

THE BOTTOM LINE

Abundant gas is not the same as available power. Veranthium tracks about 30 GW of countable data center capacity in the region, yet our delivery model expects only **about 4.2 GW** to be energized by October 1, 2031 (P10–P90: about 3.9–5.8 GW), with less than 0.5 GW before late 2028. Fuel is plentiful; what is scarce is accredited capacity, high-voltage equipment and transmission able to deliver it to new load. PJM's July 2026 auction cleared at \$325/MW-day and still fell 6,831 MW short of its reliability requirement.

97,763 MW

Operating utility-scale generation, 529 plants

~30 GW

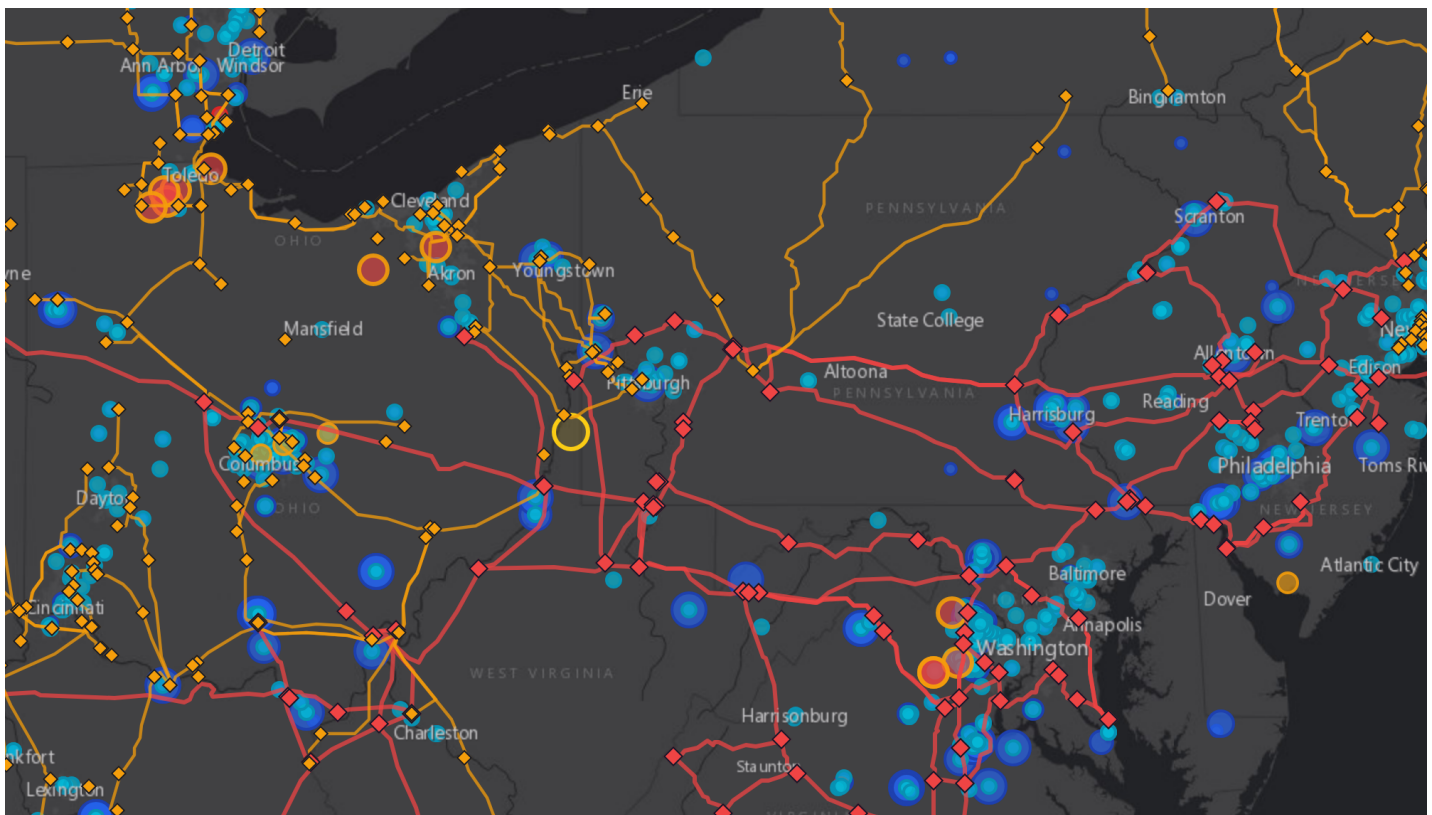
Countable data center pipeline, deduplicated

~4.2 GW

Expected facility load energized by 1 Oct 2031

6,831 MW

PJM 2028/29 auction shortfall vs. reliability requirement



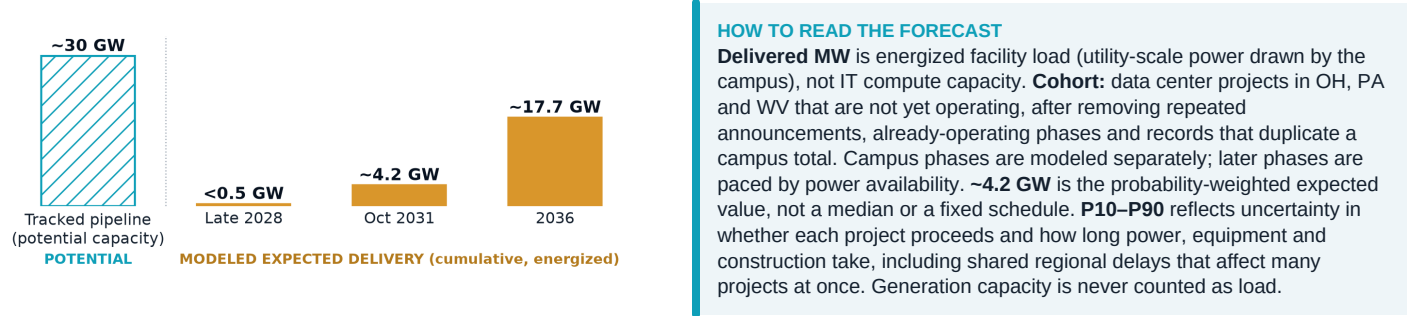
Live view from the Veranthium map. Blue: data center pipeline. Cyan: operating data centers and large loads. Red/orange circles: cancelled or delayed. Lines: existing 345–499 kV (orange) and 500 kV+ (red) transmission with 230 kV+ substations. Load clusters around Columbus, Pittsburgh and eastern Pennsylvania, often away from the 500 kV backbone. Map tiles © Esri.

1. Regional power balance: abundance on paper

The region's 97.8 GW fleet is dominated by dispatchable fuel: gas 46,658 MW, coal 24,123 MW and nuclear 12,062 MW, with solar 6,286 MW, wind 3,516 MW, hydro 2,885 MW and storage/other 2,233 MW. PJM's active generation queue in the three states holds 257 requests totalling 37,406 MW, but more than half is weather-dependent solar and wind. Historically most queued generation has not been built, and solar and wind receive low capacity accreditation, so the queue's firm contribution is far smaller than its nameplate; PJM's newer cluster process and readiness deposits may change past withdrawal patterns. Fuel supply, installed generation and resource adequacy are different things: PJM's July 2026 auction for 2028/2029 cleared at **\$325/MW-day¹** and procured 6,831 MW less than its reliability requirement.

2. How much demand could materialize—and when?

Veranthium’s tracked pipeline contains approximately 30 GW of potential new data-center capacity across Ohio, Pennsylvania and West Virginia. Our model estimates approximately **4.2 GW** could be energized by October 2031, rising to **17.7 GW** by 2036. The implication is a phased buildout: near-term opportunities concentrate in projects with established power arrangements, while larger campus expansions depend on additional generation, transmission and equipment.



Takeaway: the timing and credibility of individual phases matter more than the announced campus size.

3. A constrained corridor: central Ohio

AEP Ohio had agreements to connect 4.4 GW of new data-center load that its existing transmission could carry, but inquiries for about 30 GW more that would need new lines, possibly at 765 kV.³ It paused new data-center service agreements in 2023; the pause ended in July 2025 under a new tariff, and AEP now studies new requests in tranches with assigned in-service dates.² **Implication:** in this corridor a project’s study tranche and in-service date, more than its announced size, determine when it can energize.

Technical note. Veranthium also records PJM real-time binding transmission constraints and shadow prices. Constraint-hours are summed across constraints, and interfaces spanning two states are split between them, so they indicate where the system is stressed today, not future connection difficulty.

4. Seven factors that decide whether a project gets built

01 Transmission voltage Gigawatt-scale campuses generally need 345 kV or higher service with open substation positions; many 50–150 MW sites connect at 138 kV. Sites needing new lines can face years of right-of-way and rebuild work.	02 Utility tariff liability AEP Ohio’s large-load tariff (PUCO 24-508-EL-ATA) requires 85% minimum-demand payment ² over long terms plus collateral. Sponsors without investment-grade ratings can post qualifying letters of credit or parent guarantees; AEP Ohio says surety bonds are currently not acceptable. ²
03 Equipment allocation Veranthium’s 2026 lead-time records put the median large power transformer at about 208 weeks (89 reports), generator step-up units at 144 weeks and heavy-duty gas turbines at 156 weeks, some quoted above six years. ⁴	04 Topography & subsidence Hilly terrain and undermined ground in western Pennsylvania and northern West Virginia can add significant site-preparation cost and time, favoring already-graded industrial and former coal sites.
05 Air permitting On-site gas generation can trigger major-source NOx review and offset requirements, which are costly and sometimes unobtainable.	06 Cooling & water Evaporative cooling can need 1–3 million gallons a day per 300 MW, beyond many rural utilities, pushing designs to closed-loop or air cooling.
07 Township politics St. Albans Township (Licking County) banned data centers in March 2026; ⁵ Jerome Township (Union County) paused new applications in 2025. ⁶ Local rules can stop a project regardless of power.	HOW WE USE THEM Veranthium tracks these factors per project from dated, sourced records, so risk shows up before a project stalls, not after.

5. Three sub-regions, three different stories

Sub-region	What defines it	What it means for development
Central & western Ohio	Hyperscale cluster around Columbus/New Albany served by AEP, FirstEnergy and AES Ohio	Most saturated grid; new load pushed outward to rural sites and toward on-site supply
Western Pennsylvania	Wellhead gas and retired coal plants with intact high-voltage switchyards	Strongest case for gas co-location and coal-to-compute conversions
Northern West Virginia	Fast-track state permitting, gas supply, limited grid capacity	Attractive for self-supplied campuses; grid-dependent load faces long waits

6. Where capital is moving: on-site power and former coal sites

Long utility timelines for large new load are pushing sponsors toward on-site and co-located power. The largest campuses in Veranthium's records with documented on-site or co-located power plans are below. Capacity figures are the type stated in the source and are not interchangeable:

Campus	Location	Stated capacity	Power route
PORTS Technology Campus	Piketon, OH	up to 10,000 MW (campus)	Phase 1 on existing AEP 345 kV; later phases plan dedicated generation
Homer City Energy Campus	Indiana County, PA	4,500 MW (generation)	Gas plant on a retired coal site; data center load not separately documented
Elizabeth Township campus	Allegheny County, PA	1,000 MW	Documented on-site power plan
AWS central Ohio sites	New Albany & Hilliard, OH	~73–100 MW each	Solid-oxide fuel cells as bridging power

These routes swap the utility queue for equipment, fuel and permitting risk: recent setbacks elsewhere include force-majeure notices tied to gas pipeline timing and pending air permits.

7. What this means

Investors and lenders: treat the announced pipeline as an option, not a forecast, and assess each phase against the seven factors above. **Utilities and power producers:** recurring binding constraints flag areas worth closer study for new supply and transmission; on their own they do not show where investment pays best. **Developers and hyperscalers:** retired industrial sites with intact high-voltage connections can shorten power timelines, but each still needs its own capacity study.

Sources. (1) PJM, 2028/2029 Base Residual Auction results, July 2026. (2) AEP Ohio, Data Center Tariff (Schedule DCT, PUCO 24-508-EL-ATA), aepohio.com. (3) Utility Dive, “AEP Ohio proposes data center, crypto financial requirements,” May 15, 2024. (4) Veranthium equipment lead-time records, January–October 2026 (manufacturer and industry-reported quotes; medians shown). (5) Columbus Dispatch, “St. Albans Township becomes first to ban data centers,” March 12, 2026. (6) Spectrum News 1, “Ohio township hits brakes on new data centers,” September 22, 2025.

GET THE FULL DATA

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Request county-level datasets, the on-site power project list, or a live platform demonstration.

About this brief. Figures come from the Veranthium platform: tracked projects, operating generation, operator interconnection queues, transmission constraint records and Veranthium's delivery-forecast model (data as of October 2026). Tariff terms, capacity auction prices, equipment backlogs and queue attrition draw on public regulatory filings and industry studies. Forecasts are model estimates, not guarantees.