

FOLLOW THE POWER

Data Centers #2 · Teens 10-15

with Dess, the Infrastructure Guard and Lena Ashgrove of Channel 5



CREDITS

Follow the Power · Data Centers #2 · Teen edition (ages 10–15)

Story and production: GOTB Consulting, Chicago

Lead: Dess · Heroes: Gridline, The Auditor, Commons, Undertow · On screen: Lena Ashgrove,
Channel 5

AI-GENERATED ART, FICTIONAL CHARACTERS

All characters, the town of Prairie Bend and Channel 5 are fictional. Any resemblance to real people is a coincidence. No real logos are shown. Real institutions are described by role. Every number in this book was checked against public sources before printing; see 'Sources' near the end.

Safety: never go near power lines, poles, substation fences or fallen wires.

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THE CREW



DESS

Our lead. Asks where things come from and who decides.



GRIDLINE

Sees where current flows (LOAD SIGHT). Cannot make new power.



THE AUDITOR

Sees and reports. Cannot stop anything.



COMMONS

Hero of neighbors and the crews. Lantern up.

PRAIRIE BEND · 8:12 PM



DESS

LAST TIME WE WENT INSIDE THE CLOUD. TONIGHT WE FOLLOW THE WIRE BACK TO WHERE THE POWER IS BORN.

FACT FILE

A typical AI-focused data center uses as much electricity as about 100,000 households. That power has to travel from a power plant, over the grid, to the building.

Source: IEA, Energy and AI (2025)

TURBINE HALL



DESS

ALMOST EVERY PLANT DOES THE SAME TRICK FROM 1831: SPIN A MAGNET INSIDE COILS OF WIRE. STEAM, GAS, WATER OR WIND DOES THE SPINNING.

FACT FILE

In 1831 a scientist found that moving a magnet inside a coil of wire makes electric current flow. Most power plants use a turbine: moving water, steam, gas or air pushes blades that spin a generator.

Source: U.S. EIA, How electricity is generated



GRIDLINE

TRANSFORMERS CRANK THE VOLTAGE UP SO IT TRAVELS FAR WITHOUT WASTING AS MUCH. THEN SUBSTATIONS STEP IT BACK DOWN.

FACT FILE

Higher voltage makes long-distance transmission more efficient and less expensive. Transformers at substations step voltage up or down for each stage of the trip. Lower-voltage distribution lines are safer for homes and businesses.

Source: U.S. EIA, Delivery to consumers



ROUTE 9 DINER · 9:05 PM

LENA (ON SCREEN)

VERIFIED

U.S. POWER IN 2025: ABOUT 41% NATURAL GAS, 18% NUCLEAR, 17% COAL, 24% RENEWABLES. DATA CENTERS USED ABOUT 4.4% IN 2023.

FACT FILE

Renewables in 2025 included wind (about 11%), solar (about 7%) and hydropower (about 6%). Total U.S. utility-scale generation was about 4.43 trillion kilowatt-hours.

Source: U.S. EIA, Electricity in the U.S.; U.S. DOE (Dec 2024)



GRID CONTROL

THE AUDITOR

THREE BIG GRIDS IN THE LOWER 48: EASTERN, WESTERN, TEXAS.
SUPPLY HAS TO MATCH DEMAND EVERY SECOND, OR BLACKOUTS.

FACT FILE

The Eastern Interconnection covers most of the country east of the Rocky Mountains; the Western covers the West; ERCOT covers most of Texas. Balancing authorities keep supply and demand matched moment to moment.

Source: U.S. EIA, Delivery to consumers



ZOOM: 13 STATES + D.C.

THE AUDITOR

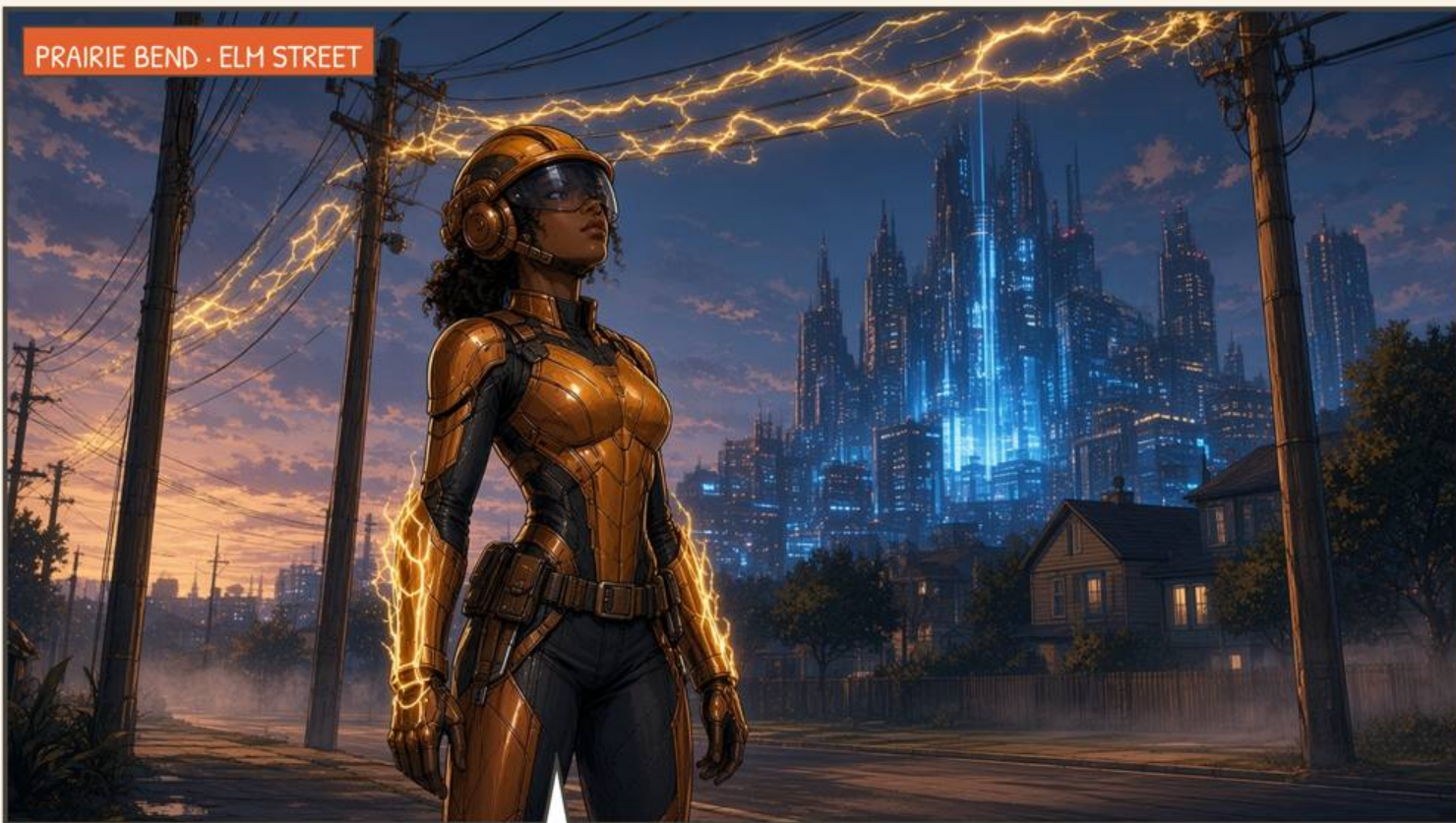
AROUND CHICAGO, ONE REGIONAL OPERATOR RUNS THE HIGH-VOLTAGE GRID AND WHOLESALE MARKET FOR 67 MILLION PEOPLE ACROSS 13 STATES AND D.C.

FACT FILE

The operator does not own the power lines or power plants. It directs them for many different owners, a bit like air traffic control. (Figures are the operator's own description.)

Source: Regional transmission organization, "Who We Are" (Oct 2026)

PRAIRIE BEND · ELM STREET



GRIDLINE

VERIFIED

ONE AI DATA CENTER CAN PULL WHAT 100,000 HOMES DO. SAME WIRES, SAME NEIGHBORHOOD.

FACT FILE

Distribution lines carry lower-voltage power to homes, schools and businesses. A big data center is one very large customer on that same system, which is why planners study where new ones connect.

Source: IEA, Energy and AI; U.S. EIA



STORM NIGHT · 1:30 AM

COMMONS

WHEN A STORM HITS, LINE CREWS TRAVEL IN AND WORK LONG DAYS UNTIL IT'S BACK. HARNESSSES, INSULATED TOOLS, NO SHORTCUTS.

FACT FILE

Line installers and repairers climb poles and towers or use bucket trucks. They use fall protection and insulated tools. After storms they may travel and work long hours for days.

Source: U.S. BLS, Occupational Outlook Handbook



TRAINING YARD · DAWN

COMMON

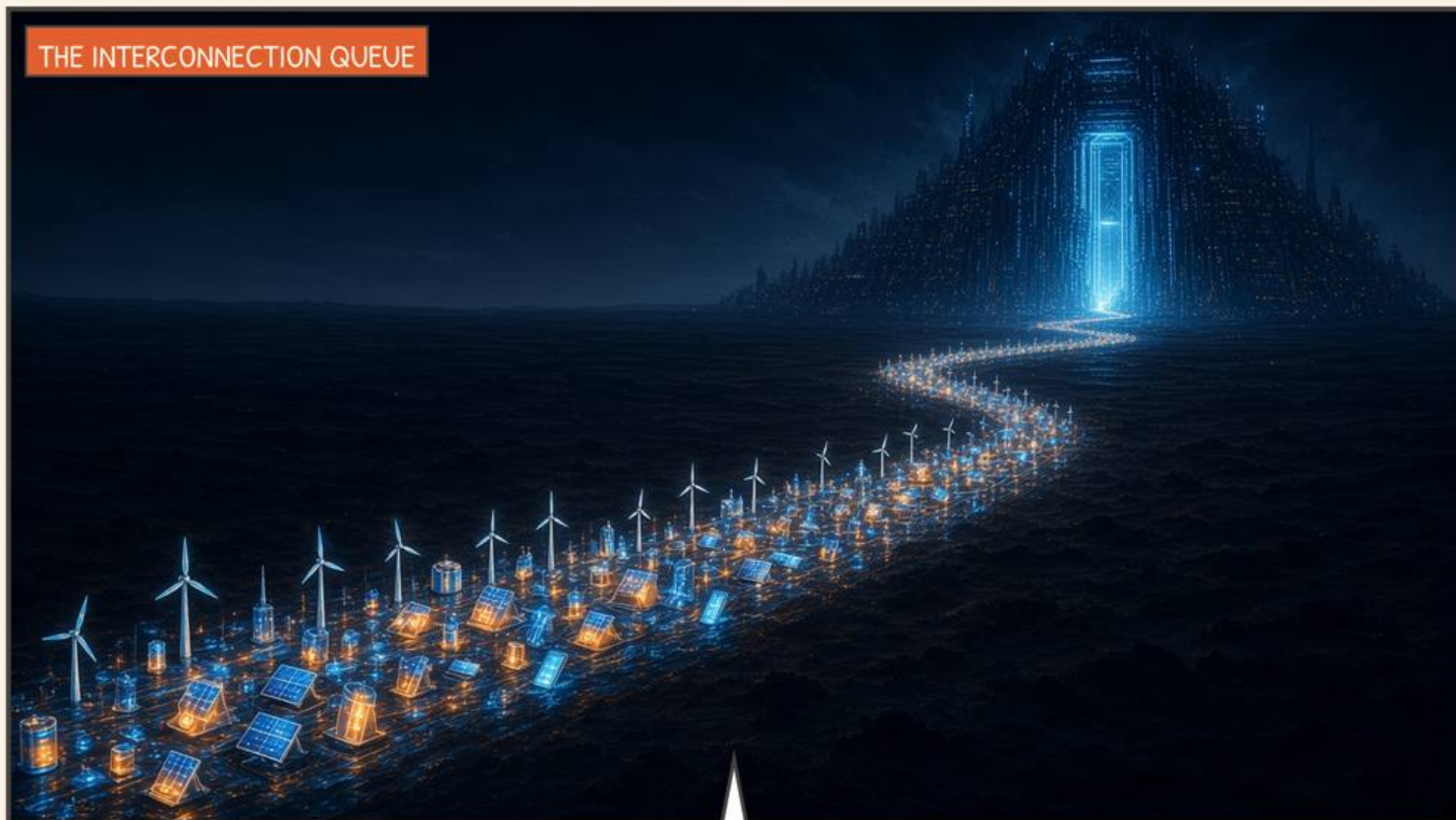
ABOUT 131,900 LINE WORKERS NATIONWIDE. MEDIAN PAY AROUND \$95K. JOBS GROWING 10%, PARTLY BECAUSE OF DATA CENTERS. MOST START WITH AN APPRENTICESHIP.

FACT FILE

Median pay was \$95,320 (May 2025). Jobs are projected to grow 10% from 2025 to 2035, with about 10,900 openings a year. Usual path: high-school diploma, then an apprenticeship of up to 3 years.

Source: U.S. BLS, Occupational Outlook Handbook

THE INTERCONNECTION QUEUE



THE AUDITOR

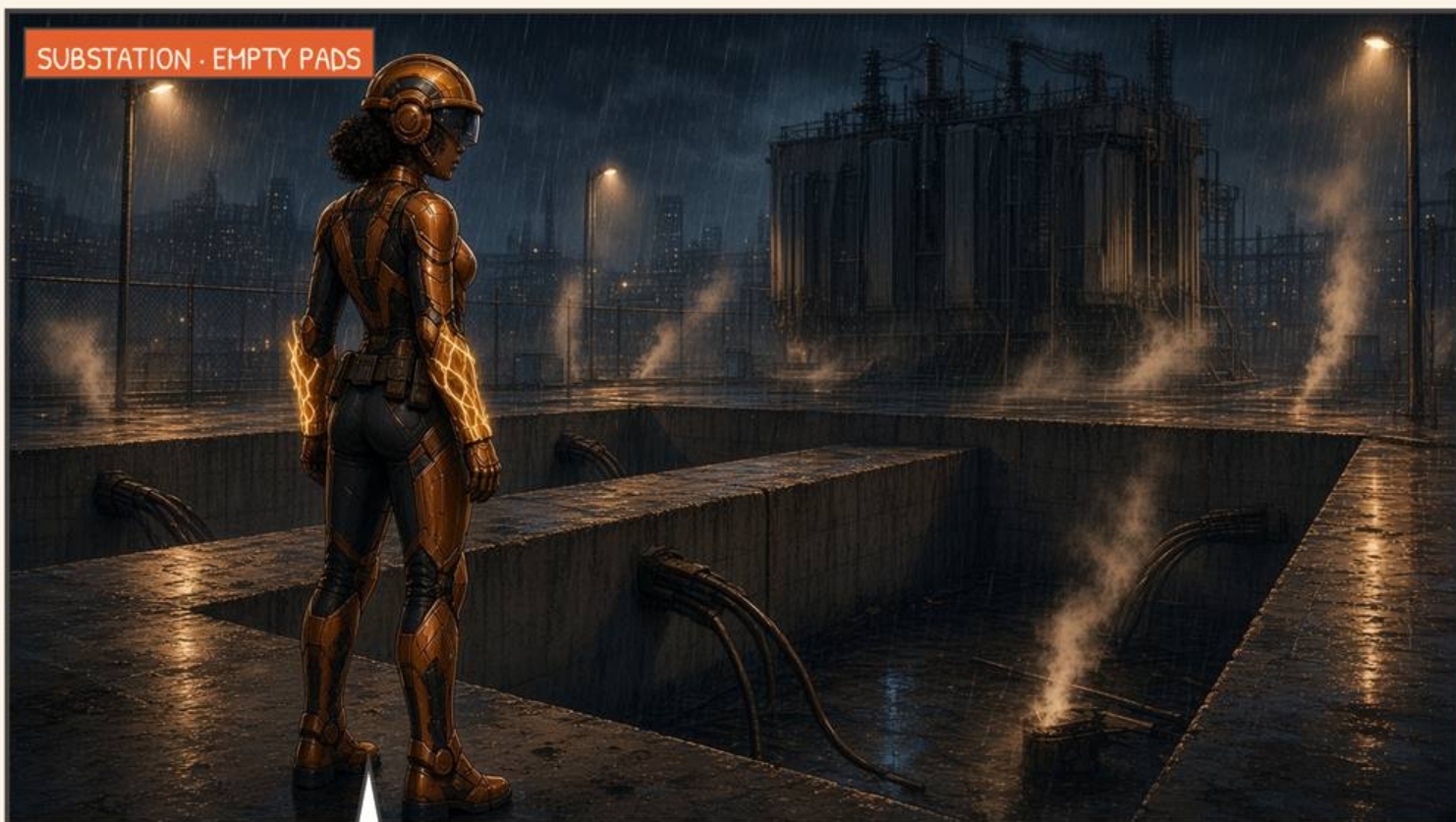
END OF 2025: ABOUT 8,200 PROJECTS WAITING TO CONNECT. MEDIAN WAIT OVER FIVE YEARS. MOST NEVER GET BUILT.

FACT FILE

The queue held about 1,312 gigawatts of generation plus about 749 GW of storage. Only 13% of the capacity that asked to connect from 2000 to 2020 was operating by the end of 2025; 75% withdrew.

Source: Lawrence Berkeley National Laboratory, Queued Up

SUBSTATION · EMPTY PADS



GRIDLINE

NEW LINES TAKE FOUR TO EIGHT YEARS. TRANSFORMER WAITS DOUBLED. ONE IN FIVE PLANNED DATA CENTERS COULD BE DELAYED.

FACT FILE

In advanced economies, new transmission lines take 4 to 8 years, and wait times for transformers and cables doubled in three years. About 20% of planned data center projects could face delays from grid strain.

Source: IEA, Energy and AI (2025)



KITCHEN TABLE · 10:40 PM

LENA (ON SCREEN)

CONTESTED

SUMMER 2025: THE CHICAGO-AREA UTILITY ESTIMATED ABOUT \$10.60 MORE A MONTH. A CONSUMER GROUP BLAMED AUCTION RULES; THE MARKET MONITOR POINTED AT DATA CENTER GROWTH.

FACT FILE

Both views are on the record. The consumer group pointed to 'policy problems' in the regional capacity auction. The auction's independent market monitor called data center load growth 'the primary reason' for high prices.

Source: Citizens Utility Board (Jun 2025); independent market monitor (Jun 2025)



PRAIRIE BEND TOWN HALL

DESS

SOME SAY BUILD LINES FAST. SOME ASK WHO PAYS WHEN A LINE IN ONE STATE HELPS ANOTHER. BOTH QUESTIONS ARE REAL.

FACT FILE

Grid challenges named by the federal energy statistics agency: some old lines have reached the end of their useful lives, siting new lines is hard, deciding who pays when a line helps several states, and protecting the grid from physical and cyber attacks.

Source: U.S. EIA, Delivery to consumers



DESS

THE CLOUD RUNS ON WIRE, STEEL AND PEOPLE WHO CLIMB IN STORMS. FOLLOW THE POWER, ASK WHO PLANS IT.

GOTB Consulting works on the infrastructure and procurement behind projects like these.

BY THE NUMBERS

41% • 18% • 17% • 24%

U.S. electricity in 2025: natural gas, nuclear, coal, renewables (wind 11, solar 7, hydro 6). Source: U.S. EIA.

4.4%

Share of U.S. electricity used by data centers in 2023. Source: U.S. DOE.

100,000 HOMES

Electricity of one typical AI-focused data center. Source: IEA.

8,200 PROJECTS

Waiting to connect to the U.S. grid at the end of 2025; median wait over 5 years. Source: LBNL.

4 TO 8 YEARS

Time to build new transmission lines in advanced economies. Source: IEA.

151,900

U.S. power-line installer and repairer jobs in 2025; median pay \$95,320. Source: U.S. BLS.

TWO SIDES, ONE GRID

Strong arguments on more than one side. Labeled: proven vs. disputed.

BUILD FASTER

Data centers, factories and homes all need more power. New lines and plants take years, so supporters say start now.

WHO PAYS?

When a line in one state helps another, deciding who pays is hard. Some families worry about higher bills.

BILLS (CONTESTED)

Summer 2025: a consumer group blamed auction rules for higher Chicago-area bills; the market monitor pointed at data center growth.

SMARTER USE

Build where the grid has room; run servers and backup power more flexibly; a smarter grid finds problems faster.

YOUR TURN

Which question would you ask at a town hall? Write it here:

GRID WORDS

INTERCONNECTION

One of the three big connected grids (Eastern, Western, Texas). Also: the process of plugging a new project into the grid.

TRANSMISSION VS DISTRIBUTION

Transmission = high-voltage long-distance lines on towers. Distribution = lower-voltage lines to homes and businesses.

TRANSFORMER

Steps voltage up for long trips or down for neighborhoods.

BALANCING AUTHORITY

Keeps power supply and demand matched every moment.

QUEUE

The waiting line of projects asking to connect to the grid.

CAPACITY AUCTION

A market where power plants are paid to be available in future years.

QUICK QUIZ

1. WHAT WAS DISCOVERED IN 1831?

a) Moving a magnet in a coil makes current b) Solar panels c) Batteries

2. WHY RAISE THE VOLTAGE FOR LONG LINES?

a) It looks cool b) It makes long-distance transmission more efficient c) It is safer for homes

3. HOW MANY MAIN GRIDS IN THE LOWER 48?

a) One b) Three c) Fifty

4. MEDIAN WAIT FOR PROJECTS BUILT IN 2025?

a) 6 months b) About 2 years c) Over 5 years

ANSWERS

1 a · 2 b · 3 b · 4 c

SOURCES

Full fact list: FACT_BASE.md (GOTB internal).

U.S. ENERGY INFORMATION ADMINISTRATION

Delivery to consumers; Electricity in the U.S.; How electricity is generated (opened Oct 22, 2026).

U.S. DEPT. OF ENERGY / BLS

DOE data center report release (Dec 20, 2024); BLS Occupational Outlook Handbook, Line Installers and Repairers (Aug 2026).

LBL • IEA

Lawrence Berkeley National Laboratory, Queued Up (data through 2025); IEA, Energy and AI, Executive summary (2025).

GRID OPERATOR • UTILITY • CONSUMER GROUP

Regional operator and utility self-descriptions; Citizens Utility Board release (Jun 4, 2025); independent market monitor analysis (Jun 2025).

ABOUT GOTB CONSULTING

WHO WE ARE

A Chicago team that helps plan the big systems towns depend on.

DATA CENTERS

Where the cloud lives.

POWER

Electricity for homes and buildings.

WATER

Clean water and smart cooling.

PUBLIC WORKS

Roads, pipes and places for people.

THE END



FOLLOW THE POWER. ASK WHO PLANS IT.

Next time: more from the Infrastructure Guard.

GOTB CONSULTING • CHICAGO

Data centers • Power • Water • Public works

AI-generated art, fictional characters