

SECOND ORDER

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AI, Capital & Work · A Second Order research briefing

The Wrong Kind of Scarcity

The decade's rising residential bill is delivery on an aging grid. The real data-center cost is a capacity charge in the PJM belt now, and an estimated \$14 to \$37 a month on every customer by 2040.

A working read of one question, how much of the rising bill traces to data centers, followed from primary data and held open to correction.

FOR DISCUSSION · NOT INVESTMENT ADVICE

Is the data center why the bill is rising?

THE THROUGH-LINE

Since Issue 05 the series has followed the AI buildout to its physical limit, the megawatt. This issue settles whether the data center is the reason the residential bill is rising. Over the decade it is not: the money went into delivery, the wires and substations of an aging grid, where utilities' spending rose over the decade while the cost of producing power did not.

WHY NOW

The data-center charge shows up this past year in the PJM belt, through the capacity auction, and Virginia's auditor has put the first number on the forward cost, \$14 to \$37 a month on a typical bill by 2040.

WHAT YOU'LL LEARN

1. The decade's increases are delivery, and they predate the data center (§01)
2. Where the data center does raise the bill, it is the belt this past year and every bill by 2040 (§02)
3. The demand in the queue is mostly optionality (§03)
4. The grid has room if the load flexes (§04)
5. The fight has moved to the tariff docket and the federal seam (§05)

IF YOU REMEMBER ONE LINE: the decade's bill is delivery on an aging grid; the real data-center cost is a recent capacity charge in the belt plus a forward charge on all customers.

The decade's rise is delivery, not the data center

Over the past decade the data center is not why the bill rose. US prices jumped a third since 2020, and the increase fell on the high-regulation states, not the data-center ones.

Second Order · Issue 06 claim

+32%

the US residential price rise in the five years to 2025, after a decade nearly flat. The money went into delivery.

-0.37

cross-state correlation of price change with demand growth. The fastest-growing states rose about like the US.

\$14-37/mo

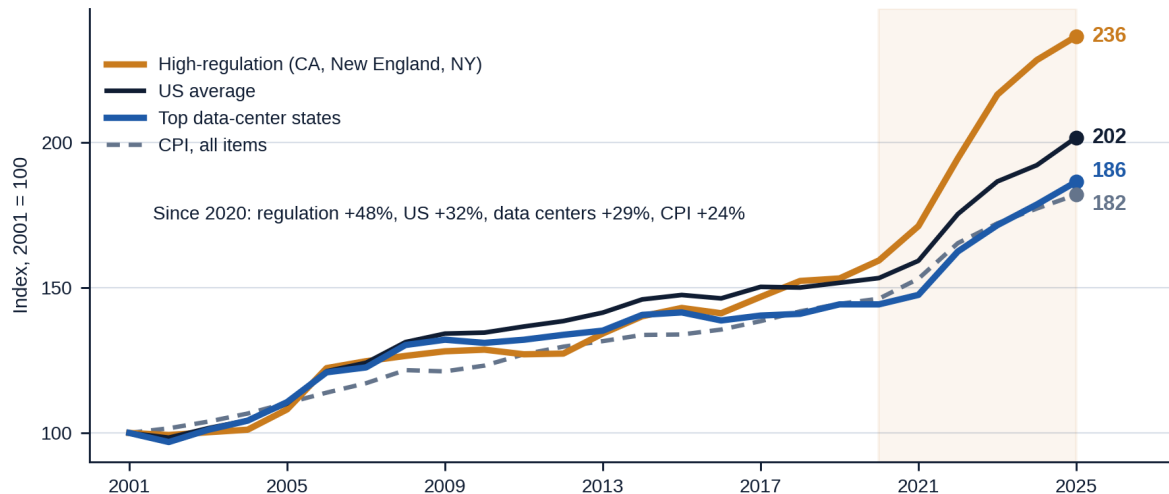
JLARC's forward estimate on a typical Dominion bill by 2040, as the net-new build is recovered from every customer.

High-regulation states drove the jump, not data centers

EXHIBIT 1

High-regulation states outran inflation; data-center states tracked it

Residential electricity price by state group and CPI, indexed to 2001 = 100



Note: Sales-weighted by residential sales. Regulation group: CA, New England, NY. Data-center group: VA, TX, GA, OH, AZ, IL, IA, NC, OR.

Source: EIA API v2 (Form EIA-861, annual) and BLS CPI-U (all items, NSA); Second Order

SO WHAT

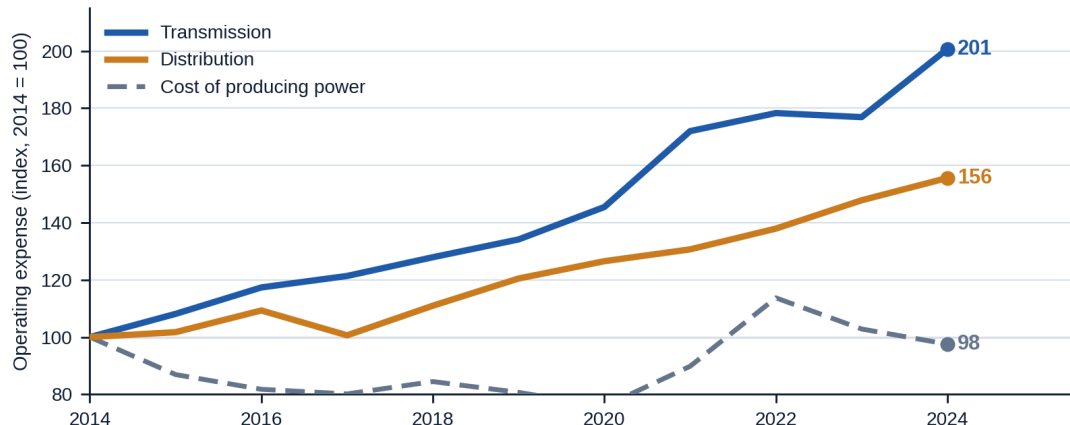
- Indexed to 2001, high-regulation states (CA, New England, NY) far outran inflation, while data-center states only tracked the CPI.
- A break that sharp is not a load story: the money went into delivery, the wires and substations on an aging grid.
- A rising bill is a cost-recovery decision, taken before any question of who draws the power.

Spending rose on the wires, not on producing power

EXHIBIT 2

Utilities' spending rose on the wires, not on producing power

Major U.S. investor-owned utility operating expense by function, indexed to 2014 = 100



Note: The cost of producing power is mostly fuel and purchased power, so it tracks gas prices (the 2022 spike).

Source: EIA Electric Power Annual, Table 8.3 (FERC Form 1); Second Order calculations

SO WHAT

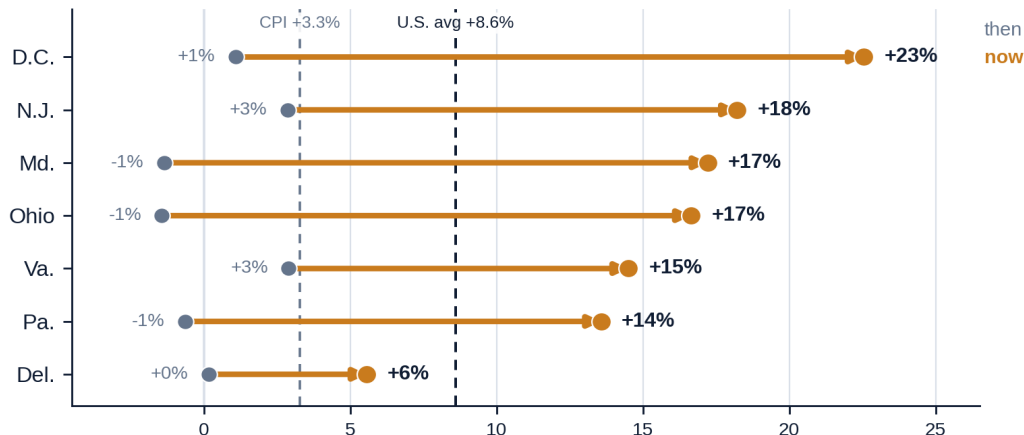
- Over the decade to 2024, spending on transmission and distribution rose sharply while the cost of producing power stayed flat to lower.
- EIA's longer series agrees: generation spending fell about 24% from 2003 to 2023 while transmission nearly tripled and distribution rose 160%.
- The rising bill is delivery recovered through the rate base, an aging-grid decision before any question of who draws the power.

Belt prices broke from a flat pace

EXHIBIT 4

In the data-center belt, a flat decade gave way to a sharp rise

Residential price change, 2018-19 (then) vs 12 months to March 2026 (now), PJM belt (percent)



Note: Reference lines mark the U.S. residential average (+8.6%) and headline CPI (+3.3%) over the same 12 months. A state's distance past the U.S. line is the increase specific to the belt, not general inflation or fuel.

Source: EIA EPM Table 5.6.A (EIA-861M) and EIA-861 annual; BLS CPI-U via FRED; Second Order

SO WHAT

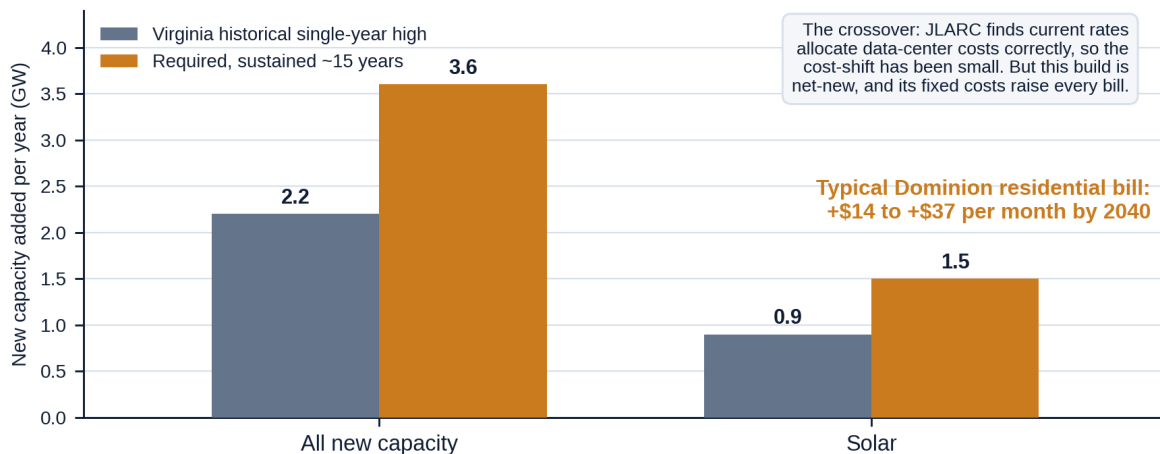
- In the year to March 2026 the PJM belt led the country: DC +23%, New Jersey 18, Virginia 15, against a U.S. average of 8.6% and inflation of 3.3%.
- Each of those states had run near zero through the 2010s; the gap past the national average is a double-digit real increase in a single year, and the part specific to the belt.
- The channel is the capacity auction, a wholesale charge that reaches retail a year before the plant is built.

\$14-37/mo by 2040, even though data centers pay their share

EXHIBIT 6

Data centers pay their share, yet the net-new build still raises every bill

Annual capacity Virginia must add to serve unconstrained data-center demand vs its historical single-year high



Note: No-VCEA scenario; required build sustained ~15 years. Bill impact: E3 estimate, typical Dominion residential, by 2040.

Source: JLARC, Data Centers in Virginia (Dec 2024), and its E3 consultant analysis; Second Order

SO WHAT

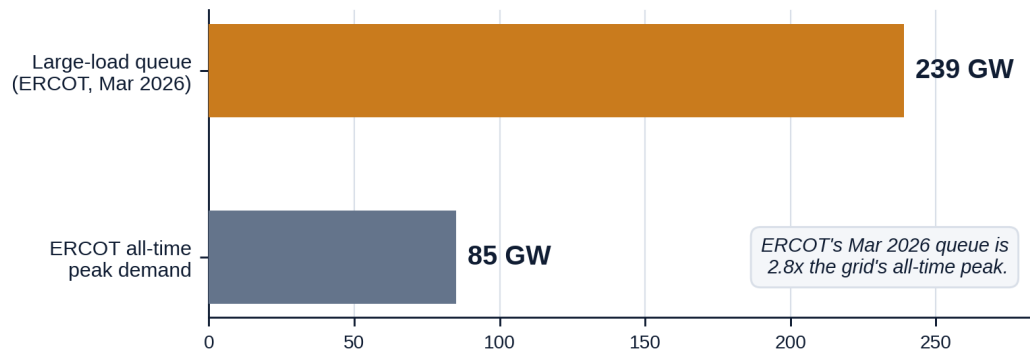
- JLARC's cost-of-service study found current rates allocate costs correctly, so the shift so far is small.
- But meeting the load means building 3.6 GW a year for fifteen years, against a state single-year high of 2.2.
- Those net-new costs raise every bill: \$14 to \$37 a month on a typical Dominion customer by 2040.

Requests run 2.8x the grid's record peak

EXHIBIT 7

ERCOT's large-load queue is 2.8 times its all-time peak demand

Cumulative large-load interconnection requests vs the size of the grid, ERCOT (gigawatts)



Note: Developers file an estimated five to ten times more interconnection requests than projects get built (RMI, estimate).

Source: ERCOT large-load interconnection reports (Mar 2026); RMI; Latitude Media / Utility Dive

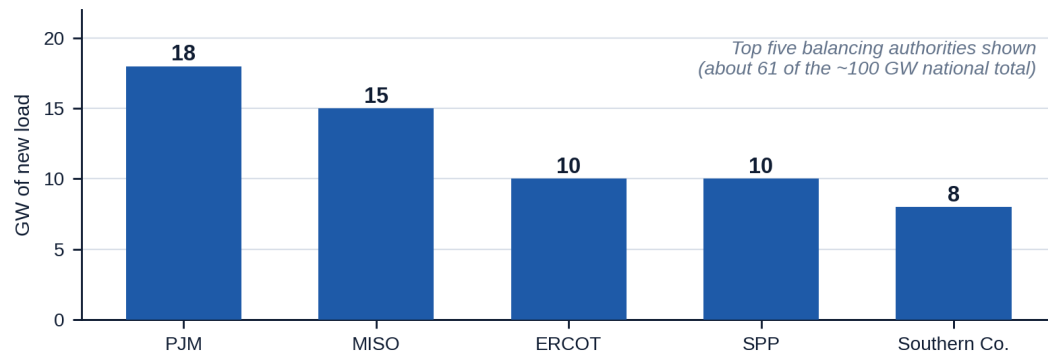
SO WHAT

- ERCOT's large-load queue reached about 239 GW by March 2026, roughly 2.8 times its record peak of about 85 GW.
- RMI estimates developers file five to ten times more requests than the projects that get built.
- The number under every capacity forecast is inflated by design, and the people running the grids know it.

Curtail 0.5% of energy and 100 GW fits with no new plants

EXHIBIT 8**The grid has room if the load flexes: about 100 GW fits with no new plants**

New load the existing grid can absorb at 0.5% annual-energy curtailment, by balancing authority (GW)



Note: 0.5% of annual energy is curtailed across about 177 hours a year, mostly partial cuts; national total about 100 GW. Potential, not current practice.

Source: Duke Nicholas Institute, Rethinking Load Growth (2025)

SO WHAT

- Curtail 0.5 percent of annual energy, about 177 hours a year in mostly partial cuts, and the grid absorbs close to 100 GW with no new generation.
- A training run can pause in a way a steel mill or a city cannot, so the binding limit is a flexibility tariff most utilities have not written.
- One caveat sets the ceiling: inference serving live traffic cannot curtail the way a training run can.

Takeaways

1. Price the net demand

Queues run five to ten times the projects built, and the forecaster marks its own number down about 40 percent. The load that connects anchors any read on utilities, IPPs, gas, and electrical equipment.

2. The tariff docket decides the cost

Ohio-style take-or-pay terms and the FERC co-location compliance set whether data centers or households carry it, and they move power costs more than any gigawatt headline.

3. Power exposure is a duration problem

Firm, forty-year generation is being built against load whose commitment is short and can move before it is built. Take-or-pay terms and offtaker credit separate a protected cash flow from a stranded one.

4. Flexibility is the cheapest capacity

A load willing to curtail 0.5 percent of its energy unlocks much of the roughly 100 GW of headroom already built. The first flexibility tariffs show how much of it is real.

WATCHLIST

What would change our mind

PJM and neighboring auctions: and the FERC co-location compliance due February 2026 on how co-located and behind-the-meter load is charged.

The next state tariff cases beyond Ohio: the terms set the split between shareholders, data centers, and ratepayers.

Q2 hyperscaler prints, week of July 27: for the behind-the-meter and power-purchase commitments underneath the capex.

EIA state price data: for whether the PJM belt's lead widens or the rest of the country catches up.

The falsifier: completions climbing toward queue totals, data centers declining to curtail, and every growth state posting the fastest increases. If load is firm, inflexible, and everywhere, the alarm is right.

NEXT ISSUE · THE CREDIT CHANNEL. The series turns from the power asset to the hardware that draws on it. Issue 07 finds a GPU's economic life is set by the price of power: where watts are scarce, the condition traced here, the old chip gives way. That economic life is the collateral under the data-center debt now sitting in private credit.