

SECOND ORDER

ISSUE 06 · PART II

AI, Capital & Work · A Second Order research briefing

Who Pays for the Buildout

The headline demand is a gross request count, the near-term wall is the turbine, and the stranding risk sits with ratepayers under regulation and with equity and credit in the merchant world.

A working read of two questions, whether the data-center demand shows up and who pays if it does, followed from primary data and held open to correction.

FOR DISCUSSION · NOT INVESTMENT ADVICE

Does the demand show up, and who carries it if it does?

THE THROUGH-LINE

Issue 06 found the residential bill is not a data-center story over the decade, real but concentrated in the PJM belt now, and modest and forward for everyone as the net-new build is recovered. This companion takes up the two questions underneath that forward cost: whether the demand shows up at all, and who carries it if it does.

WHY NOW

The FERC co-location compliance is due February 2026, turbine order books are booked through 2030, and the next state tariff cases are being decided now. Those proceedings move the risk, more than any gigawatt headline.

WHAT YOU'LL LEARN

1. The demand forecast has outrun what will connect (§01)
2. The binding near-term constraint is the turbine (§02)
3. A quarter of the planned load is arranging to leave the grid (§03)
4. What gets firmed runs on gas (§04)
5. Regulation puts stranding on ratepayers; the market puts it on equity (§05)

IF YOU REMEMBER ONE LINE: the demand is a gross count, the near-term wall is equipment, and the reprice lands on the merchant and the lender, while the regulated utility stays insulated.

THE CLAIM

The demand is a gross count; the wall is equipment; the risk sorts by ownership

The headline demand is a gross request count, the tariff fight ignores a physical wall, and who ultimately pays turns on which side of the regulatory line the asset sits.

Second Order · Issue 06 Part II claim

23 to 166

the 5-year demand forecast across four annual editions (GW). The forecaster flags its data-center core about 40 percent high.

55-90 GW

our net mark for new data-center load by 2030, a fraction of the gross request counts that get announced.

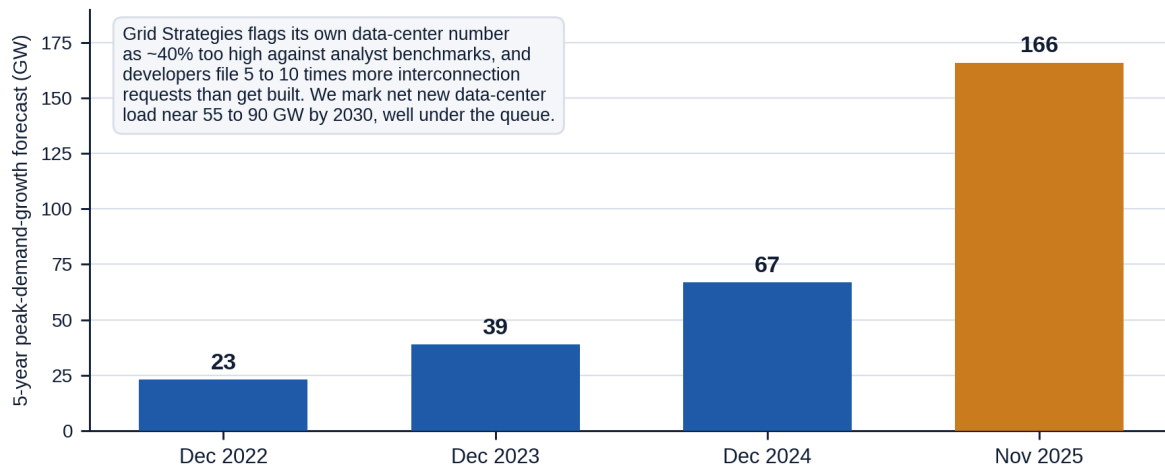
~2031

startup for a gas turbine ordered today. Slots are booked through 2030, so equipment is the near-term wall.

The demand is a gross request count

EXHIBIT 1**The five-year demand forecast has septupled in three years**

Grid Strategies national 5-year peak-demand-growth forecast, by report vintage (GW)



Note: 2024 forecast later revised to 128 GW mid-cycle. Data centers are about 90 GW, roughly 55 percent, of the 2025 figure.

Source: Grid Strategies, National Load Growth Report (2022-2025); LBNL; RMI; Second Order

SO WHAT

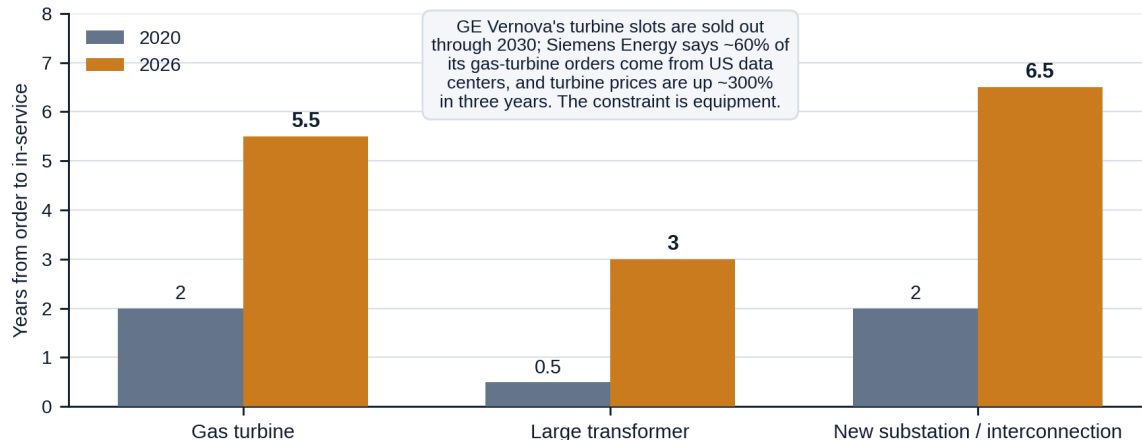
- The five-year forecast ran 23, 39, 67, and 166 GW across four annual reports, more than a sixfold revision in three years.
- The forecaster flags its own data-center figure about 40 percent high, and only 19 percent of the separate generation queue historically connected.
- We mark net new data-center load near 55 to 90 GW by 2030, well under the gross request counts.

The equipment is sold out

EXHIBIT 2

The near-term bottleneck is the turbine, not the tariff

Approximate order-to-in-service lead time for grid equipment, 2020 vs 2026 (years)



Note: Representative industry lead times, ranges. A gas-turbine order today implies startup near 2031.

Source: GE Vernova and Siemens Energy disclosures; industry reporting; Second Order

SO WHAT

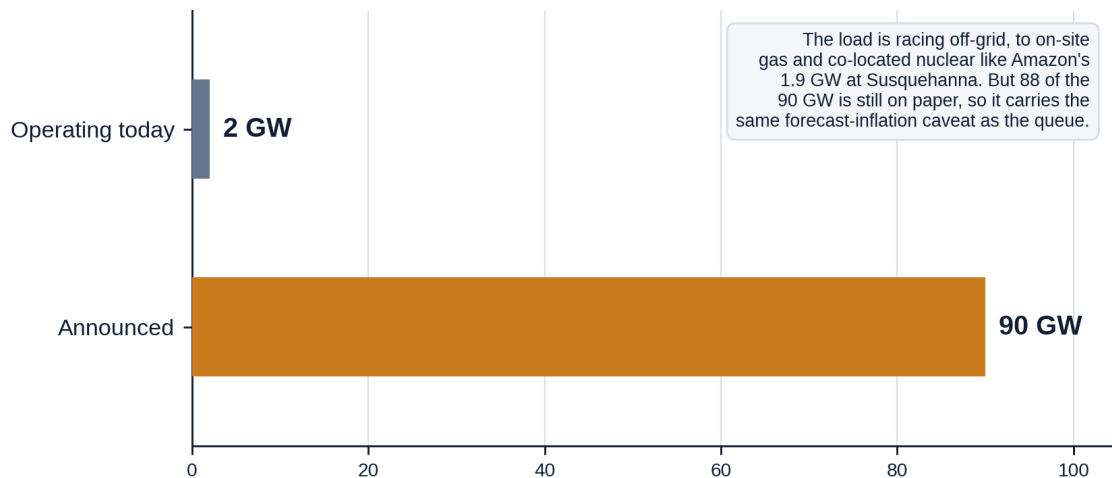
- GE Vernova's gas-turbine backlog reached about 80 GW into 2029; slots are booked through 2030 and a unit ordered today starts up around 2031.
- Roughly 60 percent of Siemens Energy's gas-turbine orders now come from US data centers, and turbine prices have risen about 300 percent in three years.
- Large transformers now take two to four years and a new substation runs five to eight, so the supply chain is the governor.

Behind-the-meter, mostly announced

EXHIBIT 3

A quarter of planned data-center power is trying to leave the grid, and almost none is built

US behind-the-meter data-center capacity, operating vs announced (GW)



Note: Behind-the-meter is >25% of all planned US data-center capacity; 92% announced since January 2025. Single-source tracker, estimate.

Source: Cleanview (2026); Talen and Amazon disclosures; Second Order

SO WHAT

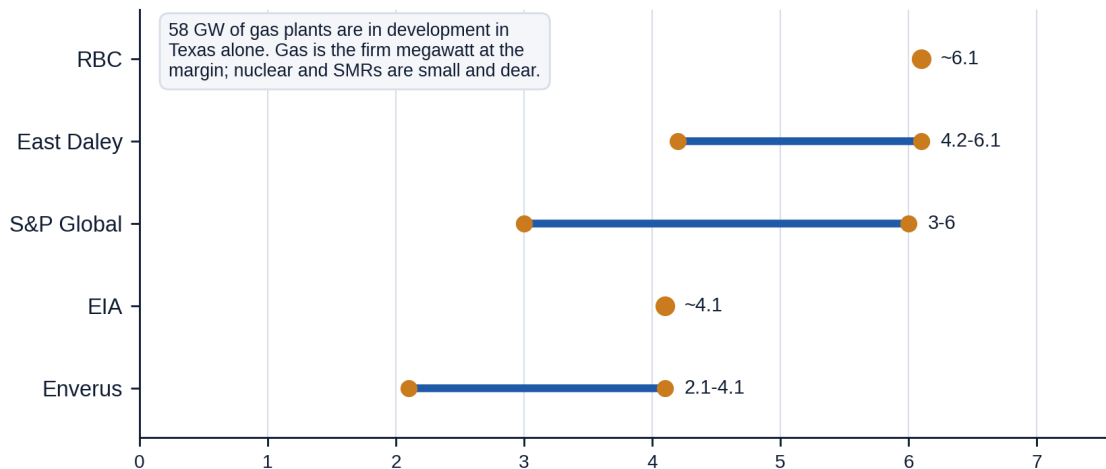
- About 90 GW of announced US capacity is behind-the-meter, more than a quarter of everything planned, with 92 percent announced since January 2025.
- The marquee case is Amazon's 1.9 GW deal at Talen's Susquehanna nuclear plant; self-supply neither burdens nor dilutes the ratepayer.
- Only about 2 of the 90 GW is operating, and FERC has moved to charge the netting it reads as a subsidy.

The firm megawatt is a gas megawatt

EXHIBIT 4

The load is being firmed with gas, and the estimates run wide

Forecast incremental US natural-gas demand from data centers by 2030 (Bcf/d)



Note: Model forecasts, wide dispersion. About 2 to 6 Bcf/d is roughly 2 to 5 percent of US gas demand (~110 Bcf/d).

Source: Enverus, EIA, S&P Global, East Daley, RBC, Wood Mackenzie; Second Order

SO WHAT

- The megawatt that serves a data center around the clock is, at the margin, a gas megawatt, and incremental US gas demand by 2030 runs about 2 to 6 Bcf a day.
- The spread across Enverus, EIA, S&P Global, East Daley and RBC is wide enough to show how little is settled; Wood Mackenzie counts 58 GW of gas in development in Texas alone.
- The clean-firm alternatives are real but small and dear, so the firming ties the buildout back to gas-turbine and pipeline capacity, the same supply chain that governs how fast the load can connect.

Takeaways

1. Price the net demand

Near 55 to 90 GW of new data-center load by 2030, a fraction of the gross queue counts the forecaster itself marks down. The net is what anchors any read on the buildout.

2. The near-term constraint is physical

Turbines are booked through 2030 and transformers run years, so the load connects on the supply chain's clock. The equipment makers are the balance sheets the buildout most reliably feeds.

3. Behind-the-meter is a caveat, not a fact

The off-grid share is large and rising but mostly announced, so it is at once a genuine bypass of the ratepayer and another number to discount, and FERC is moving to charge it.

4. The stranding risk sorts by ownership

It sits with ratepayers under regulation and with equity and credit in the merchant world, so the reprice to watch is on the unregulated generator and its lenders.

WATCHLIST

What we are marking it against

The FERC co-location compliance, due February 2026: the clearest test of whether the behind-the-meter bypass is charged or preserved.

Gas-turbine and transformer order books: the physical governor on how fast any of this connects.

The behind-the-meter trackers: for whether announced off-grid capacity converts from paper to operating.

Incremental gas demand, and Gulf and Appalachian basis: for the gas read the power story implies.

The next state tariff cases beyond Ohio: for how much of the cost a commission lets reach the household.

RELATED · THE CREDIT CHANNEL. The merchant and lender exposure this issue locates is the subject of Issue 07, which carries the power constraint forward: a GPU's economic life is set by the price of power, and that life is the collateral under the data-center debt now sitting in private credit.