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Capacity scarcity, the turbine famine, and who actually owns the AI-power trade

The Power Bill — Research Desk

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ABSTRACT

This Briefing covers six developments in the cost and generation of power: (1) PJM's second straight capacity auction clears at the administrative price cap, pricing scarcity rather than discovering it; (2) data centers now account for more than 100% of PJM's near-term peak growth as EIA forecasts record US electricity demand; (3) GE Vernova's gas-turbine backlog hits 100 GW and new-unit pricing climbs 10–20%, turning dispatchable capacity into a rationed good through 2030; (4) hyperscaler nuclear offtake re-rates the merchant IPPs and pulls a 300 MW SMR option into PJM; (5) EIA projects a record 86 GW of 2026 capacity additions, 93% of it solar, storage and wind; (6) ERCOT and CAISO battery fleets pass 14 GW each even as merchant revenues compress, forcing a shift from energy arbitrage to capacity and ancillary value.

Keywords: PJM capacity auction, data center load growth, gas turbine backlog, nuclear PPA, battery storage economics, LCOE, ERCOT, CAISO, GE Vernova, independent power producers

In this Briefing

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6. The battery fleets cross 14 GW each — but the merchant arbitrage trade is compressing

PJM clears at the administrative cap a second time — the auction now prices scarcity instead of discovering it

What's new. On 17 December 2025 PJM released its 2027/2028 Base Residual Auction, which cleared at **\$333.44/MW-day** (UCAP) across the entire RTO footprint — the FERC-approved collar cap, and a second consecutive year at the ceiling after the 2026/2027 auction cleared at \$329.17/MW-day. For the first time in PJM's history the market mechanism is no longer setting price; an administrative cap is. The auction secured 134,479 MW of capacity and demand response for the delivery year beginning 1 June 2027 [1][2].

Evidence. The 2026/2027 auction (results 22 July 2025) cleared at \$329.17/MW-day, up 22% year-over-year for most of the footprint, with a total procurement cost of **\$16.1 billion**, +9.5% from \$14.7 billion the prior year [3]. The 2027/2028 result of \$333.44/MW-day is +1.3% on that [1]. Critically, PJM's own simulation shows that **without** the collar, RTO prices would have reached **\$529.80/MW-day**, with the Dominion Zone (northern Virginia's "data center alley") clearing at **\$542.83/MW-day** — roughly 60% above the capped print [2]. PJM still fell short of its reliability target despite the cap.

THE TAKE:

The two-year cap streak masks an embedded forward step-up that the market has not yet priced. The uncapped clear of ~\$530/MW-day is the real shadow price of capacity, and the collar's upper bound ratchets each year — meaning the capped print is a *ceiling that is itself rising*, not a stable plateau. Taking PJM's own uncapped simulation as the marginal signal, the implied additional capacity transfer being suppressed by the collar is on the order of $(529.80 - 333.44) \times 134,479 \text{ MW} \times 365 \approx$ **\$9.6 billion per delivery year** (The Power Bill estimate) — value that accrues to whoever owns unforced capacity the moment the cap relaxes or is litigated away. The cap is not protecting consumers from scarcity; it is deferring the bill and transferring duration risk onto load.

Market read. VST (NYSE) — Add · conviction Med · 12–24 mo — Vistra's large dispatchable + nuclear fleet inside PJM is levered to the uncapped scarcity value the collar is currently suppressing. CEG (NASDAQ) — Hold · conviction Med · 12–24 mo — already richly valued on nuclear optionality; capacity upside is real but largely in the price. NRG (NYSE) — Add · conviction Low · 12–24 mo — capacity-heavy retail+gen book benefits from elevated PJM clears, but less nuclear narrative premium.

Data centers are not **a** driver of load growth — they are essentially **the** driver

What's new. PJM's 2026 Long-Term Load Forecast confirms that large loads — principally data centers — account for **more than 100%** of projected peak-demand growth over the next five years, because underlying base demand is contracting beneath them. PJM's large-load adjustments grow by **35.1 GW between 2026 and 2031**, against total demand growth of **34.6 GW** [4]. Nationally, EIA's January 2026 outlook called the strongest four-year run of US electricity-demand growth since 2000 [5].

Evidence. PJM's forecast has summer peak rising from **160 GW in 2025 to 253 GW by 2046**, a 58% increase led by data centers [4]. EIA's Short-Term Energy Outlook puts US electricity consumption at **4,193 TWh in 2025 and 4,283 TWh in 2026**, both fresh all-time highs above the prior 4,097 TWh (2024) record, with commercial (data-center-heavy) demand growing ~2.6%/yr and industrial ~2.1%/yr [6]. PJM's Independent Market Monitor estimated that existing and forecast data-center load added a combined **\$23.1 billion** to capacity-market revenues across the 2025/2026, 2026/2027 and 2027/2028 auctions [4].

THE TAKE:

The "more than 100% of growth" framing is the most important and least-appreciated number in US power. It means data-center load is not riding a rising tide — it is *cross-subsidizing a shrinking residential/industrial base*, and every megawatt of large load is therefore competing directly against existing ratepayers for the same scarce capacity. That structure is politically unstable: when 100% of the cost increase is attributable to a load class that is <20% of energy, the cost-allocation fight (bring-your-own-generation mandates, separate data-center rate classes, co-location tariffs) becomes the dominant regulatory risk of the next 24 months — a bigger swing factor for IPP cash flows than the commodity curve. Watch FERC and state-commission dockets, not just the auction.

Market read. EQIX (NASDAQ) — Hold · conviction Med · 12–24 mo — data-center REIT exposed to rising power cost and interconnection delay as a structural margin headwind, not just a demand tailwind. DLR (NYSE) — Hold · conviction Low · 12–24 mo — same dynamic; power procurement and on-site generation capex become differentiators.

The gas-turbine famine — capacity to build dispatchable power is now the binding constraint, and it is being priced like one

What's new. GE Vernova's gas-power equipment backlog plus slot-reservation agreements reached **100 GW in Q1 2026**, up from 83 GW the prior quarter, and management expects to reach **at least 110 GW by year-end 2026** and to be effectively sold out of turbine slots through 2030 [7][8]. The bottleneck has moved from the megawatt to the machine: you can have a power-plant permit and a PPA and still wait years for iron.

Evidence. GE Vernova's production runs at roughly **10 GW/year of slots through 2030**, so a 100 GW book represents about a decade of output [8]. New-order pricing in H1 2026 is running **10–20 percentage points higher per kW than Q4 2025**, outpacing inflation [7]. The company is targeting 20 GW of annualized turbine output by mid-2026 and says it could stretch its two existing facilities to ~24 GW by mid-2028 [8]. Meanwhile EIA's June 2026 STEO has Henry Hub averaging only **~\$3.60/MMBtu in 2026** [9] — fuel is cheap; it is the *turbine* and the *queue*, not the gas, that are scarce.

THE TAKE:

Cheap fuel plus scarce iron inverts the usual gas-economics intuition. With Henry Hub near \$3.60/MMBtu the variable cost of a new combined-cycle plant is unremarkable; the scarcity has migrated entirely into the *capital* term, and a turbine slot is now closer to a traded option than a procurement line. A 10–20% per-kW price step on a ~\$1,200–1,400/kW machine implies roughly **\$120–280/kW of additional overnight cost** (The Power Bill estimate) before any plant is built — which, levelized over a 20-year life at an 8% discount rate and a 60% capacity factor, adds on the order of **\$1.5–3.5/MWh** to new gas LCOE purely from equipment inflation (The Power Bill estimate). That is small versus the capacity scarcity it competes against — which is exactly why buyers are paying it. The turbine OEMs, not the fuel, now capture the scarcity rent.

Market read. GEV (NYSE) — Add · conviction High · 12–36 mo — the clearest pure-play on dispatchable-capacity scarcity; pricing power and a decade-deep backlog with limited slot competition. ETN (NYSE) — Add · conviction Med · 12–24 mo — electrical equipment / grid-connection content rides the same build cycle with broader end-market diversification. PWR (NYSE) — Add · conviction Med · 12–24 mo — Quanta's EPC and interconnection labor is the other binding constraint once the turbine arrives.

Nuclear becomes the balance sheet of the AI-power trade — and a 300 MW SMR option enters PJM

What's new. In January 2026 Vistra and Meta announced agreements to support existing nuclear plants inside PJM, including an **option for Meta to take power from a potential new 300 MW small modular reactor** at a Vistra site [10]. It extends a now-established pattern: as of mid-2026 every major hyperscaler has signed at least one nuclear offtake, with ~13 announced projects committing over **9.8 GW** of nuclear capacity to data centers [10].

Evidence. Anchor deals include Microsoft's 20-year, **837 MW** PPA with Constellation to restart Three Mile Island Unit 1 (Crane Clean Energy Center), and Amazon's expansion of its Talen offtake at Susquehanna to **1,920 MW through 2042** [10]. The equity re-rating has been violent: Vistra (VST) is up ~45% over the trailing 12 months to March 2026 and >500% over five years; Constellation (CEG) trades at **17–21× EV/EBITDA versus Vistra's ~13×**, a ~50% premium pricing in nuclear optionality [11]. The three merchant IPPs — VST, CEG and Talen (TLN) — have become the default vehicles for the "AI power" thesis [11].

THE TAKE:

The market is conflating two very different cash flows under one "nuclear-for-AI" label. The *uprate/restart/existing-fleet* deals (TMI, Susquehanna) are near-term, contracted, and low-execution-risk — they deserve a re-rating. The *new-SMR option* deals (the Vistra 300 MW SMR, and the broader TerraPower/Oklo pipeline) are real options with first-of-a-kind cost risk, a decade to first power, and no operating SMR fleet in the US to anchor LCOE. Pricing both at the same multiple is the error. A signed offtake on an *existing* reactor is worth a utility-like multiple; an *SMR option* is venture risk wearing a PPA. The CEG-over-VST premium is mostly existing-fleet quality — defensible — but any IPP multiple expansion justified by SMR optionality is the part of the trade most exposed to a single cost-overrun headline.

Market read. CEG (NASDAQ) — Hold · conviction Med · 12–24 mo — best-in-class existing nuclear fleet, but a ~50% multiple premium leaves limited room for upside surprise. TLN (NASDAQ) — Hold · conviction Med · 12–24 mo — contracted Susquehanna offtake is high-quality; valuation already reflects the data-center thesis. OKLO (NYSE) — Avoid · conviction Low · 12–24 mo — pre-revenue

SMR developer carrying the first-of-a-kind cost and schedule risk the existing-fleet names do not.

A record 86 GW of new capacity is coming in 2026 — and 93% of it is solar, storage and wind

What's new. EIA expects US developers to add a record **86 GW of utility-scale capacity in 2026**, of which solar, battery storage and wind together make up roughly 93% — the cheapest-to-build, fastest-to-deploy resources continuing to dominate net additions even as the system screams for firm capacity [12]. The mismatch between *what gets built* (energy) and *what is scarce* (capacity) is the defining tension of the current market.

Evidence. Per EIA's December 2025 generator inventory: **43.4 GW solar (51%), 24 GW battery storage (28%), 11.8 GW wind (14%) and 6.3 GW natural gas (7%)** [12]. Solar additions would be ~60% above 2025 if realized. Renewables were ~33.4% of US utility-scale capacity as of March 2026, projected to reach 36.6% by February 2027 [13]. EIA's STEO has the combined solar+wind generation share rising from ~18% (2025) toward ~21% (2027), while gas+coal+nuclear slip from 75% to ~72% [6].

THE TAKE:

The 86 GW headline flatters the firm-capacity picture. Apply representative summer peak-coincidence (capacity-credit) factors — roughly 25% for solar, ~10–15% for wind, and treat 4-hour storage as energy-limited firm — and the **effective firm capacity** added by the 2026 class is far smaller than the nameplate: on the order of **~30–35 GW of peak-coincident capacity** from 86 GW nameplate (The Power Bill estimate, using ~25% solar / ~12% wind / storage counted at duration-limited nameplate). That is why PJM can clear at a price cap *and* set a build record in the same year: the grid is adding energy and arbitrage depth far faster than it is adding the dispatchable, peak-coincident capacity the auctions actually pay for. The build record and the capacity crisis are not contradictory — they are the same fact seen from two sides.

Market read. FSLR (NASDAQ) — Add · conviction Med · 12–24 mo — US-manufactured modules favored by domestic-content economics as solar leads the 86 GW class. NEE (NYSE) — Add · conviction Med · 12–36 mo — the largest renewables developer monetizes the build record across solar, wind and storage. GEV (NYSE) — Add · conviction High · 12–36 mo — counterintuitively the *better* renewables-cycle hedge, since the firm-capacity shortfall the build record leaves behind is what its turbines fill.

ERCOT and CAISO battery fleets each cross 14 GW — but the merchant arbitrage trade is already compressing

What's new. US grid-scale storage scaled faster than any resource in history through 2025, with **ERCOT surpassing CAISO** as the largest fleet. ERCOT entered 2026 with roughly **13.9 GW / 22.9 GWh** of operational grid-scale storage and CAISO close behind — but the very saturation that built the fleets is now eroding the energy-arbitrage spreads that financed them [14][15].

Evidence. US battery capacity reached **38.1 GW by end-Q2 2025**, +63% year-over-year, with Q2 2025 the largest quarterly add on record [14]. ERCOT led at **14.2 GW (37% of US)**, CAISO at **12.4 GW (33%)** as of mid-2025 [15]. The economics tell the cautionary half: ERCOT merchant battery revenues fell from **~\$192/kW (2023)** to an average **~\$43/kW across 2024–2025** — a ~78% collapse — as real-time prices averaged **\$31/MWh lower in 2024 than 2023** and the fleet cannibalized its own spreads [16].

THE TAKE:

Storage is transitioning from a *price-taker on volatility* to a *price-maker that suppresses it* — and that is a structural, not cyclical, revenue headwind. A ~78% per-kW revenue decline against a still-growing fleet means each incremental ERCOT battery earns dramatically less than the one before; on current trajectory, pure energy-arbitrage merchant economics in ERCOT are approaching the point where new-build is uneconomic without a capacity or ancillary-services backstop (The Power Bill estimate). The investable thesis is therefore migrating from *deploying more 4-hour batteries* to *owning the value stack that survives saturation* — ancillary services, capacity accreditation, and longer-duration assets that arbitrage across days rather than hours. The winners of the next storage cycle will look more like capacity providers than traders.

Market read. TSLA (NASDAQ) — Hold · conviction Low · 12–24 mo — Megapack/Energy is a structural grower, but US merchant-arbitrage compression caps the standalone-storage TAM narrative. STEM (NYSE) — Avoid · conviction Med · 12–24 mo — storage software/optimization is squeezed precisely as merchant spreads that justify its value collapse. NEE (NYSE) — Hold · conviction Med · 12–36 mo — contracted/utility-owned storage insulated from merchant compression, unlike pure-play arbitrageurs.

Market Calls

Company (Ticker)	Call	Conviction	Horizon	Thesis (one line)
Vistra (VST)	Add	Med	12–24 mo	Dispatchable + nuclear PJM fleet levered to the uncapped capacity value the collar suppresses.
Constellation (CEG)	Hold	Med	12–24 mo	Best existing nuclear fleet, but ~50% EV/EBITDA premium prices in the optionality.
NRG Energy (NRG)	Add	Low	12–24 mo	Capacity-heavy gen+retail book benefits from elevated PJM clears.
Equinix (EQIX)	Hold	Med	12–24 mo	Rising power cost / interconnection delay is a margin headwind, not just demand tailwind.
Digital Realty (DLR)	Hold	Low	12–24 mo	Power procurement and on-site generation capex become the differentiator.
GE Vernova (GEV)	Add	High	12–36 mo	Purest play on dispatchable-capacity scarcity; decade-deep turbine backlog with pricing power.
Eaton (ETN)	Add	Med	12–24 mo	Electrical-equipment content rides the same build cycle, more diversified.
Quanta Services (PWR)	Add	Med	12–24 mo	EPC/interconnection labor is the other binding constraint after the turbine.
Talen Energy (TLN)	Hold	Med	12–24 mo	Contracted Susquehanna nuclear offtake is high-quality but fully valued.
Oklo (OKLO)	Avoid	Low	12–24 mo	Pre-revenue SMR developer carrying first-of-a-kind cost/schedule risk.
First Solar (FSLR)	Add	Med	12–24 mo	US-made modules favored by domestic-content economics as solar leads the build.
NextEra Energy (NEE)	Add	Med	12–36 mo	Largest renewables developer monetizes the record 86 GW class; contracted storage insulated.

Tesla (TSLA)	Hold	Low	12–24 mo	Megapack grows, but US merchant-arbitrage compression caps the storage-TAM narrative.
Stem (STEM)	Avoid	Med	12–24 mo	Storage optimization squeezed as the merchant spreads it monetizes collapse.

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