 peer-reviewed health assessment). JLARC found that under normal conditions their emissions are a relatively small share of regional emissions, because the generators mostly run only for testing or during outages. That statewide reassurance is real and worth stating — and it does not rule out local hot spots near a specific facility and the homes around it, which is why local monitoring matters.

Jobs: what the numbers actually count

The headline figure — about 74,000 jobs, \$5.5 billion in labor income, \$9.1 billion in GDP — comes from the Virginia Economic Development Partnership, the industry's leading state advocate, and measures total economic activity, most of it tied to construction rather than ongoing operations. The distinction matters because the two differ in duration:

- **Construction jobs:** up to ~1,500 workers per building at peak — but only for the 12 to 18 months of construction, after which they move to the next site.
- **Permanent jobs:** about 50 at a typical 250,000 sq-ft facility once operating — roughly 25 direct employees and 25 on-site contractors, about one job per 5,000 sq ft. A larger campus employs proportionally more, a smaller one fewer, but the ratio stays low at any size.

On residency and wages: to qualify for the exemption, each new job must pay at least 150% of the locality's prevailing average wage (excluding benefits) — a real floor, though it varies by county. But nothing requires the jobs go to *local residents*; the statute counts jobs located at the data center. Whether the on-site contractors or the peak construction workforce are hired locally or brought in is not tracked or disclosed, and whether the permanent jobs carry full benefits is not disclosed either. These facilities are already among the most automated operations in existence — which is why they employ so few even now. Whether automation reduces that number further over a facility's life isn't something anyone has publicly projected; it is a fair question, because a job count offered at a hearing is not guaranteed for the decades a data center operates.

Economics: real benefits, and a subsidy the state's own auditors question

Virginia gains genuine economic activity, and this document states that plainly. The public cost of attracting the industry has grown sharply. The sales-and-use-tax exemption is forgone revenue — taxes never collected — not a direct payment, but the budget effect is real. Forgone state revenue rose from \$685 million (FY2023) to \$1.02 billion (FY2024), with FY2025 estimated toward \$1.6 to 1.9 billion (a projection, not a settled figure). The FY2024 amount equaled roughly 81% of Virginia's entire economic-development incentive budget — this one industry's break consuming about four-fifths of everything the state spends to attract all business combined. Over 2021 to 2024 the exemption totaled about \$2.73 billion, and its benefit is concentrated: JLARC found just five companies received 82% of the value in 2023.

The single most telling figure is JLARC's own return calculation: for every \$1 the state forgoes, it recovers about 48 cents in revenue generated other ways — leaving the state, on its own math, roughly 52 cents in the hole on each dollar.

In fairness, that is not the whole debate, and this document won't pretend it is. The same analysis found the exemption produces about \$6.10 in labor income per \$1 forgone, ranking it the second-most-effective of all Virginia's business incentives by that measure, and JLARC's confidential-data review concluded roughly 90% of the investment would not have come to Virginia without it. Reasonable people weigh these differently, and the public deserves that argument with real figures on the table.

At the local level, the net figure is largely unknown — because most Virginia localities have not disclosed it. A 2026 analysis by Good Jobs First found many counties and cities do not file the tax-abatement disclosures (under accounting standard GASB 77) that would let anyone calculate whether a community comes out ahead. And JLARC warned that the transmission and generation buildout could raise costs for ordinary ratepayers — an estimated \$14 to \$37 per month on a typical residential bill by 2040, absent effective protections.

The case for, stated plainly

These facilities power services nearly everyone uses, this website included. In some counties the tax revenue has genuinely funded schools and eased residential tax rates, and the construction wages are real and well-paid. A community can weigh all of that and still ask for the studies, the written conditions, and the honest local accounting first. Requiring the evidence is not opposition to growth; it is ordinary diligence.

What communities have already won

Residents are not powerless. Across Virginia, localities have negotiated real protections — moving data centers from “by-right” to special-use permits, requiring independent water studies, adopting noise limits and setbacks, and restricting where facilities can go. Shenandoah, Rockingham, Campbell, and Amherst counties have all acted. Outcomes have been shaped by people showing up and asking precise questions. That is the purpose of gathering these numbers.

What is still not publicly known

The most important caveat is the one the numbers can't fill. Virginia still has no complete, project-by-project public accounting of how much land each facility will convert; where its water comes from and how much it will use; its generator emissions; the transmission it will require; the subsidies it will claim; or who bears the cost if requested demand never materializes. Much of the picture here is assembled from partial databases, advocacy-group mapping, and a single state study, precisely because no comprehensive public inventory exists. That gap is arguably the central

finding: decisions of enormous and permanent consequence are being made without the public information needed to weigh them. So when a project is pitched as paying for itself, the honest response is not a rival number. It is a question: show us the parcel-level accounting, because the Commonwealth's own study could not find it.

A note on this document

Every figure above is labeled with its source so you can check it. Where a number is a projection or an estimate, it is marked as such. Where a fact isn't publicly disclosed, this document says so rather than guessing. If you find a figure that has gone out of date, or a source that no longer says what is attributed to it, that correction is welcome — the value of a reference like this depends entirely on its remaining accurate.

Sources: Virginia Joint Legislative Audit and Review Commission (JLARC), “Data Centers in Virginia,” December 2024; Dominion Energy SCC filings (Feb. 2026) via Virginia Business and Data Center Dynamics; the Interstate Commission on the Potomac River Basin; the Piedmont Environmental Council; a peer-reviewed assessment in *Frontiers in Climate* (Jan. 2026); the Virginia Economic Development Partnership; Good Jobs First; the Commonwealth Institute; and reporting by Cardinal News, WRIC, VPM, Bloomberg Tax, and News From The States. Figures dated where possible. This document is informational, not legal or financial advice.

Compiled by Jo Massanari · thelastwindow.com · Goshen, Virginia · August 2026.