A Grid New Deal:
AI, Energy, and Equitable Growth

Carnegie Mellon University
Wilton E. Scott Institute
for Energy Innovation

Costa Samaras, PhD
Director, Scott Institute for Energy Innovation
Trustee Professor of Civil and Environmental Engineering
csamaras@cmu.edu @CostaSamaras.com June 10, 2026

AI Amplifies Deep Uncertainties Society Faces In Addressing Physical and Transition Risks of Climate Change

- Some uncertainties involve **data**
  - What climate extremes should companies or governments plan for? How cheap will energy storage get?

- Some involve **technologies**
  - How will AI and vehicle automation affect emissions or energy demand?

- The deepest uncertainties are in **social systems**
  - How will climate change and AI affect affordability, the economy, and growth? Who pays, and who benefits?

Energy System and Supply Chain Have Exposure and Vulnerabilities to Multiple Climate Threats

Extreme heat

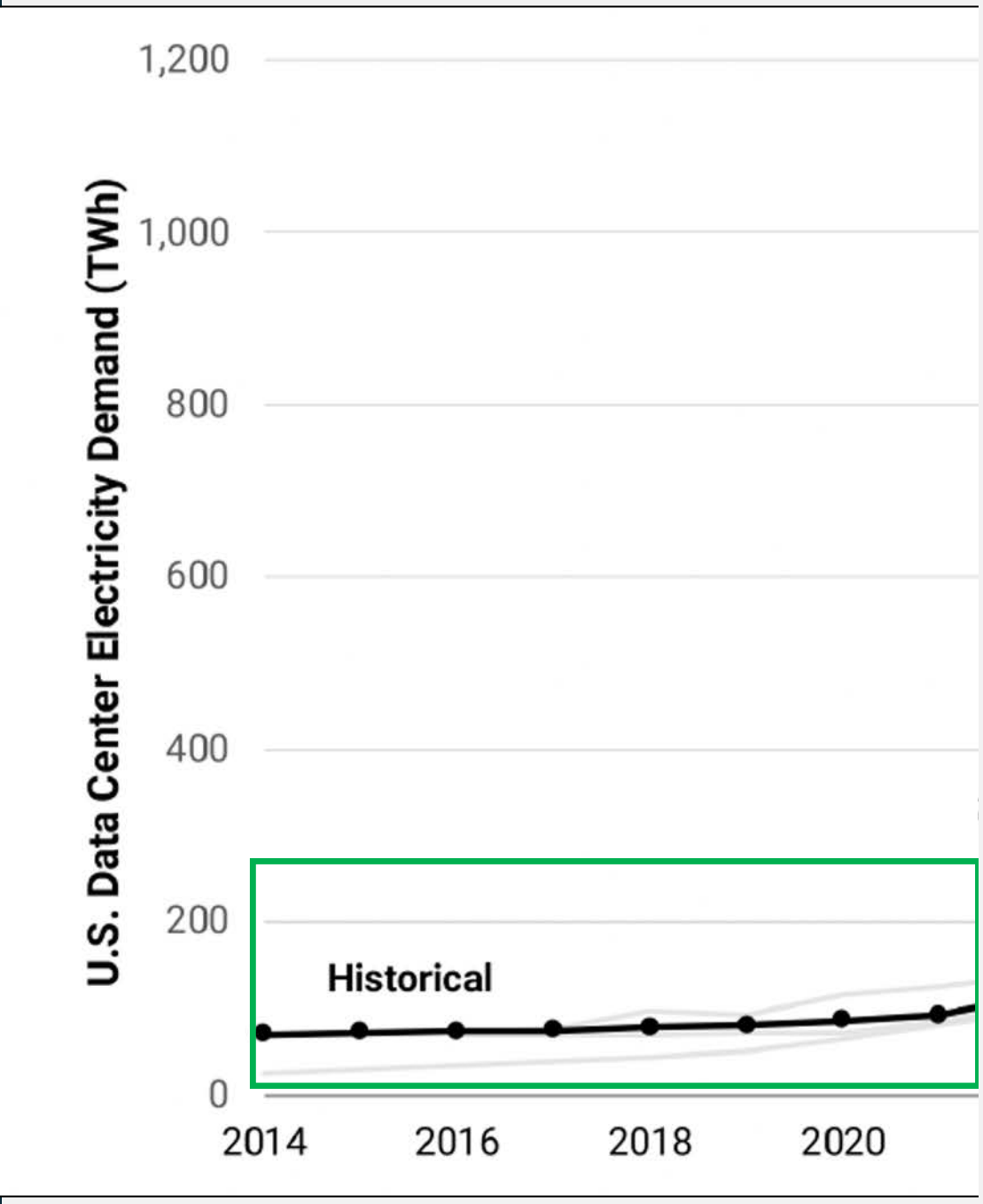
Rising sea levels and storm surge
Hurricanes and high winds
Extreme precipitation events
Ice storms

Drought
Wildfires

Earlier snowmelt
Reduced snowpack

Electricity is the Economic Infrastructure of This Century, and the Foundational Infrastructure of AI

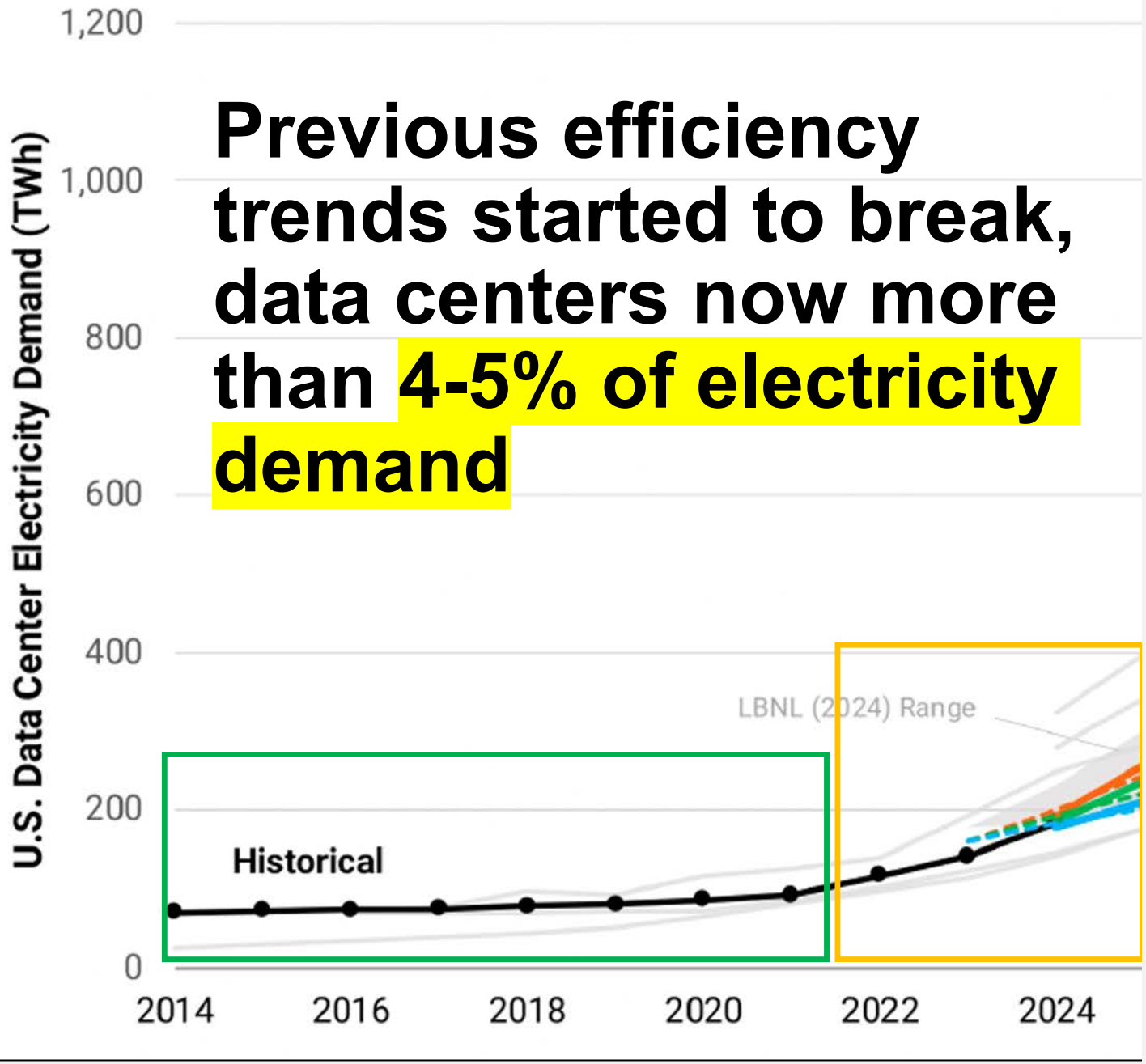
- The grid is aging and vulnerable and residential electricity prices are **growing faster than inflation.**
- AI data centers are driving near-term electricity growth, but **electric infrastructure buildout will influence feasibility of electrification.**
- AI **has the potential to improve energy, climate, and affordability outcomes** but this will not happen on its own.



From 2010-2020, global internet traffic increased 17-fold but data center energy use only increased 10%

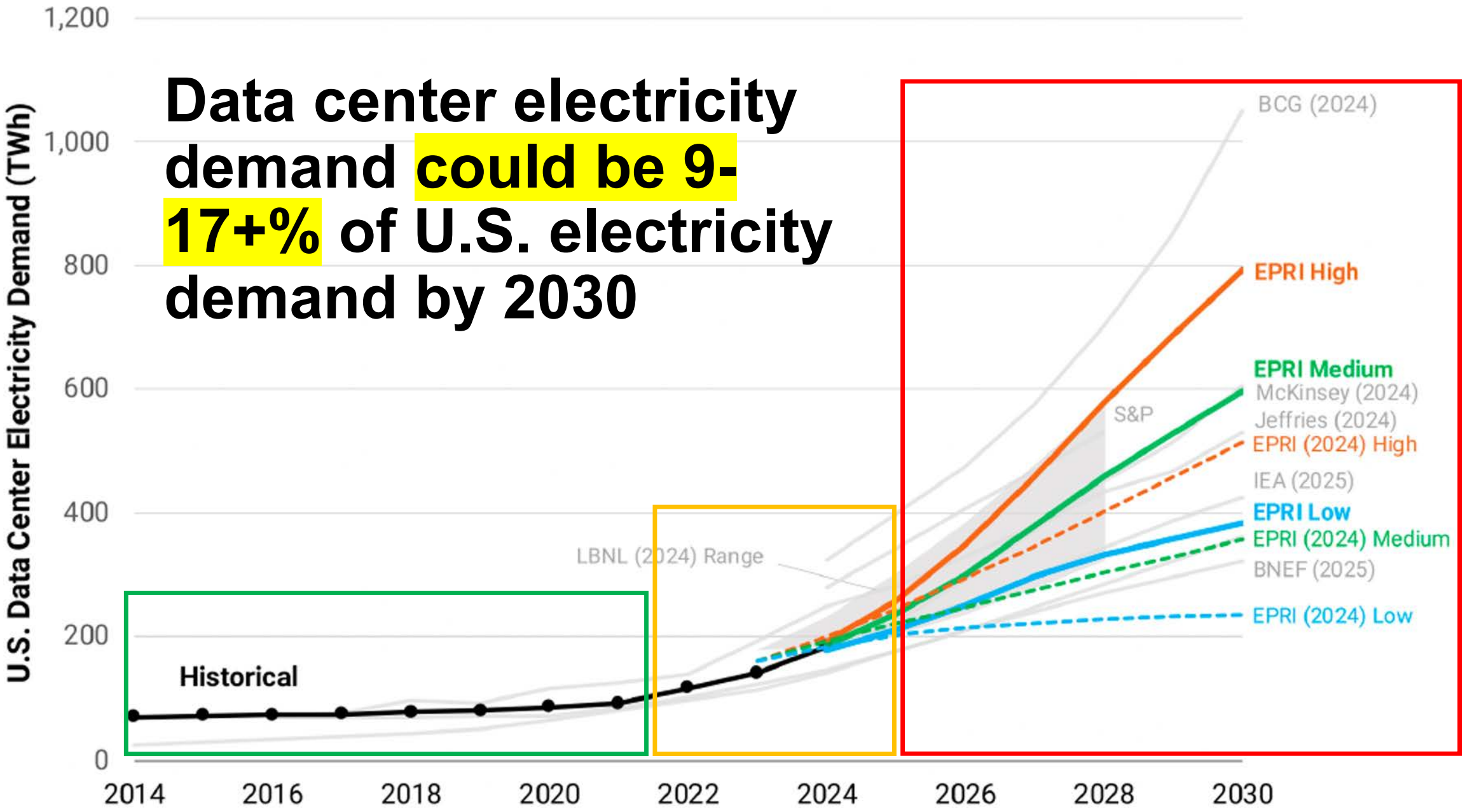
Source: LBNL, 2024; Newkirk, 2025 , EPRI (2026)

Previous efficiency trends started to break, data centers now more than 4-5% of electricity demand



Source: LBNL, 2024; Newkirk, 2025, EPRI (2026)

Data center electricity demand could be 9-17+% of U.S. electricity demand by 2030

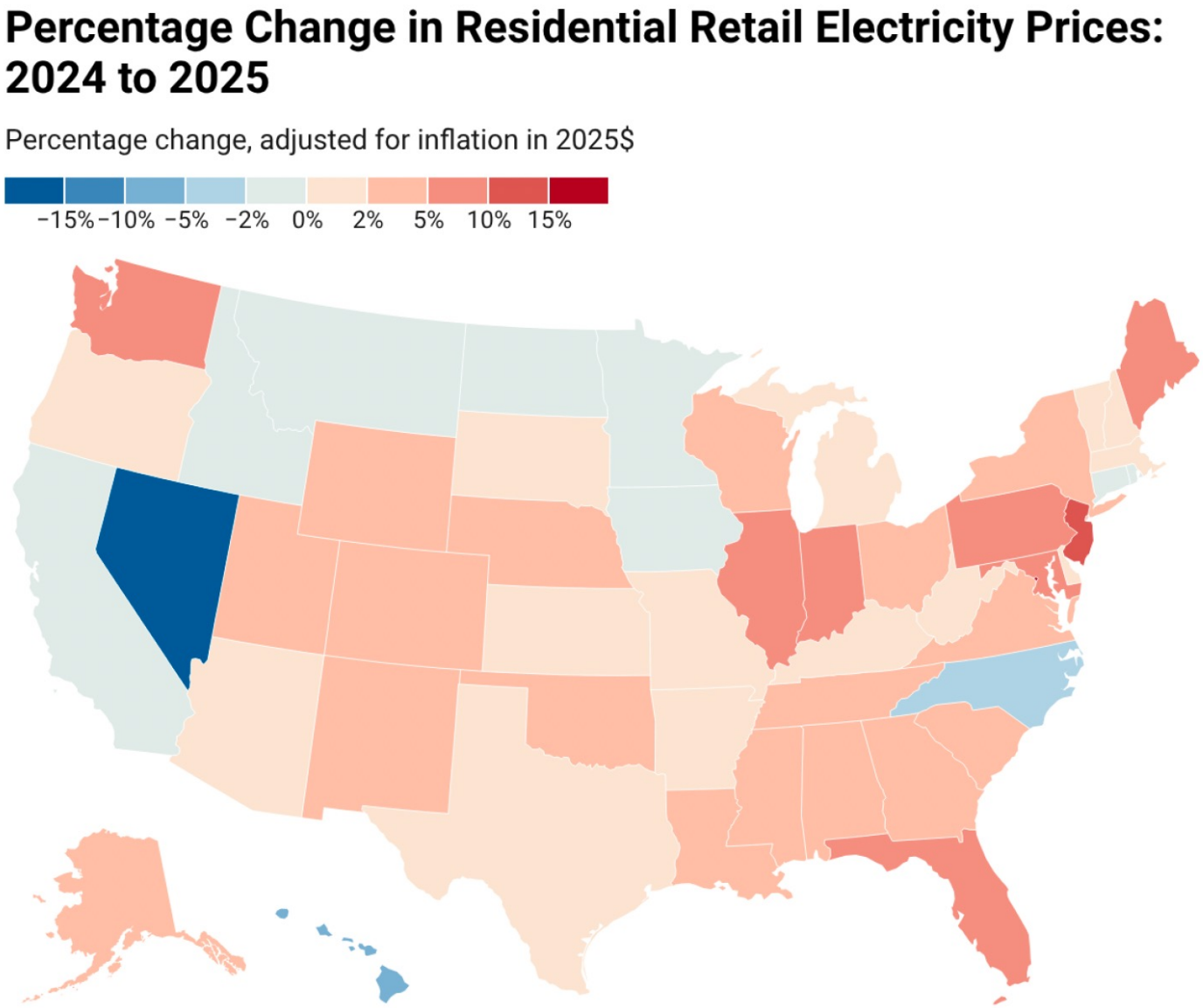


Source: EPRI (2026)

Residential Electricity Prices Rising Faster Than Inflation

- 61% of Americans said utility bills add to their financial stress

- More than half of Americans said they have changed spending habits because of utility bills



Source: Powerlines, 2026

Source: Wiser et al. 2026

Fossil-Fired Backup Generation Raises Local Pollution, and Water Consumption Creating Challenges In Some Areas

Source: The Guardian

Data Centers Are Only Part of Future Anticipated Electricity Growth, and AI Affects Emissions Broadly

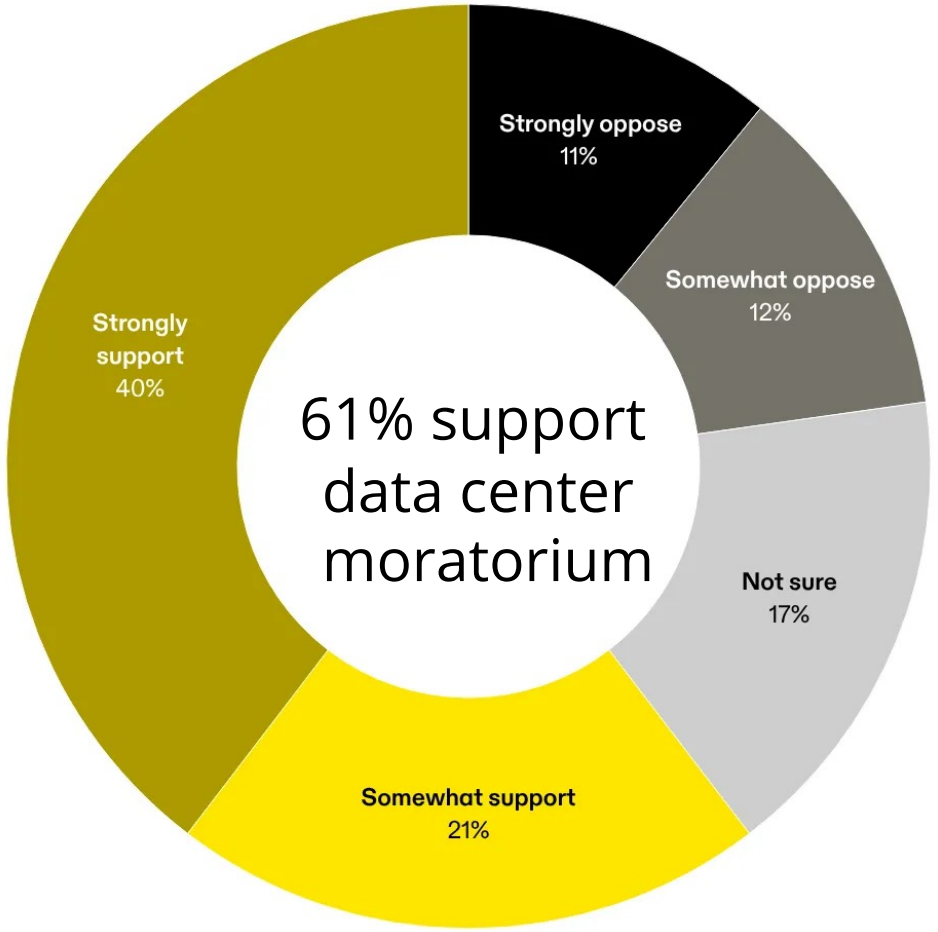
Images: WIRED, Advantage Valley, Balderston associates

AI Expansion and the Energy Transition are Firmly Intertwined

- Social license for data centers is eroding and policymakers are responding

- The energy transition and addressing climate change requires **doubling the grid**, and more

Heatmap News asked: "Do you **support or oppose a moratorium**, or temporary pause, on the construction of new data centers nationwide?"



Source: Heatmap Pro / Embold Research

HEATMAP

What Does Society Want the Future to Look Like?

Source: The Guardian, 2018

What Does Society Want the Future to Look Like?

Image: Wikimedia

Image: Library of Congress

A Grid New Deal for Equitable Growth

- The electric grid is the foundation for 21st century prosperity
- **People**: Rebuild public capacity to deliver electrification
- **Policy**: Align rules for equitable growth
- **Investment**: Mobilize public and private capital to double the grid

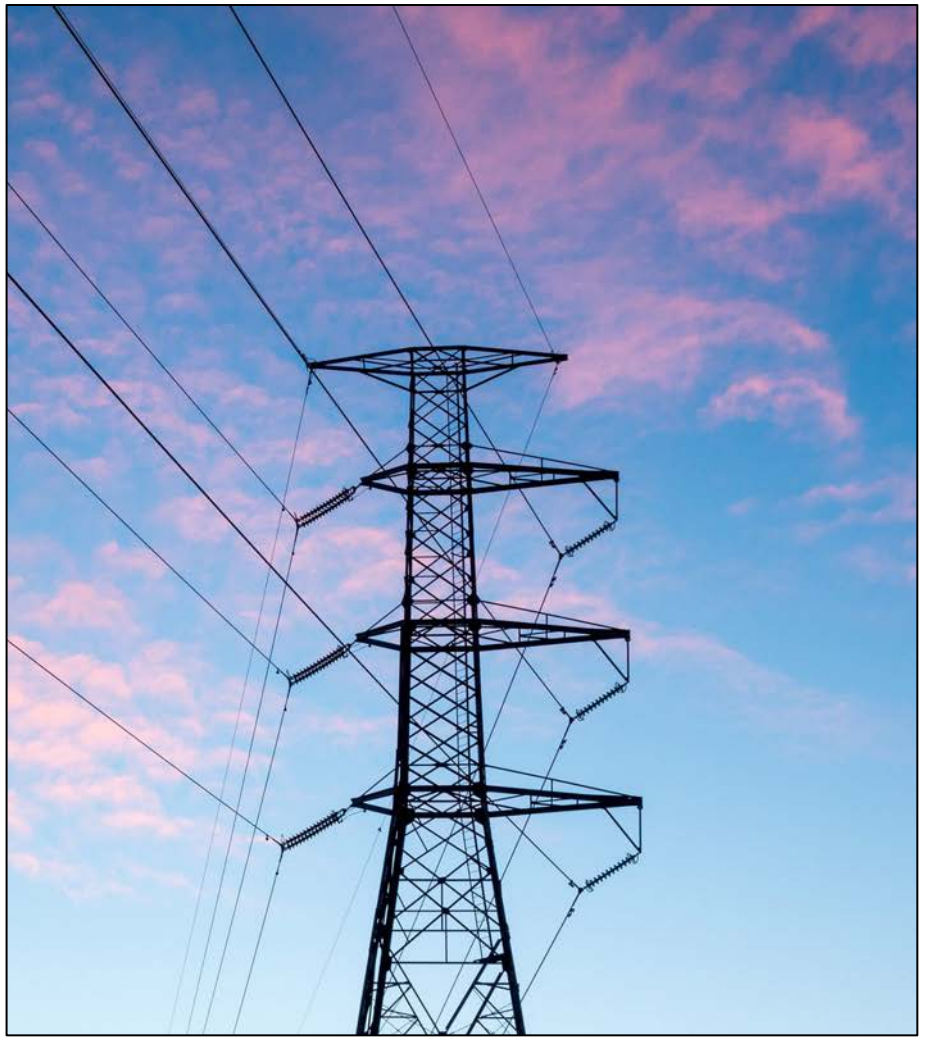


Image: Federation of American Scientists

A Grid New Deal for Equitable Growth: Public Capacity

Rebuild the human and institutional capacity to plan, permit, regulate, build, inspect, operate, and govern the electricity grid

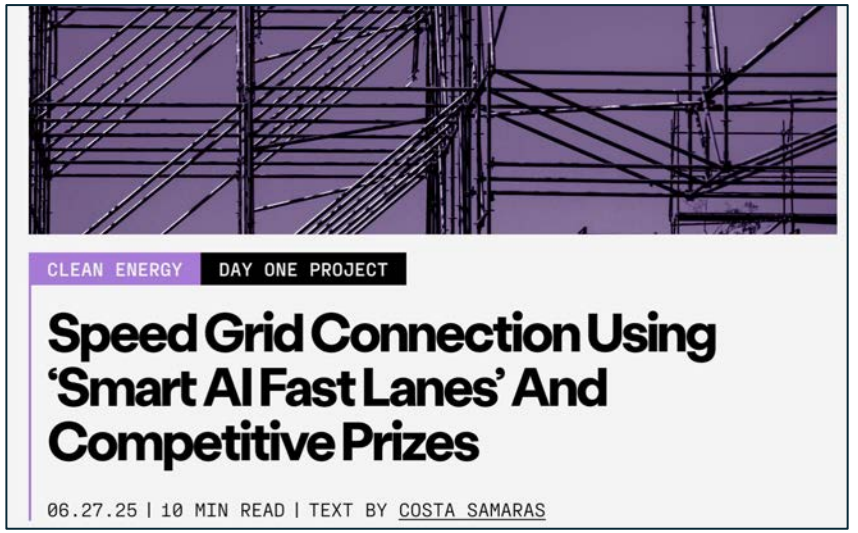
- **American Grid Corps**: staffing and funding for Public Utility Commissions and other organizations
- **Skilled Trades for America**: a doubled grid needs lineworkers and electricians
- **Community Capacity**: local institutions to enable earned speed maximize local benefits

Images: Wikimedia, City of Mentor

A Grid New Deal for Equitable Growth: Public Policy

Align rules for fast, clean, reliable, affordable, equitable growth

- **U.S. Electrification Administration**: rapid co-planning and permitting of generation, transmission, demand
- **Large load tariffs and bring clean power to share**: cost allocation for growth and shared prosperity
- **Reward flexibility and sustainability**: earn speed with environmental and community benefits



Source: https://fas.org/publication/speed-grid-connection-smart-ai-fast-lanes/

A Grid New Deal for Equitable Growth: Mobilize Investment

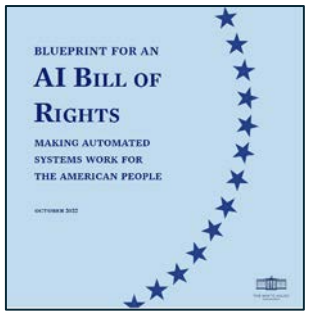
Shared public and private investment to finance national assets

- **National Grid Trust Fund:** loan guarantees and shared re-investment for clean power and resilient growth
- **Federal Market Shaping:** public procurement and reserves of U.S. grid products, standardization, milestones
- **Public-private-philanthropic community investments:** affordability and resilience beyond data centers

Image: Wikimedia

Do Now What We Would Not Regret Later

A Climate and Energy Amendment to the AI Bill of Rights



Safe and Effective Systems

Algorithmic Discrimination Protections

Data Privacy

Notice and Explanation

Human Alternatives, Consideration, and Fallback

Source: The White House, 2022

- Enables affordable electricity
- Adds more clean power to the grid than it uses
- Increases reliability, flexibility, and resilience
- Open data and rising efficiency targets
- Enables local and national environmental objectives
- Treats the grid as foundational shared infrastructure

AI and Infrastructure Choices Determine Next Two Decades of Energy, Economic, Resilience, and Environmental Outcomes

Image: Gray Line