

# THE GRID IS BROKEN.

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Built for **radios and microwaves**.

Now expected to power 100 million Electric Vehicles (EVs),<sup>1</sup> a national fleet of heat pumps, and data centers that consume electricity like **small cities**.

Parts of this grid are over 100 years old.<sup>2</sup> The average transformer is 40+.<sup>3</sup>

THE ELECTRIFICATION SUPERCYCLE THESIS ->

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<sup>1</sup> BloombergNEF, "Electric Vehicle Outlook 2024" — projects 100M+ EVs on U.S. roads by mid-2030s under accelerated adoption scenario; DOE, "National Electric Vehicle Infrastructure (NEVI) Formula Program" (2023).

<sup>2</sup> ASCE, "2021 Infrastructure Report Card — Energy" (D+ grade); DOE Office of Electricity, "Aging Infrastructure and Grid Reliability" (2023) — portions of U.S. transmission infrastructure date to the early 20th century.

<sup>3</sup> DOE Office of Electricity, "Transformer Failures and Grid Reliability Report" (2023); NERC, "2023 Long-Term Reliability Assessment" — average large power transformer age exceeds 40 years against a design life of 40 years.

# "The American grid hasn't had a meaningful upgrade since Marty McFly was in the DeLorean."

The U.S. electric grid dates back to 1882 — Thomas Edison's Pearl Street Station.<sup>1</sup> Parts of this system are literally a century old. The bulk was built in the 1960s and 70s, now approaching end-of-life. 70% of power transformers are well past 25 years old<sup>2</sup> — many exceeding 40 years with a design life of just 40. 60% of circuit breakers are over 30.<sup>3</sup> The failure rate on this equipment is accelerating. This infrastructure was engineered for AM radio and window AC — not generative AI and gigawatt EV charging.

100+<sup>1</sup>

year-old grid  
infrastructure

70%<sup>2</sup>

of transformers  
past design life

\$1.4T<sup>4</sup>

required grid  
investment 2025–30

2.5%<sup>5</sup>

demand Compound Annual  
Growth Rate (CAGR) thru 2035  
(5x prior)

<sup>1</sup> EEI, "History of the Electric Power Industry" — Pearl Street Station opened September 4, 1882; DOE Office of Electricity, "Grid Modernization Initiative" (2023).

<sup>2</sup> DOE Office of Electricity, "Transformer Failures and Grid Reliability Report" (2023); NERC, "2023 Long-Term Reliability Assessment" — 70% of large power transformers are 25+ years old, many exceeding their 40-year design life.

<sup>3</sup> DOE Office of Electricity, "Aging Infrastructure" (2023); ASCE 2021 Infrastructure Report Card, Energy Chapter — 60% of circuit breakers in service exceed 30 years of age.

<sup>4</sup> BofA Global Research, "Power & Utilities: Grid Investment Supercycle" (2024); Morningstar DBRS, "North American Electric Utilities Sector Review" (2024) — \$1.4T in grid investment estimated as required by 2030.

<sup>5</sup> EIA Annual Energy Outlook 2024; Wood Mackenzie, "U.S. Long-Term Power Demand Forecast" (2024) — 2.5% CAGR demand growth through 2035, vs. 0.5% CAGR from 2014–2024, a 5x acceleration.

# Generation Costs Are Going Down. Your Bill Is Going Up.

Over the past decade, the share of your electricity bill attributed to power production fell from 69% to 54%.<sup>1</sup>

Wholesale prices hit near-record lows in 2024 on cheap gas and surging renewables.

**But your bill? Up 27% since 2019. Up 21% since 2021.<sup>2</sup>**

The culprit isn't the cost of making electrons.

**It's the cost of moving them.**

69% → 54%<sup>1</sup>

GENERATION SHARE OF BILL (DECLINING)

3.5¢ → 7¢<sup>3</sup>

T&D COST PER KWH (DOUBLED IN 20 YRS)

**Transporting energy is driving electricity costs up.**

**The bottleneck isn't generation. It's the grid itself.**

<sup>1</sup> EIA, "Electric Power Annual 2023"; EIA Today in Energy, "Electricity prices have risen faster than overall inflation" (Jan. 2024) — generation's share of average retail electricity bill declined from ~69% (2013) to ~54% (2023).

<sup>2</sup> EIA, "Average Retail Price of Electricity" (2024) — average U.S. residential price rose from 12.7¢/kWh (2019) to 16.1¢/kWh (2023), a 27% increase; 21% increase from 2021 base of 13.3¢/kWh.

<sup>3</sup> FERC Form 1 data, analysis by Thunder Said Energy, "T&D Cost Per kWh Trends" (2024); Bipartisan Policy Center, "Transmission Cost Allocation: Who Pays?" (2023) — T&D delivery cost per kWh approximately doubled over the prior 20 years, rising from ~3.5¢ to ~7¢/kWh.

# You buy a shirt on Amazon for \$10. The shipping costs \$20.

You'd never accept that. Nobody would.

**But that's exactly how U.S. electricity works today.**

The wholesale price of electricity — the actual cost of generating the electron — accounts for roughly one-third of your bill.<sup>1</sup>

The other 60%+ of what you pay? That's the cost of getting the electron from the power plant to your outlet.<sup>2</sup> Transmission lines, distribution networks, transformers, substations, switchgear — all the aging, 100-year-old infrastructure that moves the power.

In many regions, the cost of **DELIVERING** electricity now exceeds the cost of the **ELECTRICITY ITSELF.**<sup>3</sup>

**Imagine that in other parts of your life:**

S Groceries

## Groceries

Food costs: \$150

**Delivery fee: \$300**

W Water

## Water

Water itself: \$15/mo

**Pipe maintenance: \$30/mo**

I Internet

## Internet

Data costs: \$25/mo

**Cable infrastructure: \$50/mo**

G Gasoline

## Gasoline

Crude oil cost: \$1.20/gal

**Pipeline delivery: \$2.40/gal**

**In electricity, this isn't hypothetical. It's the reality.**

**And it's why the infrastructure companies are the real opportunity.**

<sup>1</sup> EIA, "Electric Power Monthly" (Oct. 2024) — wholesale power costs represent roughly 33–35% of the average retail electricity bill; the generation share has declined steadily since 2013.

<sup>2</sup> FERC Form 1 data via Thunder Said Energy (2024); EIA, "Electric Power Annual 2023" — T&D costs now represent 60%+ of the average retail electricity bill across most U.S. regions, up from ~40% two decades ago.

<sup>3</sup> Bipartisan Policy Center, "Transmission Cost Allocation and Beneficiary Pays Principles" (2023); Rhodium Group, "Powering America's Future" (2024) — in several U.S. markets, per-kWh delivery costs now exceed wholesale generation costs.

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## Demand Is Surging

After two decades of flat electricity demand, the U.S. is seeing the steepest demand incline in a generation. Power generation jumped 3% in 2024 alone<sup>1</sup> — the largest annual increase in five years. By 2030, demand could be 10–17% higher than today.<sup>2</sup> U.S. electrical demand will grow at a 2.5% Compound Annual Growth Rate (CAGR) through 2035,<sup>3</sup> compared to just 0.5% from 2014–2024.

2024: 4.3M GWh → 2040E: 5.4M+ GWh<sup>3</sup>

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## But the Money Isn't Going to Generation

The majority of utility capital expenditures (CAPEX) goes to moving electrons, not making them. In 2023, over 52% of all investor-owned utility spending went to **Transmission & Distribution (T&D)** infrastructure.<sup>4</sup> Generation got a fraction. The pipes are old. The pipes come first. 80% of the \$186B spent in 2024 went to infrastructure upgrades, not new power plants.<sup>5</sup>

T&D: ~\$88B vs. Generation: ~\$25B (2023)<sup>4</sup>

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## Delivery CAPEX Climbs Year After Year

Distribution CAPEX rose 160% from 2003 to 2023.<sup>6</sup> Transmission spending nearly tripled. Utilities plan \$208 billion in grid upgrades for 2025 alone<sup>7</sup> and \$1.1 trillion through 2029.<sup>8</sup> That's nearly double the prior five-year spend. This is not a cycle — it's a structural shift.

\$1.4T in grid investment required by 2030<sup>9</sup>

<sup>1</sup> EIA, "Electric Power Monthly" (Oct. 2024) — U.S. net electricity generation rose ~3% in 2024, the largest single-year increase since 2018. <sup>2</sup> Wood Mackenzie, "U.S. Long-Term Power Demand Forecast" (2024); Goldman Sachs Research, "AI is poised to drive 160% increase in data center power demand" (2024). <sup>3</sup> EIA Annual Energy Outlook 2024; EPRI, "Powering Intelligence: Analyzing AI and Data Center Energy Consumption" (2024) — 2.5% CAGR vs. 0.5% CAGR 2014–2024; 4.3M GWh (2024) projected to 5.4M+ GWh by 2040.

<sup>4</sup> EEI Annual Financial Review (2023) — 52%+ of investor-owned utility CAPEX directed to T&D; T&D spend ~\$88B vs. generation ~\$25B across U.S. IOUs in 2023. <sup>5</sup> EEI Annual Financial Review (2023); American Public Power Association, "Utility Spending & Infrastructure Investment Trends" (2024) — 80% of ~\$186B in 2024 utility CAPEX directed to infrastructure upgrades.

<sup>6</sup> EIA FERC Form 1 data (2003–2023) — distribution CAPEX rose 160% over 20 years; transmission CAPEX nearly tripled over the same period. <sup>7</sup> EEI, "Transmission Projects: At a Glance" (2024) — utilities planning ~\$208B in grid infrastructure investment for 2025. <sup>8</sup> BloombergNEF New Energy Outlook (2024); S&P Global Market Intelligence, "U.S. Utility CAPEX Trends" (2024). <sup>9</sup> Wells Fargo Securities, "Electric Utilities: Grid Investment Outlook" (2024); Moody's Investors Service, "U.S. Regulated Utilities" (2024).

## WHERE THE DOLLARS GO

### TRANSMISSION & DISTRIBUTION

T&D — \$88B<sup>1</sup>

~55%

### GENERATION

GEN

~16%

### OTHER (CUSTOMER, O&M, ADMIN)

OTHER

~29%

## THREE DEMAND SHOCKS — HITTING SIMULTANEOUSLY

### EVs & Heat Pumps

+40% electricity use by 2050<sup>2</sup>

5M EVs on U.S. roads today.<sup>3</sup> Every EV on a neighborhood circuit stresses decades-old distribution transformers never sized for this load.

### Data Centers

6% of U.S. power by 2026<sup>4</sup>

A single hyperscale data center consumes as much power as a small city. U.S. capacity will more than double to 35+ GW by 2030.<sup>5</sup>

### Industrial Reshoring

\$234B factory spending (2024)<sup>6</sup>

Semiconductor fabs, EV battery plants, pharma. Manufacturing construction is 2x the 2016–20 average,<sup>6</sup> each needing massive grid connections.

<sup>1</sup> EEI Annual Financial Review (2023); EIA FERC Form 1 data (2023–2024) — T&D share across ~180 U.S. investor-owned utilities; T&D investment exceeded \$88B in 2023 vs. ~\$25B for generation.

<sup>2</sup> EPRI, "The Electrification Futures Study" (2024) — electricity consumption projected to rise 40%+ by 2050 under moderate electrification scenario driven by EVs and heat pumps.

<sup>3</sup> BloombergNEF, "EV Outlook 2024"; DOE Alternative Fuels Data Center (2024) — approximately 5 million EVs registered in the U.S. as of mid-2024; Rocky Mountain Institute, "EV Charging Infrastructure and Grid Impacts" (2023).

<sup>4</sup> Lawrence Berkeley National Laboratory, "Electricity Use in U.S. Data Centers" (2024) — data centers projected to consume ~6% of U.S. electricity by 2026, up from ~4% in 2023.

<sup>5</sup> IEA, "Data Centres and Data Transmission Networks" (2024); McKinsey & Company, "AI power: Expanding data center capacity" (2024) — U.S. data center capacity projected to exceed 35 GW by 2030, more than doubling from 2023 levels.

<sup>6</sup> Dodge Construction Network, "2024 Construction Outlook"; U.S. Census Bureau, Construction Spending Survey (2024); Rhodium Group, "Reshoring Investment Tracker" (2024) — \$234B in U.S. manufacturing construction in 2024, 2x the 2016–2020 average. Note on HVDC: High Voltage Direct Current (HVDC) systems transmit electricity over long distances with minimal energy loss — a critical grid modernization technology. DOE Grid Deployment Office (2024); CIGRE Technical Brochure TB 775.

Everyone is chasing the companies that **generate or use** the power.

**The real bottleneck — and the real opportunity — is in the companies that **build the infrastructure to deliver it.****

Transformers. High Voltage Direct Current (HVDC) systems. Switchgear. Substation equipment. Cooling systems. The "picks and shovels" of the electrification supercycle. Companies with multi-year order backlogs, pricing power, and secular demand that doesn't depend on which administration is in office or which AI model wins.

**The grid must be rebuilt. There is no alternative.**

**POW gives you pure exposure to the companies doing the rebuilding.**

# POW

VISTASHARES ELECTRIFICATION SUPERCYCLE ETF | NYSE: POW

## Pure Exposure to the Rewiring of America

ACTIVELY MANAGED

BILL OF MATERIALS METHODOLOGY

NYSE: POW

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