Data Center Infrastructure

Virginia: The Statewide Picture

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Overview

This report takes stock of the data center industry across the entire Commonwealth of Virginia as it stands in August 2026 — the world's largest data center market — and answers the questions residents most often ask but rarely see answered plainly: How many are there, and how many more are coming? How many jobs do they actually create for local people? What do the tax breaks and subsidies cost, and who receives them? Who are the developers? And what environmental harm is on the record?

Every figure below is drawn from public sources — chiefly the Commonwealth's own Joint Legislative Audit and Review Commission (JLARC — the General Assembly's nonpartisan watchdog agency), the Virginia Department of Taxation, the state's Annual Comprehensive Financial Report, the subsidy-watchdog Good Jobs First, university researchers, and court filings. Where a number is self-reported by the industry or genuinely unknown, this report says so, because the gaps are part of the story.

Virginia at a Glance

The market: Virginia hosts roughly **340 data center buildings** across about **150 sites**. Northern Virginia is the largest data center market in the world — JLARC puts it at **13% of all reported global operational capacity and 25% of capacity in the Americas.** Loudoun County alone accounts for roughly half the state's industry.

The jobs: In FY2025 the industry reported adding **1,610 net new jobs** statewide — against a tax break that cost about **$1.9 billion** that year (state and local combined), or roughly **$1.2 million of forgone revenue per job.**

The subsidy: The sales-and-use tax exemption forgave about **$1.02 billion** in state revenue in FY2024 and an estimated **$1.9 billion** in combined state-and-local revenue in FY2025 — the single largest economic-development expenditure in the state.

The power: Data centers are the main driver of a forecast that Virginia's electricity demand could **double within ~10–15 years**, with costs beginning to reach ordinary ratepayers in 2026.

Part I · The Statewide Picture

How big, and where

Virginia is, by a wide margin, the data center capital of the world. Northern Virginia — the "Data Center Alley" centered on Loudoun and Prince William counties — alone constitutes about 13% of all reported global operational capacity and 25% of capacity in the Americas. As of 2024, JLARC counted roughly **150 data center sites** in Virginia, collectively housing about **340 data center buildings**. The Piedmont Environmental Council has mapped roughly **370 million square feet** of existing and proposed data centers statewide.

- **The established core:** Loudoun County accounts for roughly **half of the state's data center industry** — by number of sites, building square footage, and estimated energy use (JLARC); Prince William and Fairfax follow. This cluster grew roughly fivefold in capacity between 2015 and 2023.
- **The spread outward:** JLARC and industry both project the fastest new growth **outside** Northern Virginia — down the I-95 corridor into Central Virginia, and into new markets including Chesterfield, Louisa, Goochland, Pittsylvania, Spotsylvania, and the Shenandoah Valley communities documented elsewhere in this series.
- **Power as the true scale:** Virginia's data centers required roughly **5 gigawatts** of generating capacity as of 2024 — and unconstrained demand is forecast to more than double the entire state grid's load. For perspective, all of Virginia's power plants together had about 29 GW (gigawatts; 1 GW = 1,000 megawatts) of nameplate capacity in 2023.

How many more are coming

The pipeline is enormous but genuinely uncertain — and both halves of that sentence matter. On paper, roughly **100 million additional square feet** are proposed statewide, and the single largest project alone (the Prince William "Digital Gateway") would add ~2,100 acres and 23 million square feet. But nationally, **about half of the data centers expected to open in 2026 are now projected to be delayed or cancelled** (Bloomberg), and at least 25 U.S. projects were cancelled in the past year amid grid limits and public opposition. A proposal in Virginia is real pressure, but not a certainty — organized opposition is one reason projects stall.

Part II · The Jobs Question: How Many for Local People?

This is the question data centers are most often sold on, and where the record most sharply diverges from the marketing. The honest answer has two layers: a large industry-wide jobs number that is real but mostly construction and indirect, and a very small permanent-jobs number per facility.

The industry's headline figure

- The Virginia Economic Development Partnership (VEDP) and JLARC cite the industry as supporting **~74,000 jobs, $5.5 billion in labor income, and $9.1 billion in GDP (gross domestic product)** annually. This is the number proponents lead with — but JLARC is explicit that **the majority of this activity comes from construction**, which is temporary, not from ongoing operations.

The permanent-jobs reality

- A typical 250,000-square-foot data center employs only about **25 direct workers, plus roughly 25 on-site contractors** — around 50 people — once operating. JLARC's own economists note that once a building is finished, "unless they're building additional data centers on the campus," it "doesn't, per square foot, employ a lot of people."
- Statewide, the numbers are stark: in FY2025 the industry reported adding **just 1,610 net new jobs** across all of Virginia. Independent analysis (Food & Water Watch) found that from 2020 to late 2025, Virginia data centers created about **one permanent job for every $54 million invested.**
- **Local hiring is rarely guaranteed.** Good Jobs First reports it has not found a Virginia data center subsidy agreement that requires **local** hiring. Construction labor is often skilled and travels between projects; some operational roles are filled through temp agencies. In established markets like Northern Virginia many construction workers are local, but in newer markets developers frequently bring in out-of-state crews for specialized work.

*The defensible bottom line on jobs: the construction-phase and indirect figures are real and should not be dismissed — but the **permanent, local** jobs a finished data center provides are few, and no Virginia subsidy currently requires that those jobs go to people who live nearby. A community should ask for the permanent-local number in writing, not the headline.*

Part III · The Money: Subsidies, and Who Pays

The sales-and-use tax exemption

Virginia's central data center subsidy is the **Data Center Retail Sales and Use Tax Exemption (DCRSUT)**, enacted in 2008 and expanded in 2010, which waives sales tax on the servers, chips, generators, and equipment a data center buys. It does not sunset until **2035**, and it has grown far faster than anyone projected.

Fiscal year	State portion	Total (incl. local/regional)	Note
FY2022	$673 million	—	On $13.8B exempt investment
FY2023	$683 million	$928.6 million	JLARC Rpt598, Ch.2, p.20; state portion alone
FY2024	$1.02 billion	—	79% of state incentive spending that year (JLARC)
FY2025 (proj.)	—	~$1.6–1.9 billion	Combined state + local; up ~118% in one year
FY2021–24 total	$2.73 billion	—	53% of all state incentive spending across FY2015–24, and 11× the next-largest incentive. JLARC reports no reliable figure before FY2021.

- To grasp the scale, consider the comparison JLARC itself draws: at an estimated **$683 million in forgone state revenue in FY2023**, the exemption is by far Virginia's largest economic development incentive — the **next-largest incentive was valued at just $74 million.** The data center break is not the biggest of a comparable set; it dwarfs everything else.

- The exemption is **the single largest economic-development expenditure in Virginia**, and in FY2024 it made up roughly **79% of the state's incentive spending that year** (JLARC; Good Jobs First, using a slightly different denominator, puts it at 81%). The Department of Taxation projected combined statewide losses (state plus local) would reach **~$1.94 billion** in FY2025.
- **The comparison that puts the scale in view.** In FY2024 Virginia spent about **$1.3 billion** across 97 economic development incentive programs. The data center exemption accounted for **$1.02 billion** of it. Every other incentive in the Commonwealth combined — the grants to manufacturers, the enterprise zones, the port and rail programs, the film credit, all of it — came to about **$279 million.** Over the full decade FY2015–FY2024, the exemption was 53% of all incentive spending and **eleven times larger** than the next-largest program (manufacturing single sales factor apportionment, $245 million). This is not one large incentive among several — it is **the** incentive, and everything else is a rounding error beside it. *(JLARC, Economic Development Incentives 2025, Rpt611.)*
- **The Commonwealth did not know what this cost until 2021.** JLARC's 2025 incentives report states it plainly: earlier estimates of the exemption's value ranged from **$80 million to $100 million a year**, while the FY2024 estimate is **over $1 billion.** Not all of that gap is growth. Data centers were not required to report their annual exemption benefit to the Virginia Economic Development Partnership until **2021**, and JLARC writes that the previous method **markedly underestimated** actual tax expenditures. Every figure the state published before FY2021 was too low, by its own account. A program can grow tenfold past its projection; it takes a reporting failure for the government to be unable to say by how much. *(JLARC Rpt611.)*
- Set against the **1,610 net new jobs** reported for FY2025, that combined ~$1.9 billion figure works out to roughly **$1.2 million of forgone revenue per job** (counting state and local together, not the state portion alone) — consistent with Good Jobs First's national finding that data center "megadeals" average about $1.95 million per job.
- The industry's counter, which this report states fairly: VEDP argues the exemption **pays for itself**, citing a JLARC-referenced estimate that **~90% of the investment "would not have occurred in Virginia without the exemption,"** and a state finding that the break produced about $6.10 in labor income per $1 forgone. The counter-argument is **not only made by critics.** JLARC's own 2025 incentives report notes that research on incentives nationally suggests between **75% and 98% of projects would have occurred anyway** without incentives, citing the economist Timothy Bartik. That sidebar concerns grant programs rather than the exemption specifically, so it is not a direct rebuttal — but it means the "but-for" question is contested **inside the Commonwealth's own documents**, not just between the industry and its opponents. Critics add that location decisions are driven by **power, land, and fiber — not tax breaks** (only 3% of data center owners in one survey named incentives their top site factor).

What localities receive — and the disclosure problem

- Local benefit is **real but wildly uneven.** Among the five Virginia localities with mature markets, data center revenue ranged from **under 1% to 31% of total local revenue. Loudoun County** collects the most — data centers provide roughly **31–38% of its general-fund revenue**, hundreds of millions of dollars. A community cannot assume it will be Loudoun.

- **Local property taxes** (on buildings and on the computer equipment inside) are where localities actually make money — **not** the sales-tax exemption, which is a state giveaway. This is why the local calculus differs from the state one, and why each locality must run its own numbers.
- **The disclosure failure is severe.** Of Virginia's 133 counties and cities, only 36 disclosed any tax-abatement programs in FY2024, and **only one (Chesterfield) mentioned data centers at all.** Virginia — the largest market on Earth — **does not publicly disclose which companies receive the exemption or how much each gets.** All the state's figures are **self-reported by operators and not independently validated.**
- **The school-funding link:** Good Jobs First estimates that in FY2024 the exemption's forgone revenue included losses of roughly **$38 million to Fairfax County schools and $19 million to Prince William schools** — revenue that would otherwise have been available for public services, though the state disputes how directly the two are linked.

Who bears the cost: ratepayers

JLARC found plainly that **"growing energy demand is likely to increase other customers' costs."** Because data centers require vast new generation and transmission, and those costs are socialized across the grid, ordinary households and businesses can end up subsidizing the industry's power. In response, Virginia enacted a first-of-its-kind **energy-consumption tax of $0.011 per kWh (kilowatt-hour) on data centers (effective July 1, 2026)** and passed legislation shifting some grid-capacity costs onto facilities using 25 MW (megawatts) or more — an attempt to stop the cost-shifting, and a sign the Commonwealth now formally acknowledges it was happening.

Part IV · Who the Developers Are

Two kinds of company build Virginia's data centers: the **hyperscalers** (the tech giants who own and operate their own facilities) and the **colocation / wholesale developers** (who build space and lease it, often to those same giants). A recurring difficulty for the public is that projects are frequently advanced under **code names and LLCs (limited liability companies)**, with the true end-user hidden behind NDAs (nondisclosure agreements) — so the list below reflects what is publicly known.

Developer / operator	Type	Virginia footprint (public record)
Amazon Web Services (AWS)	Hyperscaler	The largest operator; campuses across Loudoun, Prince William, Louisa, and a multi-county water deal (below)
Google	Hyperscaler	Pledged ~$9B in VA AI infrastructure through 2026; Chesterfield campus; Loudoun & Prince William expansions
Microsoft	Hyperscaler	Major Northern Virginia presence and expansions
Meta (Facebook)	Hyperscaler	Operating facilities; large campuses
QTS (Blackstone)	Colocation / wholesale	A central developer of the Prince William Digital Gateway; subject of ongoing litigation
Compass Datacenters	Colocation / wholesale	A Digital Gateway partner (later exited)

Developer / operator	Type	Virginia footprint (public record)
Tract	Land developer	Assembling large sites (e.g., Goochland) for data center campuses
Digital Realty / others	Colocation / REIT	Established Northern Virginia operators

A note on transparency: nationally, end-users such as Google, Meta, and Amazon have used broad NDAs that prevent local officials from disclosing even the identity of the company behind a project (in Tucson, an Amazon project was known only as "Project Blue" until a document reached a reporter a month after the vote). Virginia has seen the same code-name pattern. This secrecy is itself a documented feature of the industry, not an incidental one.

Part V · Political Influence and Public Process

You asked specifically about political contributions and organizations. Here the honest answer requires care: the **influence is well documented; precise contribution totals by company are not consistently public**, and this report will not invent figures. What the record does show:

- **An organized industry lobby.** The **Data Center Coalition** is the industry's national trade group and an active presence in Richmond; the **Virginia Economic Development Partnership** advocates for the exemption in official responses to JLARC. In the 2026 session alone, lawmakers considered **61 data center bills**, with the billion-dollar tax exemption the central fight in a budget standoff that delayed the state budget into a special session.
- **A documented veto.** In May 2025, Governor Youngkin **vetoed HB 1601** (Del. Josh Thomas), a bipartisan bill that would have required data center applicants to study impacts on water, farmland, forests, historic sites, and noise near homes and schools before approval. The sponsor argued the veto "prioritized corporate interests over community well-being"; the Governor called it a "one-size-fits-all" burden. Similar bills returned in 2026.
- **NDAs that limit public input.** As noted above, NDAs binding local officials are a documented mechanism that constrains the public's ability to weigh in before approvals — the reform most frequently requested by residents and preservation groups.
- **The organizations on the public's side (nonprofits):** the **Piedmont Environmental Council**, the **Sierra Club** (Virginia chapter), **Food & Water Watch**, the **American Battlefield Trust**, the **Virginia Data Center Reform Coalition**, and local homeowners associations (e.g., Oak Valley) have led research, litigation, and organizing. Good Jobs First and the Commonwealth Institute for Fiscal Analysis supply much of the independent fiscal analysis.

The campaign-contribution record: a closer look (VPAP)

Using the nonpartisan Virginia Public Access Project (VPAP — a Richmond-based nonprofit that publishes Virginia campaign-finance data), the clearest documented money trail runs through the industry's **power supplier** rather than the data center operators themselves. This matters because Virginia is one of only a handful of states that places **no limit on corporate campaign contributions**, so a regulated utility can give in amounts that would be illegal elsewhere.

- **Dominion Energy is the dominant spender.** Per VPAP, Dominion Energy — the monopoly utility that powers Data Center Alley and profits directly from the load growth — donated a **record ~$19.3 million** across

the 2024–2025 election cycle (split nearly evenly between Democrats and Republicans), and reportedly spent **over $40 million more on issue advertising**. It is consistently one of the two largest political donors in the Commonwealth. Because the State Corporation Commission (SCC — the body that sets Dominion's rates and rules on data center cost-shifting) is chosen by the General Assembly, this spending reaches the very legislators who pick Dominion's regulators.

- **The money concentrates at the top.** In the 2023–2024 cycle, Dominion's **top five recipients — three Democrats and two Republicans — each received at least $400,000**. The single largest was then-House Majority Leader (later Speaker) Don Scott (D–Portsmouth), whose campaign accepted about **$720,000**. Giving to leaders of both parties is the documented pattern — it buys access regardless of who holds the majority.

Donor / entity	What VPAP documents	Relevance to data centers
Dominion Energy	~$19.3M in 2024–25 cycle; top-5 recipients each ≥$400K; bipartisan	Builds & profits from the grid serving data centers; rate cases decide who pays
Data Center Coalition (Sterling, VA)	Registered donor & lobbying presence	The industry's own national trade group
Google	Appears in VA political-giving records	Hyperscale operator
Clean Virginia	~$23M since 2018 (mostly to Democrats)	Founded specifically to counter Dominion's influence

- **There is an organized counterweight — and a reform trend. Clean Virginia** (a Charlottesville-based advocacy group funded largely by investor Michael Bills, formed expressly to challenge Dominion's political power) has given roughly **$23 million since 2018**, mostly to Democrats. Notably, a growing number of candidates — including Governor Abigail Spanberger and others — now **refuse to accept donations from regulated public utility monopolies** on principle, and in 2025 eight Republicans also broke from taking Dominion money. The utility-money question has itself become an election issue.
- **The operators lobby even where they don't headline the donor lists.** Beyond contributions, Meta, Google, Amazon, and Microsoft all formally intervened in the 2026 SCC transmission-cost case (Part VII), and the Data Center Coalition co-authored the industry's preferred grid-cost proposal at the regional grid operator. Influence flows through **lobbying and regulatory intervention**, not only campaign checks.
- **An honest limit remains.** VPAP cleanly documents Dominion's and Clean Virginia's giving, but it does **not** produce a single tidy "data center industry contributions" total, because operators give through multiple entities, PACs, and executives, and much influence is exercised through the utility rather than the operators directly. This report states what VPAP documents and does not synthesize a combined figure the source will not support.

*How to check this yourself: at **vpap.org** you can search any donor (try "Dominion Energy" or "Clean Virginia") or any candidate to see who funds them, by year and amount; and you can look up your own legislators' top donors in a few clicks. The practical takeaway is that the money shaping Virginia data center policy flows most visibly through the **utility** and an organized lobby — so to follow the influence, follow Dominion, the Data Center Coalition, and the reform groups arrayed against them.*

Part VI · Documented Environmental Harm

This section separates **documented** harm — measured, on the public record, or the subject of litigation — from **projected** risk. Virginia's scale means it has more documented cases than anywhere else.

Water

- **Rising, drought-colliding use (documented).** Loudoun County utilities reported roughly **899 million gallons** of potable water used by data centers in 2023 — about a **250% increase** over earlier years. Statewide, the Joint Legislative Audit and Review Commission (JLARC) estimated Virginia data centers consumed roughly **2.1 billion gallons in 2023** — under 0.5% of the state's total water withdrawals, and JLARC judged current statewide use sustainable. But the burden is highly uneven: at the six utilities JLARC reviewed, data centers made up between **2% and 21% of total water use**, and a handful of sites dominate — eleven buildings each exceeded 50 million gallons in 2023, and one alone used **~243 million gallons** (10% of the industry's total). Peak use falls in summer, exactly when drought risk is highest; Loudoun faced mandatory water restrictions during 2024 drought.
- **A state aquifer study the administration tried to suppress (documented).** In August 2026, a Virginia Department of Environmental Quality (DEQ) study — withheld for more than six months — concluded that the **Potomac Aquifer in eastern Virginia (east of I-95) cannot support new industrial water withdrawals**, meaning effectively no new water-cooled data centers there. State senators requested a special session.
- **A four-county withdrawal for Amazon (documented).** FOIA-based reporting in 2026 (University of Mary Washington researchers, via Virginia Mercury) found that four counties between Northern Virginia and Richmond — Louisa, Spotsylvania, Caroline, and Stafford — have allocated at least **19.6 million gallons of water a day** to Amazon data centers, a figure the researchers call an underestimate. More than half is lost to evaporation during cooling, raising direct questions about aquifer and reservoir stress.
- **The Occoquan risk (documented concern).** Prince William holds the headwaters of the Occoquan Reservoir, a major drinking-water source serving roughly **1.2 million people** in Northern Virginia — including over half of Prince William County. Impervious surfaces and discharge from large campuses threaten runoff and water quality in a shared drinking-water source already on Virginia's impaired-waters list for salt pollution; Fairfax's environmental council has formally warned of long-term impacts.
- **Discharge and PFAS — per- and polyfluoroalkyl substances, the "forever chemicals" (hazard documented, testing rare).** Cooling blowdown carries heat, salts, and treatment chemicals; environmental advocates and a University of Georgia study flag PFAS "forever chemicals" tied to some cooling methods, and Virginia reporting has asked "what's in the water" because discharge is generally not tested for PFAS.

Air and noise

- **Diesel backup generators (documented).** Virginia has permitted **nearly 9,000** backup generators, about 4,700 in Loudoun alone. JLARC estimated that in a worst case these could emit roughly **9,000 tons of nitrogen oxides** in Northern Virginia — about half of what the whole region emits annually from all sources. DEQ has permitted generators to run up to 500 hours/year each.
- **Health assessment (peer-reviewed, 2026).** A *Frontiers in Climate* study — the first of its kind — assessed Data Center Alley and found measurable quality-of-life impacts from noise and air quality, with diesel PM2.5 (fine particulate matter) and NOx (nitrogen oxides) linked to asthma and heart disease, falling hardest on children, seniors, and asthmatics.

- **Noise (documented, litigated).** Residents near Gainesville and elsewhere describe a constant 24/7 industrial hum — one resident called it "an internal organ vibration." Chronic noise is linked to sleep disturbance, hypertension, and cardiovascular risk. In Louisa County, a homeowner (Austin Newsom) filed suit against Amazon in 2026 over **brown well water, dust, and round-the-clock construction noise**.

Land, litigation, and habitat

- **The Prince William "Digital Gateway" (documented, litigated).** A ~2,000-acre rezoning for as many as **37 data centers and 14 substations** with **700+ diesel generators** was approved in December 2023 over heavy opposition — then, in April 2026, the **Virginia Court of Appeals halted it**, finding the county failed to properly notice public hearings. Parallel litigation on battlefield-preservation grounds continues. The county had already spent $1.6 million on legal costs.
- **Farmland and habitat conversion (documented pattern).** Large campuses convert farmland and forest to impervious surface permanently, fragmenting habitat and altering drainage — a change residents describe as turning rural countryside into "an industrial wasteland."
- **An out-of-state warning (documented).** In Oregon, a data center subsidiary agreed in 2026 to a **$20.5 million settlement** over nitrate groundwater contamination (while denying responsibility) — an illustration of the liability that industrial-scale siting can carry.

The through-line: Virginia's environmental record is not a matter of projection alone. It includes a suppressed state aquifer study, documented multi-billion-gallon water use rising into drought, thousands of permitted diesel generators, a peer-reviewed health assessment, and active litigation — a body of evidence no other state can match, because no other state has this much data center.

Part VII · Transmission Lines, Land, and Wells

A data center's footprint reaches far beyond its own fence line. To power it, utilities build new high-voltage transmission lines and substations that cut across farms, yards, and school grounds — and to acquire the right-of-way, they can invoke **eminent domain**. This surrounding infrastructure is where much of the human cost of the build-out is now landing, and Virginia has become the national test case.

The transmission build-out and its cost fight

- **Who pays (documented, 2026).** Dominion Energy sought to recover roughly **$1.5 billion in transmission costs** through a rider charged to all customers. After the Governor's office, Meta, Google, Amazon, and Microsoft all intervened, the State Corporation Commission ordered (July 31, 2026) that Dominion must **directly assign the cost of transmission infrastructure to the large-load facilities that make it necessary** — with mandatory (not voluntary) contributions for users of 25 MW or more. Regulators called Virginia a national "bellwether" for who pays for data center power.
- **The lines themselves (documented).** Dominion's Northern Virginia reliability build-out includes new 500 kV lines such as the **"Golden to Mars"** line across Loudoun County (SCC-approved in 2026). These corridors require towers up to **185 feet tall** — higher than the Statue of Liberty — and routes that, in one proposal, would have run beside two schools.

Eminent domain and the taking of yards and farms

- **A documented Virginia case.** In Ashburn, homeowner **Vicky Hu** faced losing up to a third of her property to a Dominion high-voltage line and a tower in her backyard; after more than a year of opposition, regulators approved a route, and residents were left fighting for an underground option or to route the line onto school land (which, as public land, **cannot** be taken by eminent domain). One affected resident said simply, **"We've been sacrificed."**
- **The legal tension is real and unsettled.** A 2012 amendment to the Virginia Constitution (Article I, § 11) says private property may **not** be taken where the primary use is "private gain, private benefit, private enterprise, increasing jobs, increasing tax revenue, or economic development." Whether a transmission line built primarily to serve private data centers meets the "public use" test is now an open question — in Virginia and in Georgia, Maryland, Indiana, and Pennsylvania, where similar takings are being challenged.
- **Farmland lost — or deliberately protected.** Nationally, developers have offered farmers extraordinary sums (a Pennsylvania grower was offered **$15 million** for 261 acres; a Kentucky family **$26 million** for 600) — some accept, and some refuse and place their land in preservation trusts instead, warning "the American farm family is definitely in trouble." Either way, large Virginia campuses permanently convert farm and forest to impervious surface — land no longer available for agriculture, housing, or habitat.

Wells and private water

- **Documented well harm.** In **Louisa County**, homeowner Austin Newsom sued Amazon in 2026 alleging that data center construction left his family with **brown well water, dust, and round-the-clock noise**. Because roughly rural Virginia relies heavily on **private wells** that draw from the same shallow aquifers a large facility taps or disturbs, well owners have the least monitoring and the most direct exposure to drawdown, sediment, and contamination.
- **The aquifer ceiling (documented).** The suppressed 2026 DEQ study (Part VI) means new water-cooled facilities east of I-95 would compete for groundwater the state itself says cannot support new industrial withdrawals — raising the risk to every private well that shares that aquifer.

Part VIII · Health Effects on Children

You asked specifically about children, and the evidence — while still emerging — is consistent and concerning, because children are physiologically the most vulnerable to exactly the pollutants and noise data centers add. This section separates what peer-reviewed and preliminary research documents from what remains under study.

Why children are more exposed

- Children **breathe roughly twice as much air per pound of body weight as adults**, their lungs and brains are still developing, and damage sustained in childhood can be **permanent**. Public-health researchers note that air pollution is already the leading environmental cause of death and disease in children globally. This is why the same diesel PM2.5 and NOx that modestly affect adults fall hardest on the young.

What the research documents

- **Air pollution and asthma (peer-reviewed).** The 2026 *Frontiers in Climate* study (Pan, Johnston, Caylor et al.) modeling data center backup generators and electricity demand found that in Virginia alone, generator emissions could contribute to roughly **14,000 asthma symptom cases and 13–19 deaths per year**, part of a national burden projected to reach ~600,000 asthma cases and ~1,300 deaths by 2028. Diesel PM2.5 and NOx are directly linked to **asthma, impaired lung development, and respiratory infections** in children.
- **A single Loudoun facility (modeled).** One analysis of a single Loudoun County data center estimated **$53–99 million per year in health damages** from PM2.5, including 3.4–6.5 additional premature deaths annually — harm concentrated in the surrounding, often school-aged, community.
- **Learning and test scores (preliminary, 2026).** Research presented at a Brown University conference found that **math scores of third-graders in schools within a mile of data centers declined more** than those one-to-two miles away, with sharper declines near multiple facilities — an effect the researchers link to both air pollution and chronic noise. Separate noise research near a major airport found similar math-score declines, consistent with decades of evidence that chronic noise impairs children's cognition.
- **Noise and sleep (documented mechanism).** The constant low-frequency hum of cooling systems penetrates walls and disrupts sleep; established research (including a cross-national *Lancet* study) links chronic environmental noise in children to impaired reading, attention, and memory.

*The honest framing: the direct epidemiology of children living beside data centers specifically is still **sparse and emerging** — much of the strongest evidence is modeled or drawn by analogy from the large, well-established literature on traffic and industrial pollution. But the direction is consistent across every study, the mechanisms are well understood, and the exposures (diesel exhaust, fossil-power emissions, chronic noise) are real and measurable. Where facilities are sited near homes and schools — as many in Virginia are — children bear a disproportionate share of the risk, and that is reason enough to require the studies HB 1601 would have mandated.*

Part IX · The Grid, the Power Pivot, and Stranded-Asset Risk

Beneath the water and land questions sits a larger structural one: can the electric grid physically keep up, who gets protected when it can't, and what happens to the enormous new power infrastructure if the AI boom slows? These are not abstractions — they became concrete in Virginia in 2026.

Grid reliability: "whose power gets protected first?"

- **The physical instability (documented).** On **July 22, 2026**, a transmission-line outage caused roughly **3.1 gigawatts of Northern Virginia data center load to drop off the grid in about 30 seconds** — double a similar 1,500 MW event in July 2024. The system held, but federal regulators now treat large computational loads as a **bulk-system reliability concern**: the North American Electric Reliability Corporation (NERC) has called AI data centers among "the greatest near-term risks to grid reliability," and the Federal Energy Regulatory Commission (FERC) has ordered new mandatory reliability standards for them.
- **The capacity shortfall (documented).** PJM (PJM Interconnection, the regional grid operator for Virginia and 12 other states) — for the **first time in its history** failed to secure enough future power supply in its capacity auction, leaving a ~6.8 GW gap, and projects data centers could add **30+ GW of demand by 2030**. Capacity prices hit the ceiling, and PJM's own market monitor blamed data centers for much of a near-doubling of

wholesale power costs.

- **Who gets cut first (documented).** In 2026 the U.S. Department of Energy and PJM moved to let the grid **curtail large data centers** (50 MW+) during emergencies — requiring them to switch to backup generators — **before** cutting households, with hospitals, 911 centers, and water plants exempt. New data centers that don't bring their own power by June 2027 face curtailment. The framing has flipped from "will the lights stay on for data centers" to "will data centers be forced off so the lights stay on for everyone else."

The power pivot: nuclear (SMRs) and on-site gas

Because the grid can't keep up — Dominion's data center customers face an average **seven-year wait** to connect, against a ~70 GW project queue — the industry and the state are pivoting to new power sources, each with its own trade-offs:

- **Small modular reactors (SMRs — compact nuclear reactors, none yet commercially operating in the U.S.).** Governor Youngkin pledged Virginia would host the nation's first commercial SMR; Dominion is studying one at its **North Anna** plant (Louisa County) with **Amazon** funding development, and Appalachian Power has a site at Joshua Falls. SMRs are carbon-free but **not yet commercially proven in the U.S.**, face cost-overrun and delay risk, and — importantly for ratepayers — 2024 legislation lets utilities **recover SMR development costs from customers before any reactor is built** (Dominion's first such request was ~$17 million).
- **On-site gas ("behind the meter").** To skip the grid queue, developers increasingly propose building their **own gas turbines** on-site. This speeds deployment but **increases local air pollution** and may **sidestep Virginia's clean-energy law** (the Virginia Clean Economy Act, or VCEA), since behind-the-meter generation isn't bound by the same requirements. Dominion has also sought approval for a new **1-GW gas plant** (Chesterfield) largely to serve data center demand.

Stranded-asset risk: who is left holding the bill

Here is the structural financial risk most residents never hear. Virginia is building enormous, expensive, long-lived power and transmission infrastructure on the assumption that data center demand will keep growing. But nationally, roughly **half of announced 2026 data center capacity may be delayed or cancelled**, and PJM's own queue shows only about one in four projects reaching completion. If the demand forecast proves inflated — or the AI boom cools — Virginia could be left with **over-built generation and transmission that ratepayers financed**, a classic "stranded asset." Analysts warn ratepayers are "on a path to spend more than $100 billion" region-wide, potentially "unjustly enriching owners of old power plants while still facing blackouts." The people who pay for speculative overbuilding are not the speculators; they are the households on the same grid.

Part X · What Nobody Measures — and How to Check for Conflicts

The cumulative-impact gap

Perhaps the single biggest structural flaw in how Virginia regulates data centers is this: **each facility is reviewed one at a time, but the harms are cumulative.** A county weighing a single rezoning assesses that project's water, power, and traffic — but no one is required to assess the **aggregate** effect of dozens of facilities on a shared aquifer, airshed, or grid. This is exactly the review that HB 1601 would have begun to require before it was vetoed, and it is why residents so often feel the full scale arrives without anyone having weighed it as a whole. When you evaluate a proposal, ask: **what is the combined impact with every other data center on this water system and this grid** — not just this one building?

How to check for conflicts of interest

You asked how to find conflicts of interest between the officials approving these projects and the companies building them. Virginia law provides real tools — this is a factual guide to using them. Nothing here alleges wrongdoing by any official; it describes the public records that let citizens check for themselves, which is exactly what those records exist for.

- **Statements of Economic Interests (SOEI).** Under the State and Local Government Conflict of Interests Act (Va. Code § 2.2-3100 et seq.), state legislators, many local elected officials, and members of policy/supervisory boards must file annual **Statements of Economic Interests** disclosing income sources, business interests, and real-estate holdings. These are **public records**. State-level filings are searchable through the **Virginia Conflict of Interest and Ethics Advisory Council** (ethics.dls.virginia.gov); local officials' filings are held by the locality's Clerk. **Compare** the disclosed interests against the parties to a data center application.
- **Real-estate and land records.** Whether an official (or a relative) owns land near a proposed site — or stands to profit from selling or leasing to a developer — can be checked against county **land records, deeds, and GIS parcel maps** (in the Circuit Court Clerk's office and online property systems). Cross-reference the applicant's parcels and any LLC names against officials' known holdings.
- **Campaign finance (VPAP).** Check whether the developer, its executives, or affiliated PACs donated to the officials voting on the project, using **vpap.org** (search both the donor and the official). Contributions are legal and common, but the pattern is public and worth knowing.
- **Recusals and the meeting record.** Virginia law requires an official with a personal interest in a transaction to **disclose it and recuse** from voting. Meeting **minutes** (public under FOIA) record who recused and who voted. A vote cast by someone with an undisclosed interest is the thing to look for.
- **The Freedom of Information Act (FOIA).** Under Va. Code § 2.2-3700 et seq., you can request emails, calendars, staff reports, and communications between officials and developers. Be aware of the **"economic development" and "proprietary" exemptions** often invoked to withhold data center records — but drafts and minutes are generally public, and the FOIA Advisory Council (a free state resource) will advise on what must be released.
- **Watch for the code-name gap.** Because projects advance under NDAs and LLC code names (Part IV), an official may vote on "Project [X]" without the public — or even all board members — knowing the end-user. Asking, on the record, **who the true beneficiary is** before a vote is itself a way to surface hidden interests.

The honest framing: disclosure requirements and public records exist precisely so residents don't have to take conflicts on trust. Most officials comply and most votes are clean — but the tools above let a community verify that rather than assume it. If a records request is refused on a questionable exemption, that refusal is itself information, and the FOIA Council can be asked to weigh in.

Scale at a Glance

Metric	Virginia figure	Note
Operating data centers	**~340 buildings across ~150 sites**	Loudoun ~half the state's industry
Share of world capacity	**N. Virginia: ~13% global / ~25% Americas**	Largest market on Earth (JLARC)
Net new jobs, FY2025	**1,610**	Self-reported by operators
Typical jobs per facility	**~50 (half contractors)**	Per 250,000 sq ft
Capital per permanent job	**~$54 million**	2020–late 2025
Tax break, FY2025	**~$1.6–1.9 billion**	Largest state incentive
Forgone revenue per job	**~$1.2 million**	FY2025
Exemption sunset	**2035**	Grows automatically until then
Backup diesel generators	**~9,000 permitted**	~4,700 in Loudoun
Power demand	**Forecast to ~double the grid**	Data centers the main driver

Virginia is the largest data center market in the world, and the numbers that matter most to residents point the same way: a very large tax subsidy (largest in the state) producing a small number of permanent local jobs, with the power and water costs increasingly landing on the broader public. The benefits are real — construction activity, some local property-tax revenue, GDP — but they are concentrated, front-loaded, and often overstated relative to the permanent, local return.

Key Takeaways

01 **Virginia is the world's data center capital — and the spread is moving outward.** Roughly **340 buildings across ~150 sites** statewide (JLARC: **Northern Virginia** alone is ~13% of global operational capacity and ~25% of the Americas), concentrated in Loudoun and Prince William but now expanding down I-95 into Central Virginia and rural counties. About 100 million more square feet are proposed — though nationally about half of 2026 openings may slip or cancel.

02 **The permanent, local jobs are few — and not guaranteed to locals.** A typical facility employs ~**50 people** (half contractors); statewide the industry reported **1,610 net new jobs** in FY2025, about one permanent job per **$54 million** invested. **No Virginia subsidy requires local hiring.** The 74,000-job headline is mostly temporary construction and indirect activity.

03 **The subsidy is the largest in the state — and it dwarfs everything else.** The sales-tax exemption cost ~**$1.02B in FY2024** and ~**$1.6–1.9B in FY2025** — about **79% of all state incentive spending in FY2024**, against **$279 million** for every other incentive program combined. It grows automatically until **2035**, at roughly **$1.2 million of forgone revenue per net new job.** The industry says it pays for itself (90% "but-for"); JLARC's own 2025 report cites research finding **75–98% of incentivized projects would have happened anyway.**

04 **Who benefits locally varies enormously — and disclosure is broken.** Local data center revenue ranges from **under 1% to 31%** of a locality's budget; Loudoun gets ~31–38% of its general fund, most localities far less. Virginia **does not disclose which companies receive the exemption**, and only one of 133 localities even named data centers in abatement disclosures.

05 **The developers are the tech giants — often hidden behind code names.** Amazon, Google, Microsoft, and Meta are the main operators; QTS, Compass, Tract, and Digital Realty develop and lease. NDAs and LLC code names routinely hide the end-user from the public until after approval — a documented industry practice, not an accident.

06 **The environmental harm is documented, not hypothetical.** A suppressed state study found the eastern **Potomac Aquifer can't support new withdrawals**; Loudoun water use rose **~250%**; **~9,000 diesel generators** are permitted; a peer-reviewed health study found real impacts; and courts **halted the 2,000-acre Digital Gateway**. Residents are suing over brown well water and noise.

07 **The costs increasingly land on the public — which is why the politics shifted.** JLARC found data center demand **"likely to increase other customers' costs."** Virginia responded with a first-of-its-kind **energy tax ($0.011/kWh, July 2026)** and cost-shifting rules for large users. A 2025 oversight bill was vetoed; 61 bills followed in 2026. Local governments are "no longer rolling out the welcome mat."

08 **The infrastructure reaches into yards, farms, and schools — by eminent domain.** Powering data centers means new 500 kV lines and **185-foot towers**; Dominion sought **$1.5B** in transmission costs before regulators shifted them onto large users. Homeowners like Ashburn's Vicky Hu face losing land to towers, and Virginia's constitution bars takings for "private gain" — making the data center transmission grab legally contested. A Louisa family sued Amazon over **brown well water.**

09 **Children bear a disproportionate share of the health risk.** Children breathe ~twice the air per pound and their lungs are still developing. Modeling ties Virginia generators to **~14,000 asthma cases/year**; one Loudoun facility alone to **$53–99M** in annual health damage. Preliminary Brown University research found **math scores fall** for children in schools within a mile of data centers, from both pollution and noise.

10 **The grid can’t keep up — and residents may be cut off last, but pay first.** In July 2026, **3.1 GW** of Northern Virginia data center load dropped in 30 seconds; PJM hit its **first-ever capacity shortfall.** Regulators moved to **curtail data centers before households** in emergencies. Meanwhile the industry pivots to unproven **SMRs** (with costs recovered from ratepayers before any reactor is built) and **on-site gas** that skirts clean-energy law — with **stranded-asset risk** if the boom cools.

11 **Each project is judged alone, but you can check the whole — and check for conflicts.** No one assesses the **cumulative** impact of dozens of facilities on one aquifer or grid — the review HB 1601 would have started. Residents can check officials’ **Statements of Economic Interests** (ethics.dls.virginia.gov), **land records**, **campaign donations** (vpap.org), recusal records, and **FOIA** emails to see whether those approving projects have ties to those building them.

A note on sources and method: figures here come from JLARC’s Data Centers in Virginia and incentive reviews, the Virginia Department of Taxation and Annual Comprehensive Financial Report, Good Jobs First, Food & Water Watch, the Piedmont Environmental Council, a 2026 Frontiers in Climate health assessment, DEQ’s aquifer study, and Virginia court filings and news reporting. Where the state relies on industry self-reported data, or where a precise figure (such as per-company subsidies or campaign contributions) is not publicly disclosed, this report says so rather than estimate. This is a snapshot as of August 2026 of a fast-moving subject.

References & Sources

Every figure in this report is drawn from the public sources below, organized by topic. Links were current as of August 2026. Primary government sources (the Joint Legislative Audit and Review Commission, the Department of Taxation, the Department of Environmental Quality, and court filings) are the anchor wherever one exists; independent analyses and news reporting are included so each figure can be independently verified. Where the report cites something the Commonwealth does not publicly disclose — such as per-company subsidy amounts — no link can exist, and that absence is itself noted in the report as part of the disclosure problem.

Primary Government & Oversight

JLARC — Data Centers in Virginia (December 2024)
The Commonwealth's official study. Source for the 74,000-jobs / $5.5B labor income / $9.1B GDP figures, the ~50-workers-per-facility finding, the tax-exemption and water analyses, the generator estimates, and the grid forecast.
https://jlarc.virginia.gov/landing-2024-data-centers-in-virginia.asp

JLARC — Data Centers in Virginia, full report (PDF)
The complete report (Rpt598), including the 80%-in-three-counties concentration and the exemption's revenue impact.
https://jlarc.virginia.gov/pdfs/reports/Rpt598.pdf

JLARC — grid & rate-impact study (E3 analysis)
The commissioned grid modeling behind the "demand could double" and "likely to increase other customers' costs" findings.
https://jlarc.virginia.gov/pdfs/presentations/JLARC%20Virginia%20Data%20Center%20Study_FINAL_12-09-2024.pdf

Subsidies, Jobs & Fiscal Impact

JLARC — Economic Development Incentives 2025 (Nov. 2025)
The Commonwealth's most recent figures on the exemption. Source for the FY2024 $1.02 billion / 79%-of-incentive-spending finding, the $279 million spent on all other incentives that year, the $80–100M-to-$1B revision, and the 75–98% "would have happened anyway" research. Currently posted as a commission draft.
https://jlarc.virginia.gov/pdfs/reports/Rpt611.pdf

Good Jobs First — "Cloudy with a Loss of Spending Control"
Source for the exemption's scale, share-of-incentive-budget figures, school-funding losses, and the disclosure-failure findings.
https://goodjobsfirst.org/cloudy-with-a-loss-of-spending-control-how-data-centers-are-endangering-state-budgets/

Good Jobs First — "Even Cloudier" (local abatements, April 2026)
Follow-up on passive local revenue losses and property-tax abatements (Phoenix, Georgia, Oregon figures).
https://goodjobsfirst.org/even-cloudier-with-a-greater-loss-of-spending-control-how-data-center-tax-abatements-undermine-public-budgets/

Bloomberg Tax — "Data Centers Won Billions in Tax Breaks. Some States Are Balking"
Multi-state context on exemptions being reconsidered (Ohio, Georgia, Michigan).
https://news.bloombergtax.com/daily-tax-report-state/data-centers-won-billions-in-tax-breaks-some-states-are-balking

Futurism / Georgia Tech — the permanent-jobs reality
Georgia Tech research: rural data centers typically employ fewer than 100 permanent workers.
https://futurism.com/future-society/data-center-economics-job-labor-construction-ai

Political Contributions (VPAP)

Virginia Public Access Project (VPAP)
The nonpartisan source for all campaign-finance figures. Search "Dominion Energy" or "Clean Virginia," or look up any legislator's top donors directly.
https://www.vpap.org/

Water Use

Univ. of Illinois Center for Secure Water — Virginia water planning
A university synthesis of others' data. Confirms Loudoun's 899 million gallons (2023, ~250% increase) and the concentration among a few large sites. (For the statewide 2.1 billion-gallon figure, the primary anchor is JLARC Rpt598, listed above.)
https://securewater.illinois.edu/data-center-expansion-in-virginia-closing-critical-gaps-for-informed-water-planning-and-permitting/

Virginia Mercury — four counties will pump ~20 million gallons a day to Amazon
The FOIA-based reporting behind the 19.6 million gallons/day figure (Louisa, Spotsylvania, Caroline, Stafford).
https://virginiamercury.com/2026/06/19/four-va-counties-will-pump-almost-20-million-gallons-of-water-a-day-to-amazon-cause-for-concern/

Grist — "The surging demand for data is guzzling Virginia's water"
The original FOIA reporting on Loudoun's 250%+ increase (2019–2023) and summer peak use.
https://grist.org/technology/surging-demand-data-guzzling-water-ai/

Environment, Health & Noise

Frontiers in Climate (2026) — health assessment of Data Center Alley
The peer-reviewed study behind the asthma / health-impact figures and the noise and air-quality findings.
https://www.frontiersin.org/journals/climate

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Source for the Gainesville "internal organ vibration" account (Google "Mango Farm").
https://www.usnews.com/news/national-news/articles/2026-04-28/living-in-hell-data-center-neighbors-grapple-with-noise-air-pollution

WilmerHale — "Data Centers in Court" (nuisance & land-use litigation)
Overview of the nuisance/property lawsuits and the Prince William Digital Gateway rezoning being struck down.
https://www.wilmerhale.com/en/insights/client-alerts/20260713-data-centers-in-court-the-emerging-wave-of-nuisance-environmental-and-land-use-litigation

Grid, Power Pivot & Ratepayer Cost

Brookings — new evidence on data center employment effects
The PJM grid-cost jump ($2.2B→$14.7B), the residential rate rise, and the employment analysis.
https://www.brookings.edu/articles/new-evidence-on-data-center-employment-effects/

Ohio River Valley Institute — "Why Data Centers Will Be Economic Development Duds"
The Pennsylvania ratepayer figures (~$225/customer/year) and stranded-asset framing.
https://ohiorivervalleyinstitute.org/why-data-centers-will-be-economic-development-duds/

Governing — "Lawmakers Weigh the Promises and Pitfalls of a Data Center Boom"
Loudoun's 38%-of-revenue figure and the broader benefits-vs-impacts debate.
https://www.governing.com/magazine/lawmakers-weigh-the-promises-and-pitfalls-of-a-data-center-boom

Checking for Conflicts of Interest (public records)

Virginia Conflict of Interest & Ethics Advisory Council
Where state-level Statements of Economic Interests are filed and searchable.
https://ethics.dls.virginia.gov/

Virginia Freedom of Information Advisory Council
Free state resource on what records must be released under FOIA (Va. Code § 2.2-3700).
https://foiacouncil.dls.virginia.gov/