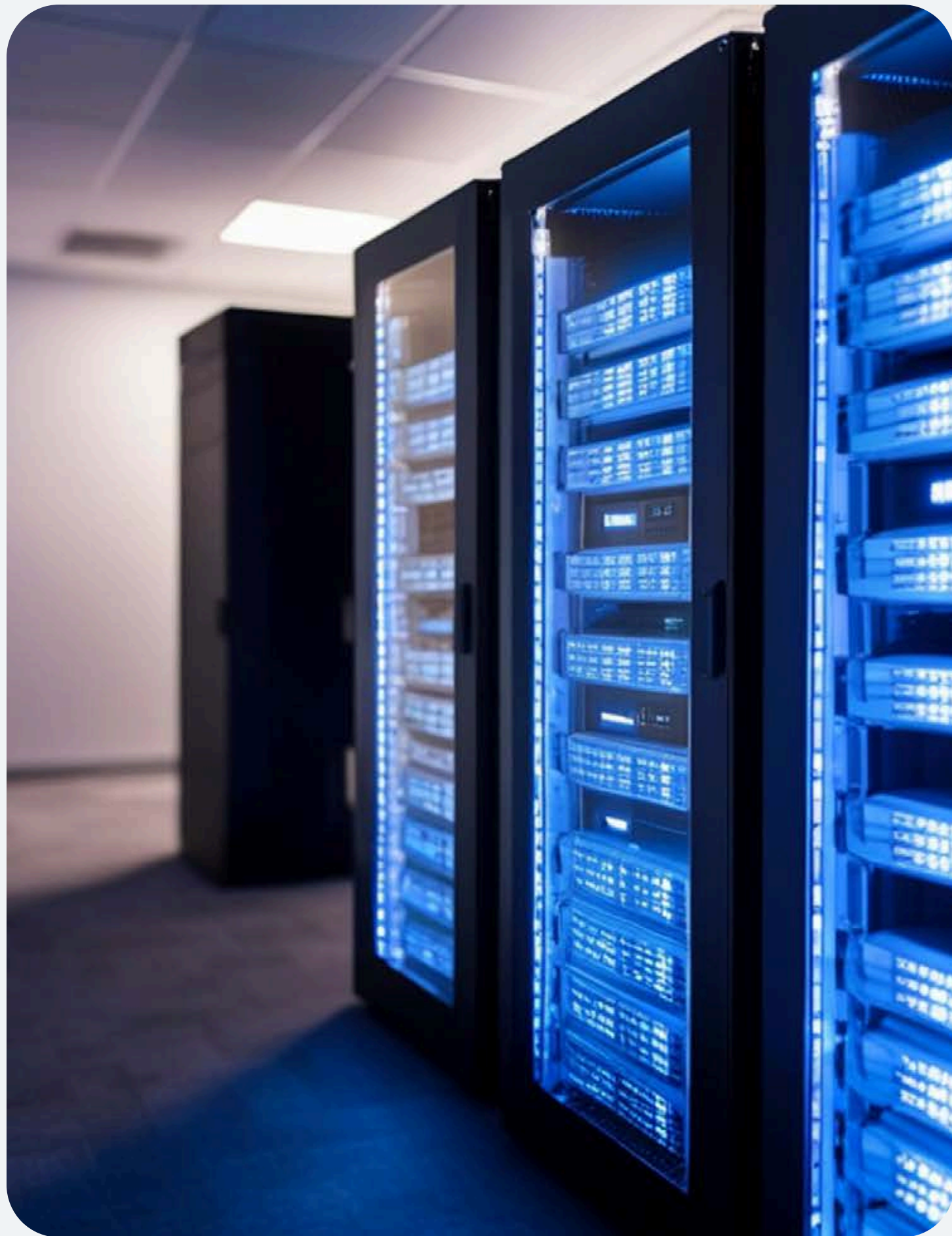




Getting Ahead of the Grid

Lessons in Data Center Planning and Policy

Curry Roberts

President, Parkway Strategies, LLC
Fredericksburg, Virginia

ESTD



2025

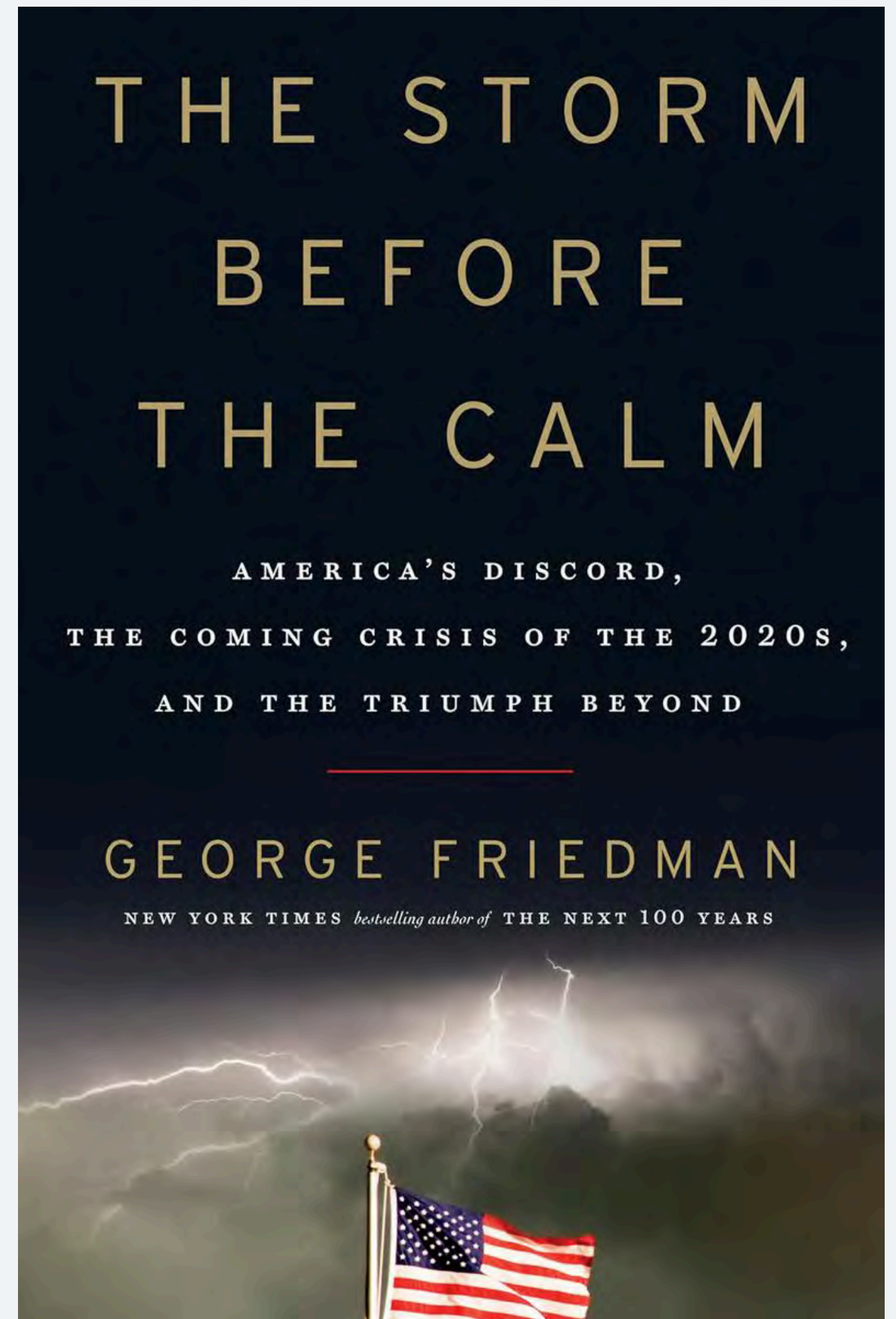
PARKWAY STRATEGIES, LLC.

900 Barton Street, Unit 205, FXBG, VA 22401

Understanding the Moment

"These Are the Times We Live In"

- Released weeks before COVID-19, the author predicted that the 2020s would bring deep institutional gridlock and economic disruption as America's foundational cycles reset simultaneously. AI and hyperscale digital infrastructure are remaking our physical landscape today.
- Data centers and soaring power demands are not temporary corporate fads. They are the literal brick-and-mortar foundation of this new economic era.
- **You cannot legislate the digital wave away.** You can either plan ahead to protect your grid and capture the tax revenue, or react after the demand arrives on your doorstep.



What's Driving Data Center Growth?



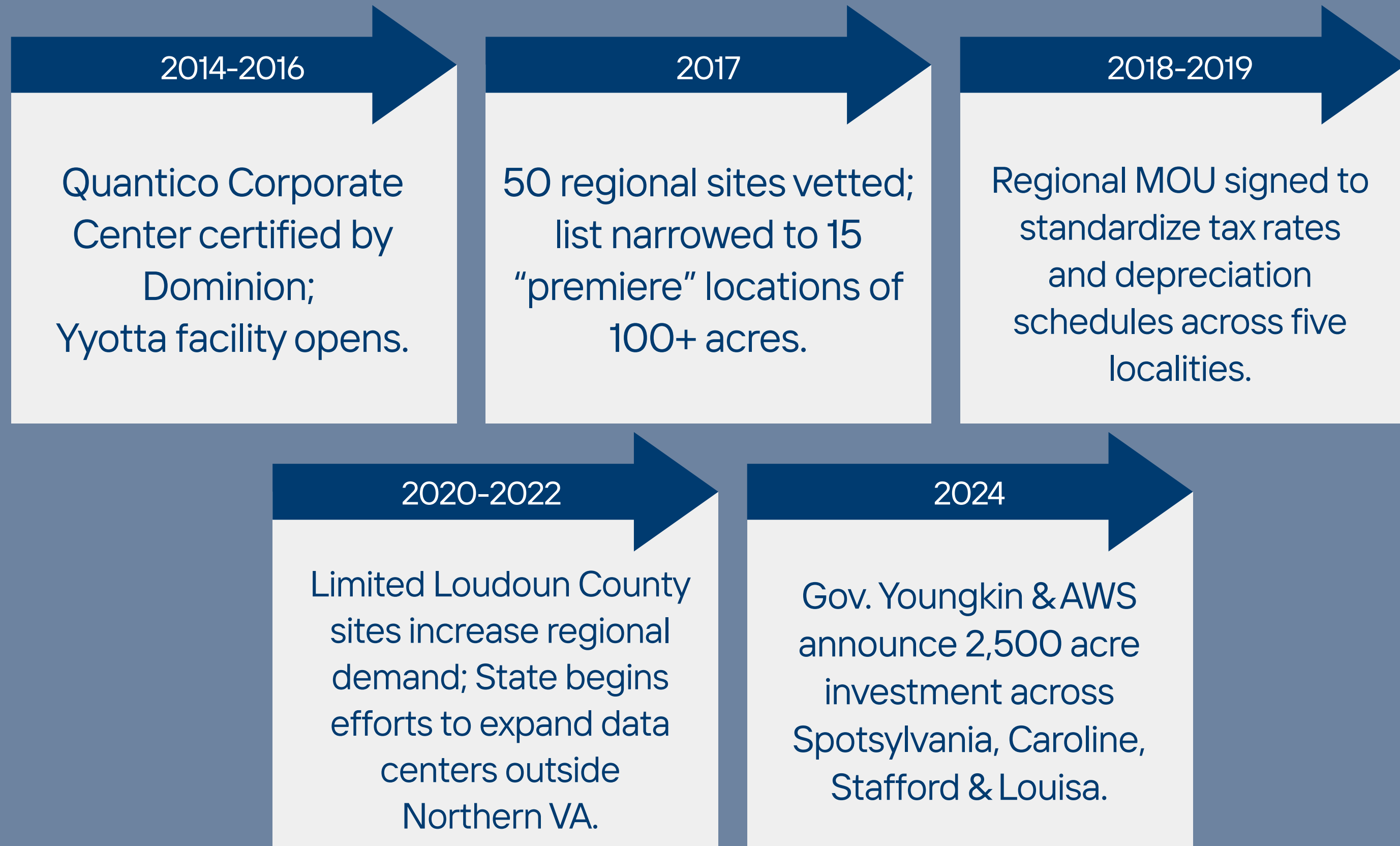
Behind every click, stream, and upload, data centers are the backbone of our digital lives.

But while consumer streaming and mobile apps established baseline demand, the explosion of AI is driving an unprecedented surge in power density and scale - requiring far more capacity than traditional cloud services.



Regional Data Center Strategy & Timeline

A decade of strategic planning - from initial site vetting to regional tax harmonization - culminated in the landmark 2024 expansion of the data center industry into the Fredericksburg region.



The Gold Standard: JLARC 2024 Data Center Study

JLARC examines true grid, water, and fiscal impacts of data centers

- Data Centers support 74,000 jobs, \$9.1B in annual GDP, and over \$24B in yearly capital investment across Virginia.
- Confirmed data centers cover their own dedicated grid costs.
- Closed-loop cooling systems consume roughly the same amount of water as a typical commercial office building.
- Data Centers generate up to 31% of local operating revenue in host counties, funding schools and allowing localities to reduce homeowner tax rates.




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Case Study: Loudoun County, VA

“Where the Internet Began”

- Over the last decade, the county has experienced significant data center expansion. Data center revenue grew from \$70.4M (FY2020) to an estimated \$875M+ (FY2024). Additionally, the county grew by over 100,000 residents between 2010 and 2020, reaching a population of 443,000.
- Data centers pay \$26 in local tax revenue for every \$1 in local services required—a ratio significantly higher than manufacturing.
- Median Home Price Growth: Increased from approximately \$435,000 (2014) to over \$730,000 (2025).
- Data center tax revenue has allowed officials to lower the residential tax rate by 48 cents since 2012.

Locality	Est. Tax Revenue	Benefit to Cost Ratio
Loudoun County	\$875,000,000+	26.0
Prince William County	\$300,000,000	12.9

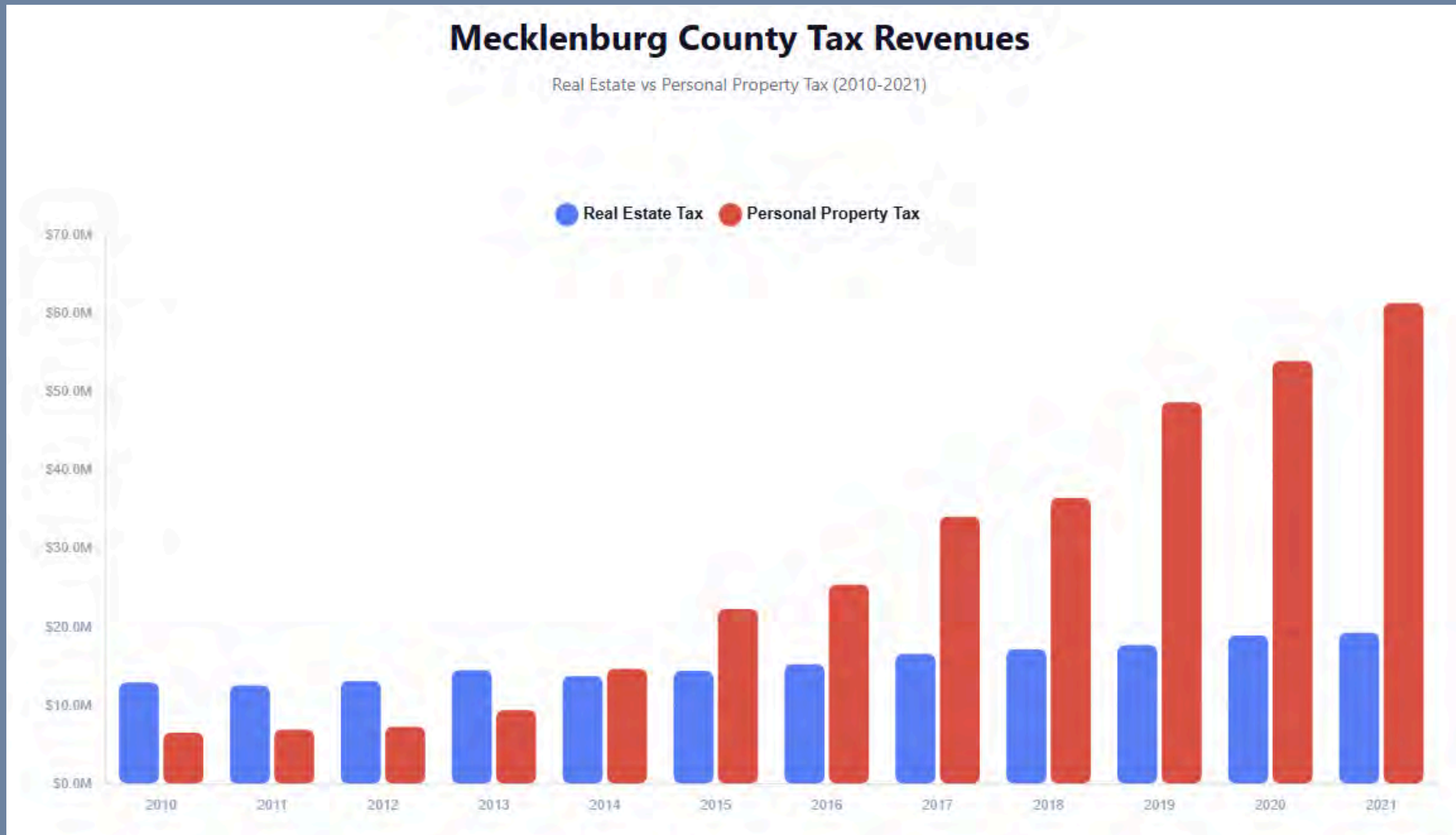
Source: Northern Virginia Technology Council (NVTC) 2024 Economic Impact Report, Loudoun County FY2024 Budget Data

Case Study: Microsoft & Mecklenburg County

- After losing over 2,000 manufacturing jobs (Burlington closure, 2002) and the end of the tobacco quota program (2004), the county successfully transitioned to hosting Microsoft's largest Virginia campus.
- The Microsoft Mecklenburg site represents a rural-to-high-tech transition for a community with a population of approximately 30,000 (2020 Census), which saw a decline of roughly 2,000 residents since the previous census.



Case Study: Microsoft & Mecklenburg County



- Substantial data center tax revenue allowed the county to fund a \$152 million joint high school and middle school complex without a significant tax hike on residents.



- The dramatic rise in personal property tax revenue, particularly after 2014, is a reflection of the significant capital investment brought to Mecklenburg County by the arrival and expansion of Microsoft's data center campus.



Case Study: Stafford Technology Campus

- A Landmark Project: A massive 1-Gigawatt (GW) campus developed by STACK Infrastructure in Stafford County, VA.
- The Economic Engine (Per 1.2M SF Phase):
 - Total Investment: \$4.52 Billion per phase.
 - Ongoing Revenue: Estimated \$27.7 Million in annual tax revenue for the county from just one phase.



Data Centers vs. Mixed-Use: The Reality Check

A 2025 environmental analysis of 340 acres in Fredericksburg compared a 2M SF data center campus against a 2,000-unit mixed-use development.

- **Height & Profile:** Data centers stay at a uniform 2–3 stories behind natural buffers; mixed-use hotels and commercial can reach up to 90 feet.
- **Drinking Water:** Over 90% of mixed-use demand is treated drinking water (200M+ gal/yr). The data center relies on 90%+ reclaimed wastewater, leaving the drinking supply untouched.
- **Traffic & Services:** 2,000 homes add heavy peak-hour traffic and demand local schools and services; data centers generate negligible daily trips and zero student enrollment.
- **Buildout:** Five years for the data center campus vs. a 10–20 year continuous construction window for mixed-use.



Lessons Learned: Great Oaks vs. Stafford

This comparison illustrates the evolution of Virginia’s data center standards over 40 years. While early "encroachment" models like Great Oaks resulted from building industrial facilities too close to established neighborhoods, the Stafford model represents a modern, "Master Planned" approach.

	Primary Adjoiner	Setbacks	Acreage Use	Water Strategy	Sound Mitigation
Great Oaks	Facilities were built directly adjacent to established neighborhoods.	100 feet: Older standards allowed massive industrial walls to tower over residential fences.	Encroached: High density on small plots led to perceived "industrial walls" near homes.	Potable Focus: Many early sites relied heavily on the community's drinking water for cooling.	After community feedback, AWS mitigated by replacing air intake vents and upgrading rooftop heat exchange systems.
Stafford Technology Campus	Site is intentionally adjoined by a landfill and light industrial zones.	750 feet: New "Gold Standard" setbacks create massive physical distance from residents.	Campus Style: 500 total acres with only ~60 acres of building footprints; the rest is open space or trails.	Sustainable Focus: Utilizes a reclaimed (purple pipe) water system for permanent industrial cooling or a closed loop system.	Requires pre and post occupancy sound evaluations and strict decibel limits enforced annually.

Locality	Total SF of <u>APPROVED</u> Data Center
City of Fredericksburg	3,000,000
Caroline County	7,470,000
Culpeper County	8,000,000
Spotsylvania County	12,278,000
Stafford County	8,672,000
TOTAL	39,420,000

The Fredericksburg region's 39.4M sq. ft. of approved space is across 1,605 sq. mi.

By contrast, established data center markets are more concentrated; Loudoun County has an estimated 49M sq. ft. existing in 515 sq. mi., while Prince William County has a development pipeline of over 80M sq. ft. in just 348 sq. mi.



Lessons Learned: Managing Scale

Total square footage is less disruptive when spread across a larger geographic footprint

- The Fredericksburg area and its surrounding counties have approved a massive amount of space for data center construction.
- A total of 39,420,000 square feet of data center space has been approved across these five localities. This indicates a major economic and development trend for the region.
- While the entire region is seeing this growth, Spotsylvania County leads with over 12 million approved square feet.

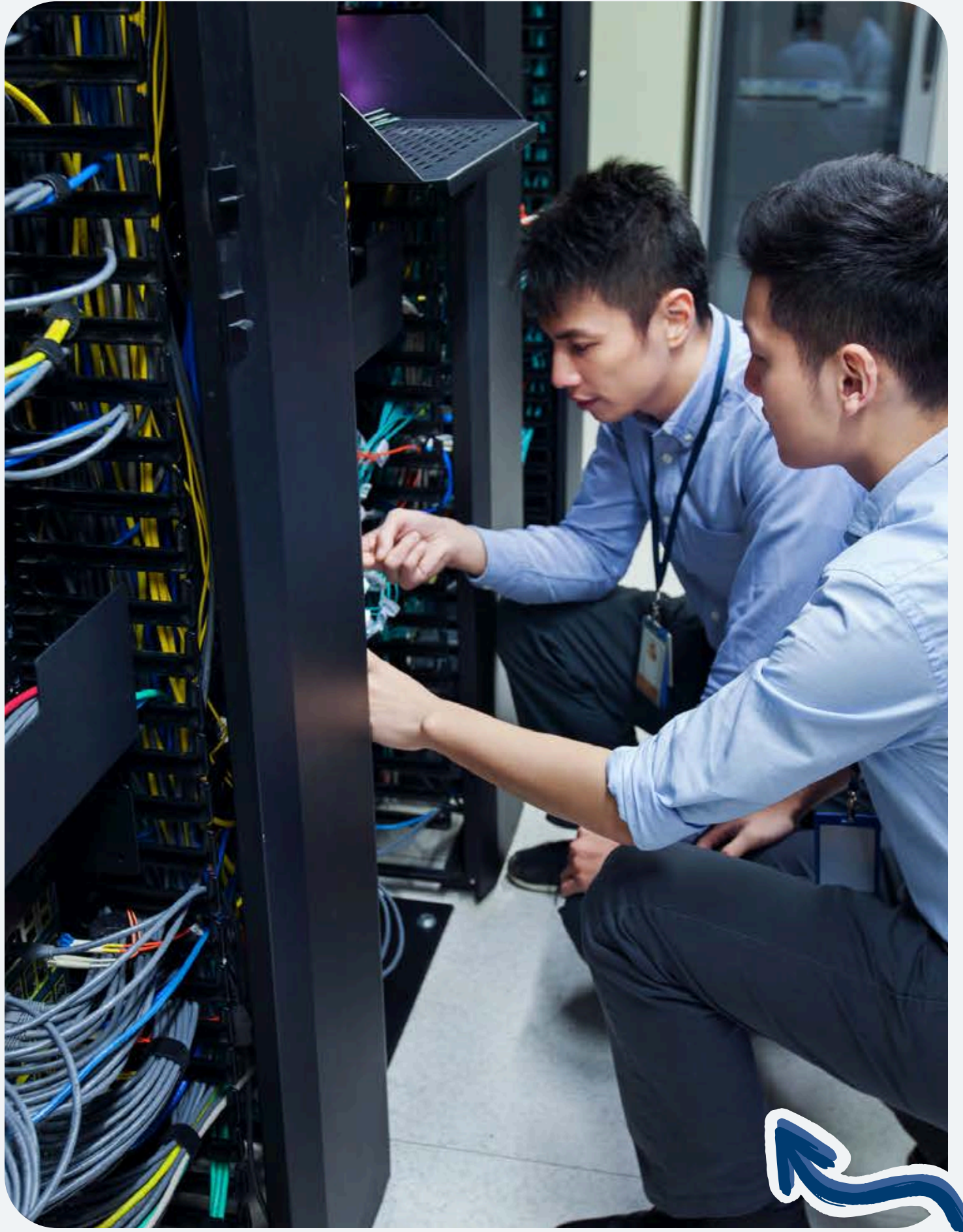


The Evolution of Site Selection

Accountability & Transparency

- **The Leverage Shift:** Communities no longer need to chase projects or enter incentive bidding wars. Power availability, transmission assets, and community willingness now dictate the terms.
- **Enforceable Commitments:** Modern agreements include strict clawbacks such as reimbursing the locality if job or investment targets fall short and significant community benefits.
- **By-Right Zoning with Guardrails:** Establishing data centers as "by-right" within dedicated industrial megasites provides development certainty while keeping facilities away from residential boundaries.
- **Ending the Secrecy Era:** Localities should mandate identity disclosure and public community engagement directly within the purchase and sale agreement (pioneered by developers like STACK Infrastructure).

Photo: Southern Virginia Megasite at Berry Hill | Pittsylvania County & Danville, VA



Lessons Learned

By the Fredericksburg Communities and Other Downstate Localities

- **Industrial Priority:** Data centers should be restricted to Industrial Zones, not commercial/office areas and ideally located under or touching electrical transmission infrastructure.
- **Proactive Utility Coordination:** A key lesson is the necessity of collaboration with the power company prior to final site selection to ensure grid capacity exists without impacting residential reliability.
- **Buffers and Siting:** Utilizing research to find larger sites of 150+ acres that are naturally separated from residential neighborhoods.

The Energy Reality: Protecting Rate-Payers & the Grid

"In reality, most of the charges leveled against data centers are false. They aren't sending your power bills sky-high... the real threat to your power bill, long-term, is not coming from the additional energy that data centers are using. It comes from a power grid that is increasingly unreliable."

[Source: The Free Press, "Data Centers are not the Villain" (January 2026)]

"The primary challenge to accommodating continued data center growth is the speed at which the necessary electric utility infrastructure—such as transmission lines and generation facilities—can be planned, permitted, and built."

[Source: JLARC, "Data Centers in Virginia" (December 2024)]

Regional Competitiveness: The Energy Cost Advantage

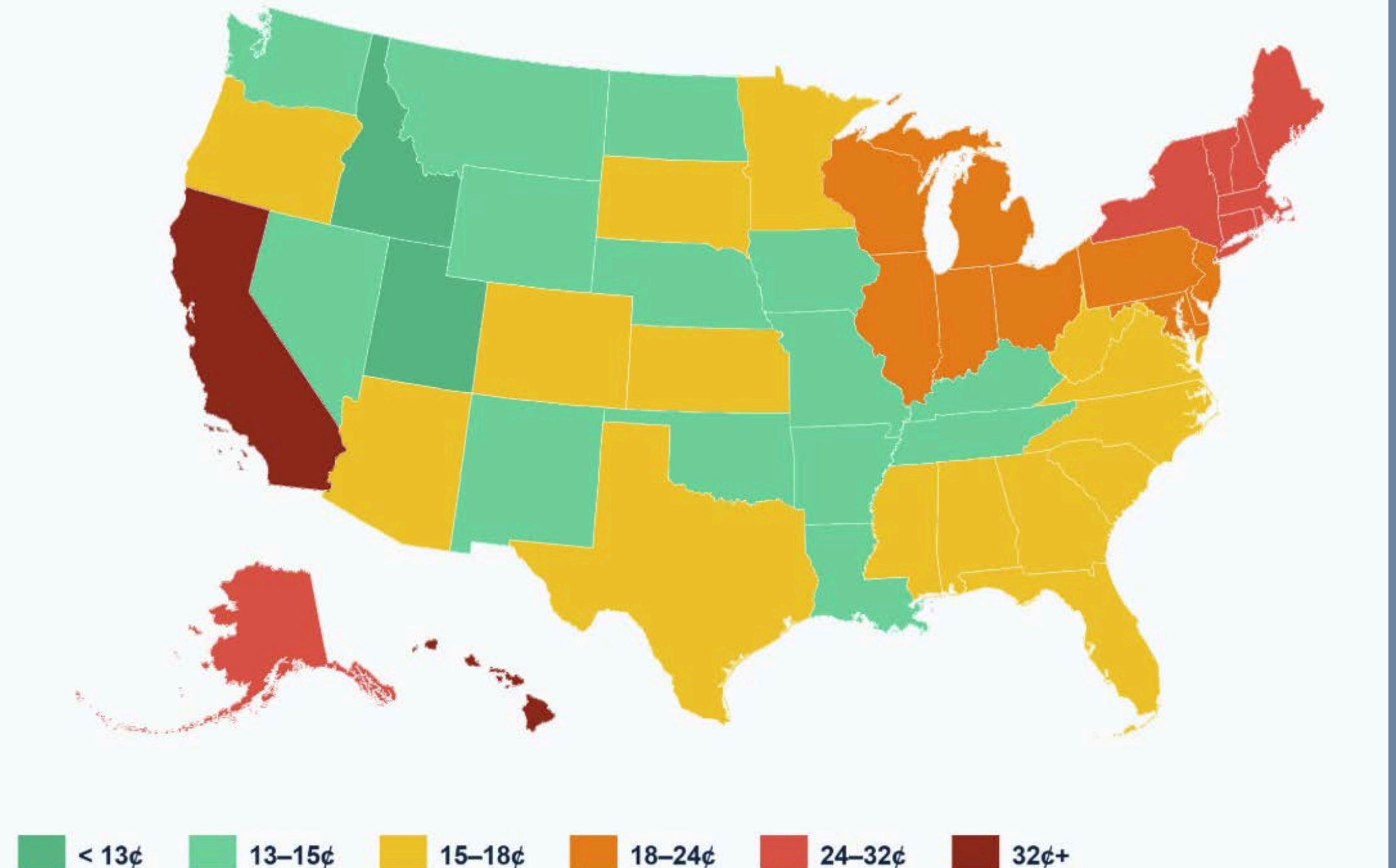
The South is a magnet for Data Center Investment

- Power pricing and grid capacity dictate where data center investment goes.
- Southern states consistently offer some of the most competitive electricity rates in the nation.
- Proactive policy is essential: dedicated industrial tariffs ensure large-load users pay their own way.
- Require developers to fund their own transmission and substations to insulate residential ratepayers.

Source: ElectricChoice.com & U.S. Energy Information Administration (EIA)

Electricity Rates by State (2026)

Average residential rate in ¢/kWh



Overall Strategies for Success

- **Educate and Engage:** Prioritize community education and address public concerns regarding noise, water, and power.
- **Intentional Site Selection:** Restrict development to industrial zones, ideally on sites of 150+ acres that are naturally buffered from residential neighborhoods.
- **Proactive Utility Planning:** Collaborate with power providers early to ensure grid capacity exists without impacting residential reliability or costs.
- **Update Local Policy:** Review and strengthen noise ordinances, tax structures, and permitting processes to align with modern setbacks and sustainability goals.
- **Define Revenue Goals:** Identify how data center tax revenue will be used—such as lowering residential tax rates or funding critical infrastructure and schools.



A big deal: Stafford's largest data center gets green light

by Kathy Knotts | Sep 19, 2024 | , Stafford, Technology

Youngkin, AWS announce data center investment in Fredericksburg region

By Potomac Local News
Published March 14, 2024 at 9:53AM



NO TECHNOLOGY PLEDGE

I personally support a data center moratorium in Pennsylvania and therefore to commit to the following:

- ✓ **STOP** using social media platforms, including Facebook, Instagram, X, and TikTok
- ✓ **STOP** using AI tools, including ChatGPT, Claude, and Microsoft Copilot
- ✓ **STOP** streaming movies, music, or videos through Netflix, YouTube, Spotify, or similar platforms
- ✓ **STOP** shopping through Amazon and other e-commerce platforms
- ✓ **STOP** using Venmo, PayPal, online banking, mobile deposits, and digital payment apps
- ✓ **STOP** storing photos, videos, documents, or backups in iCloud, Google Photos, OneDrive, or other cloud services
- ✓ **STOP** using GPS navigation and real-time traffic apps
- ✓ **STOP** working remotely or participating in video conferences
- ✓ **STOP** receiving emergency weather alerts
- ✓ **STOP** emailing, texting, and FaceTiming
- ✓ **STOP** using credit cards, debit cards, and digital point-of-sale systems
- ✓ **STOP** using telehealth services or accessing online medical records
- ✓ **STOP** relying on cloud-based cybersecurity, logistics, payroll, accounting, or customer service systems

Name

Date

Life Without the Grid?

The Pennsylvania Chamber's "No Technology Pledge" for Lawmakers Considering a Ban

- When state lawmakers propose banning data centers, the PA Chamber offers a simple clause requiring sponsors to personally pledge to stop using everything they power.
- Could you surrender your GPS, mobile banking, weather app, health apps, Facebook, Instagram, Amazon, Venmo, Facetime, and Netflix? **How many times have you checked your phone during this presentation alone? You are using a data center.**
- Data centers are essential public infrastructure, and the legislative goal is not prohibition, but predictable, master-planned growth that protects ratepayers

Sources

Official Reports & Economic Data

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- JLARC – Joint Legislative Audit and Review Commission (December 2024): "Data Centers in Virginia."
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- Wetland Studies and Solutions, Inc. (WSSI) (February 2025): "Environmental Considerations for Development: Celebrate Virginia South"

Government, Policy & Regulatory Filings

- U.S. Census Bureau (2010 & 2020 Decennial Census)
- Virginia State Corporation Commission (SCC) Final Order (Case PUR-2025-00058)
- Loudoun County Department of Finance and Budget (FY2024/2025)
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- Pennsylvania Chamber of Business and Industry (August 2026): "No Technology Pledge"
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Thank You

Curry Roberts
President
Parkway Strategies, LLC.

croberts@parkwaystrateg.com

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