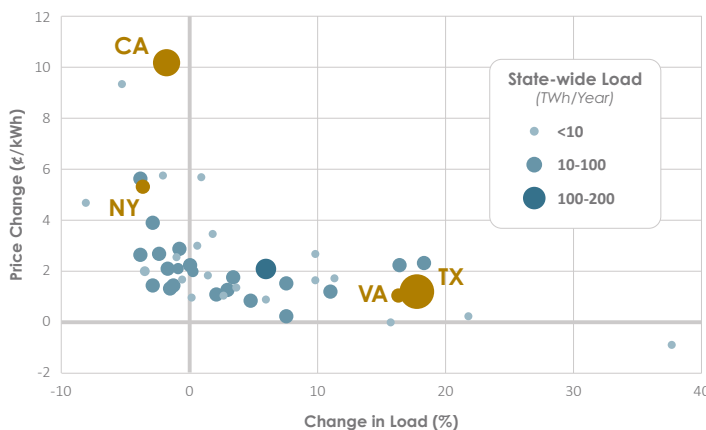


The Load Factor Effect: A Backcast of Data Centers' Impact on Historical Dominion Virginia Rates

Context

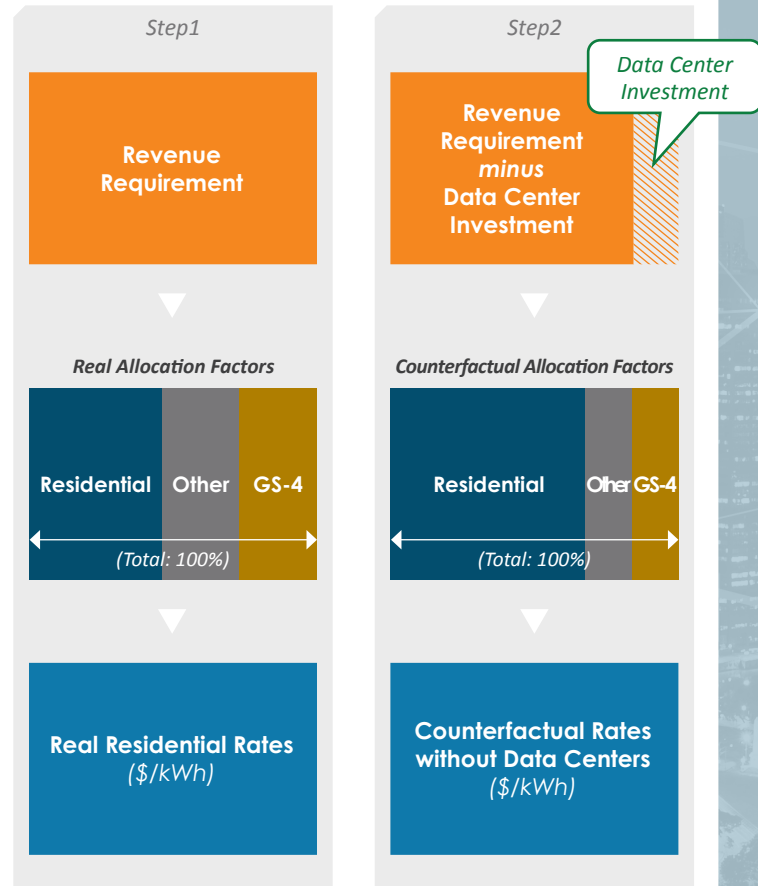
Data center load growth is one of the most hotly debated topics in energy today, centered on the concern that large loads must pay their fair share of the shared infrastructure costs they cause. A growing body of literature (including E3's recent report on the drivers of rising electricity rates and a 2026 LBNL study) finds no historical correlation between load growth and rate increases, and in some cases a correlation with downward pressure on rates, as shown below across states. E3 was contracted by CloudHQ to test this relationship directly by modeling Dominion Energy Virginia's system with and without its historical data center load growth, estimating the impact on 2023 residential retail rates.

Change in Load vs. Nominal Retail Price Change by State (2019-2024)



Methodology

Using Dominion's 2023 Biennial Review revenue requirement and rate case allocation factors, E3 calculated a baseline average residential rate of \$0.134/kWh. E3 then isolated ~1.6 GW of unanticipated data center load (the gap between 2018 and 2023 PJM DOM Zone forecasts) and removed the avoidable gas, transmission, and RPS-driven solar investments it would have required. Recalculating allocation factors and rates without this load and its associated costs produces the counterfactual residential rate.



Results

The real-world residential rate of \$0.134/kWh was lower than 98% of the 2,187 counterfactual scenarios tested, which produced rates ranging from \$0.134 to \$0.138/kWh. This implies a typical residential customer using 1,000 kWh/month **saved \$2 per month on average** due to incremental data center load growth. The primary driver: data centers' share of cost responsibility grew more than the total costs they imposed, putting downward pressure on rates for other classes, including residential.

