
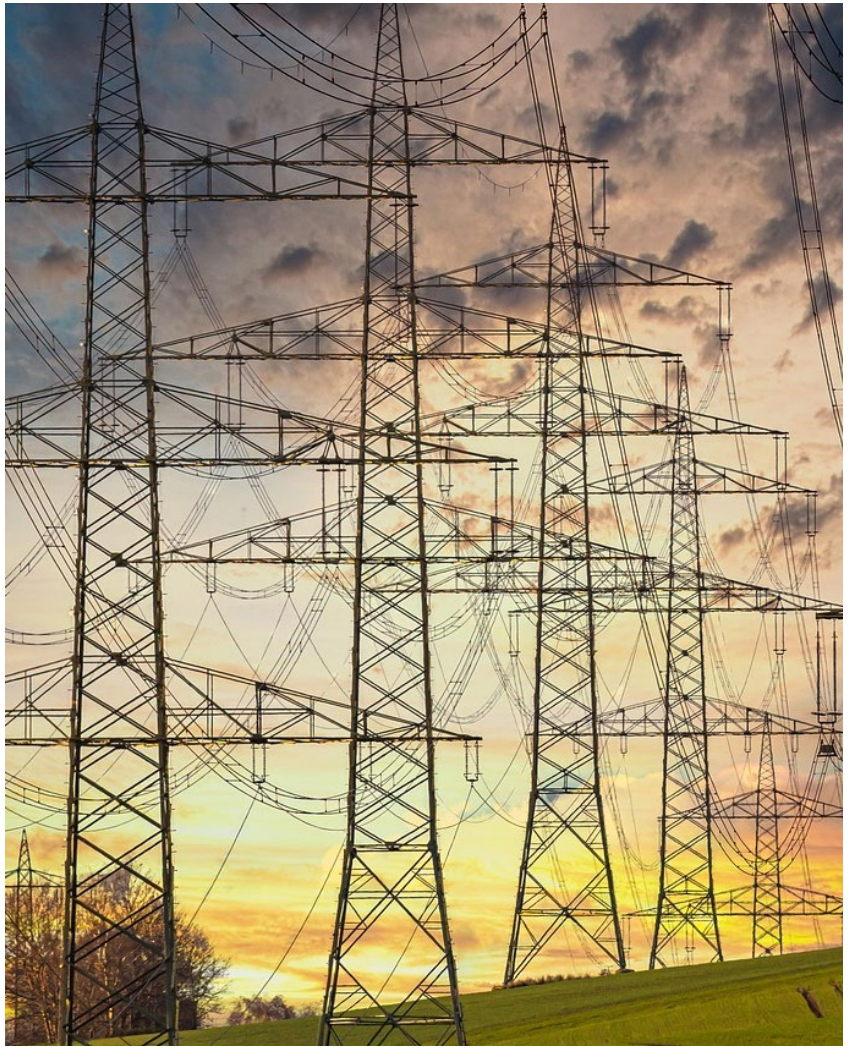


Carnegie Mellon University
Wilton E. Scott Institute
for Energy Innovation

Webinar: The Promise and Potential of Energy Parks

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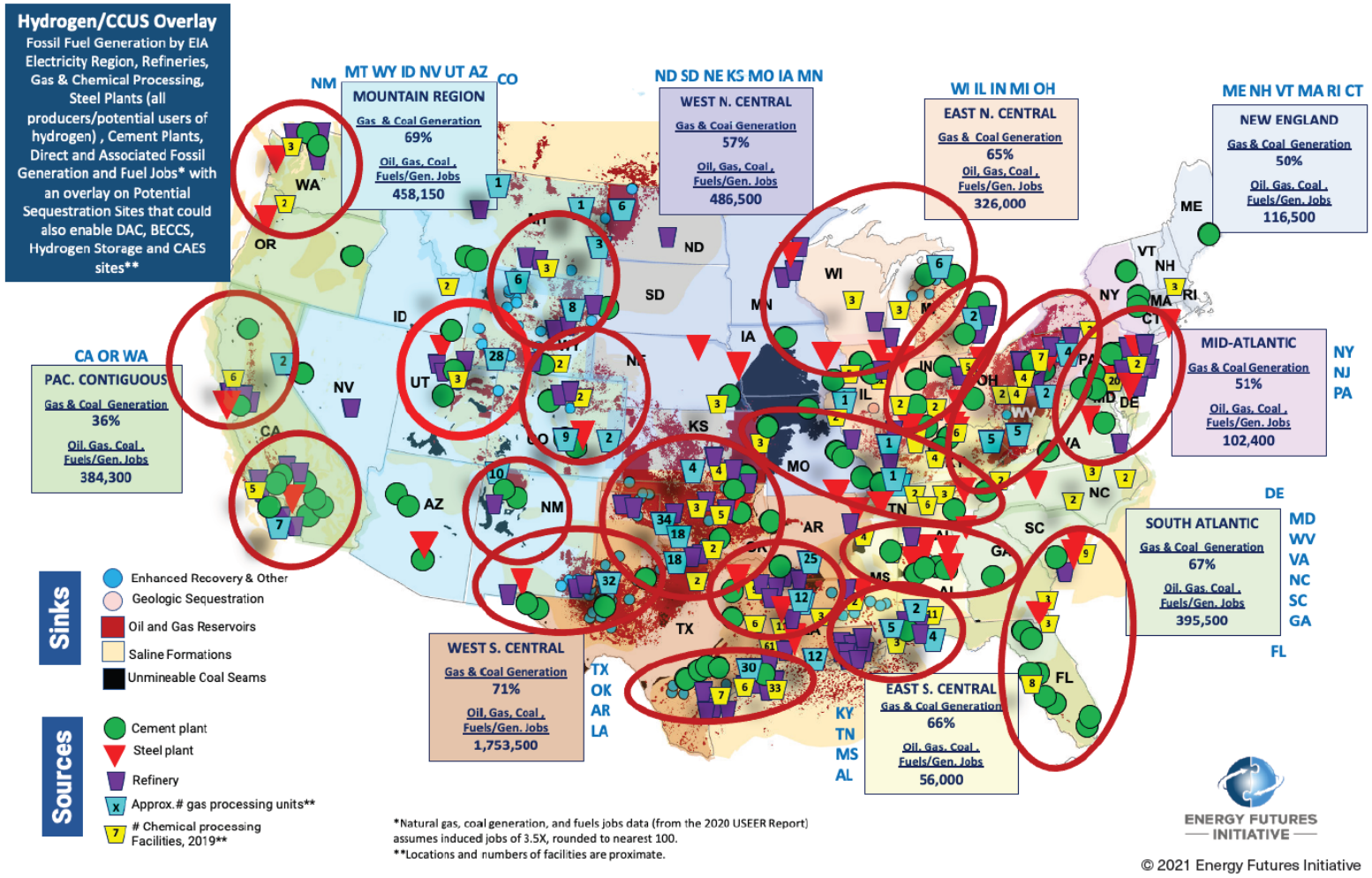
February 12, 2026

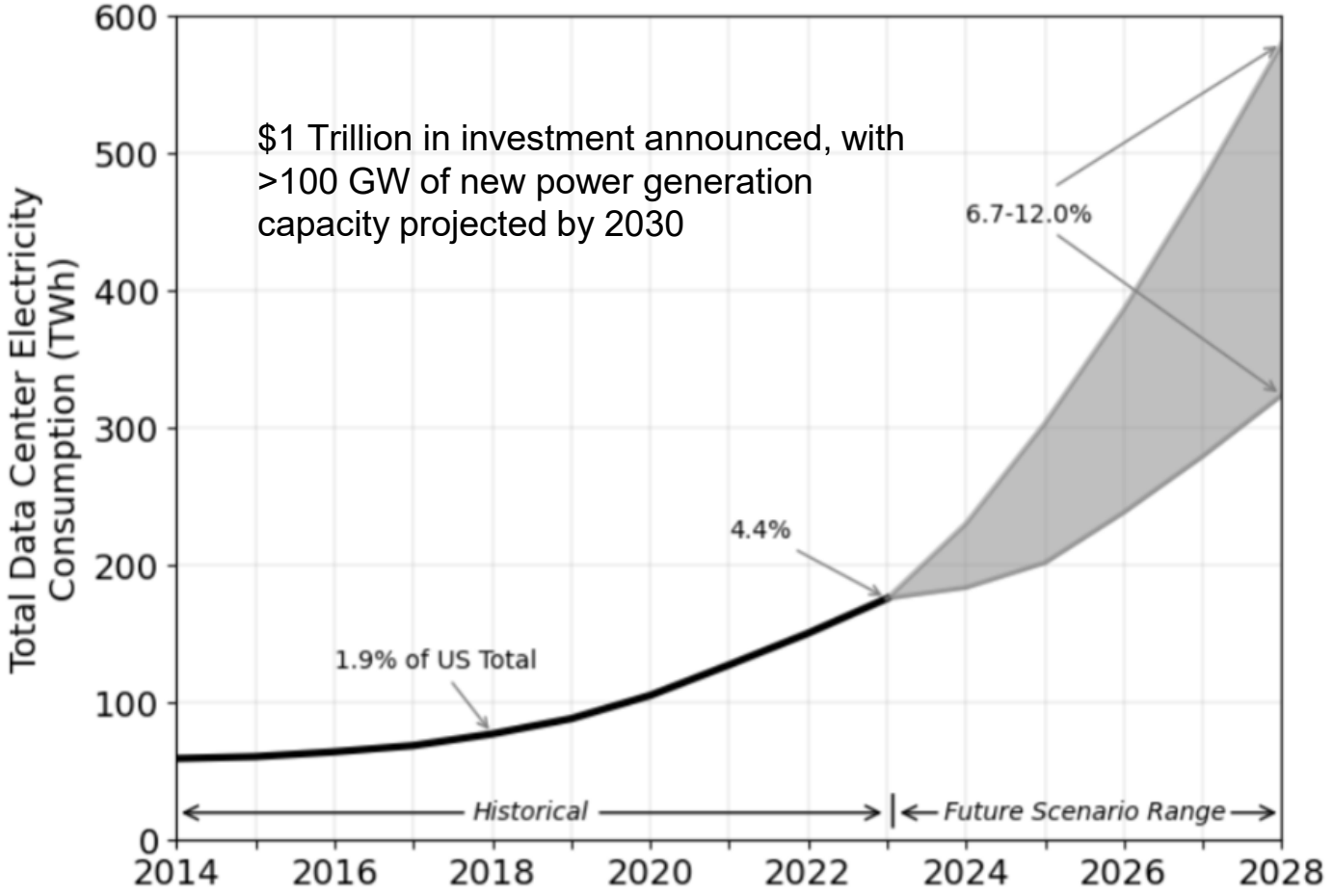
Example of an effort to build next generation energy parks – the Hydrogen Hubs program in the United States

Figure 2. EFI Hydrogen and CCS Data Overlay Map with Potential for Hub and Market Formation[4,5,6,7,8,9,10,11,12]



The complex overlay of essential elements for hydrogen and CCS market formation (industrial plants that make or use hydrogen, large CO_2 emitters, geologic carbon dioxide sinks, oil and gas generation and jobs) shows regional concentrations that have the potential to be industrial hubs. Data from Google Maps, 2021; Earth Justice, 2021; Data Basin, 2017; EIA, 2019; EPA, 2019; and NASEO and EFI, 2020. © 2021 Energy Futures Initiative.

Data centers, plus electric vehicles and industrial loads, are increasing electricity demand



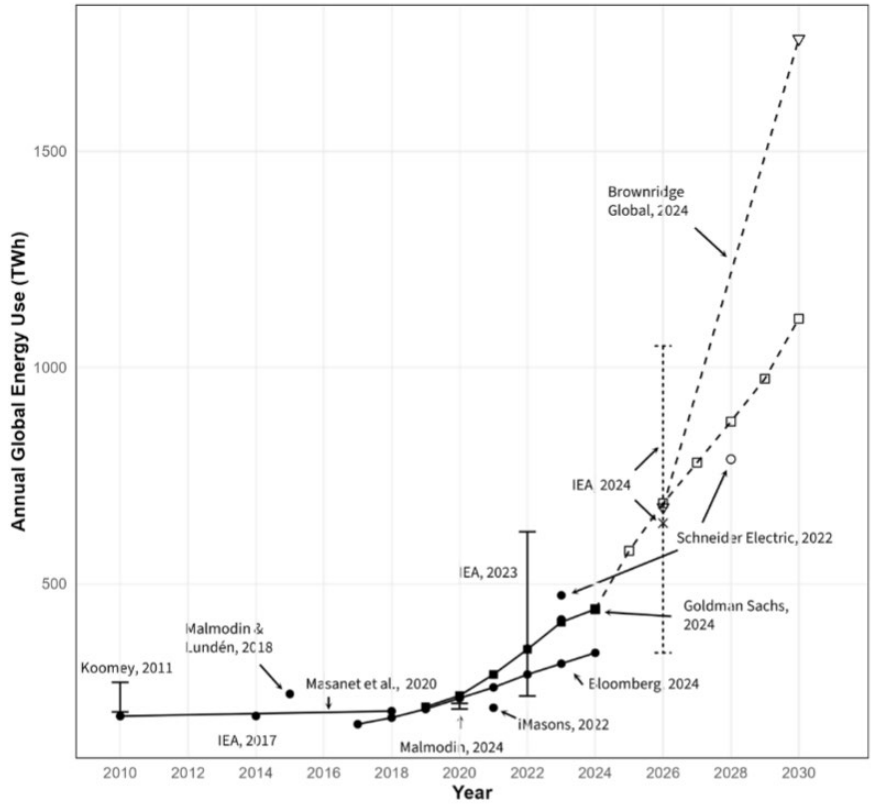
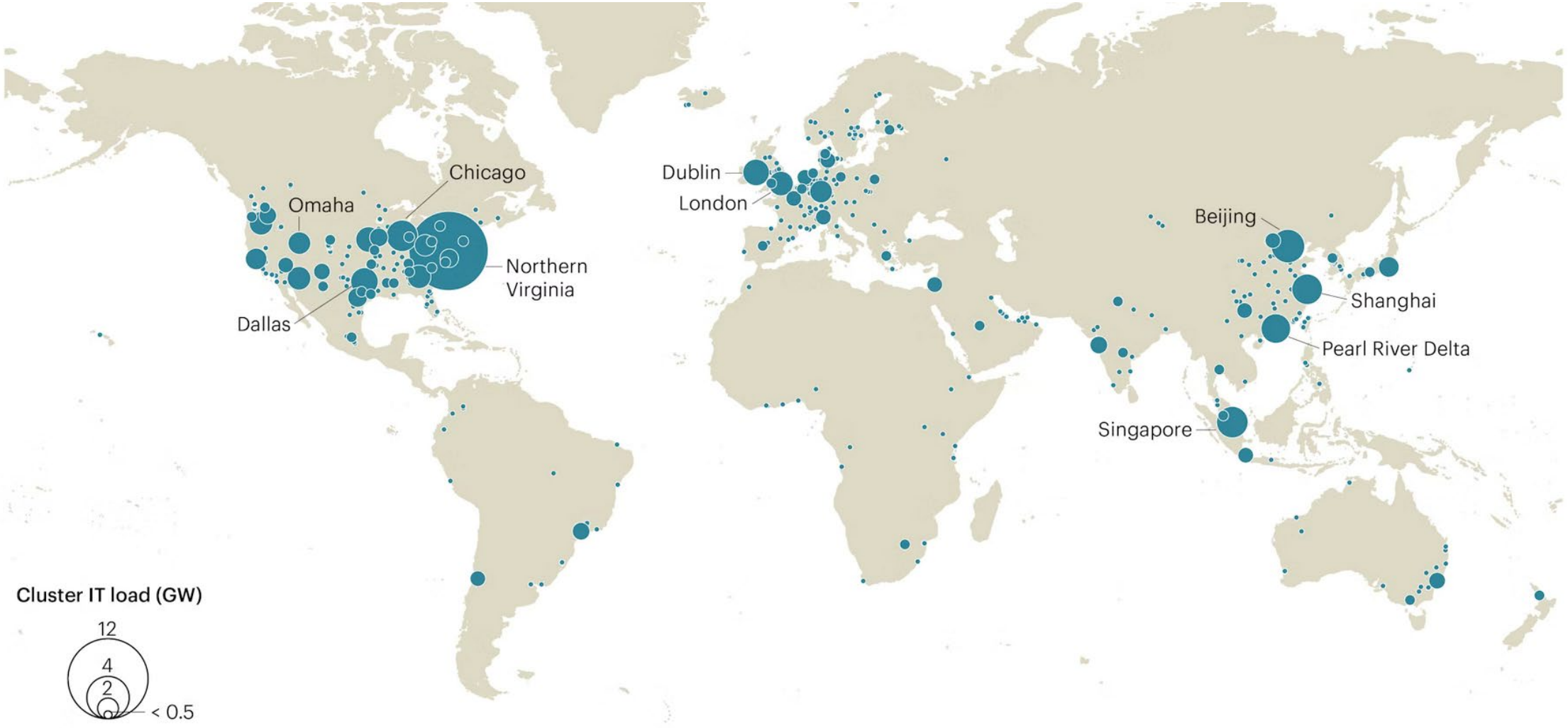


Figure 1.2. Academic and industry historical estimates of global data center energy use.
Plot also includes future projections from those sources. Historical estimates are shown with solid lines, and projections are shown with dashed lines.

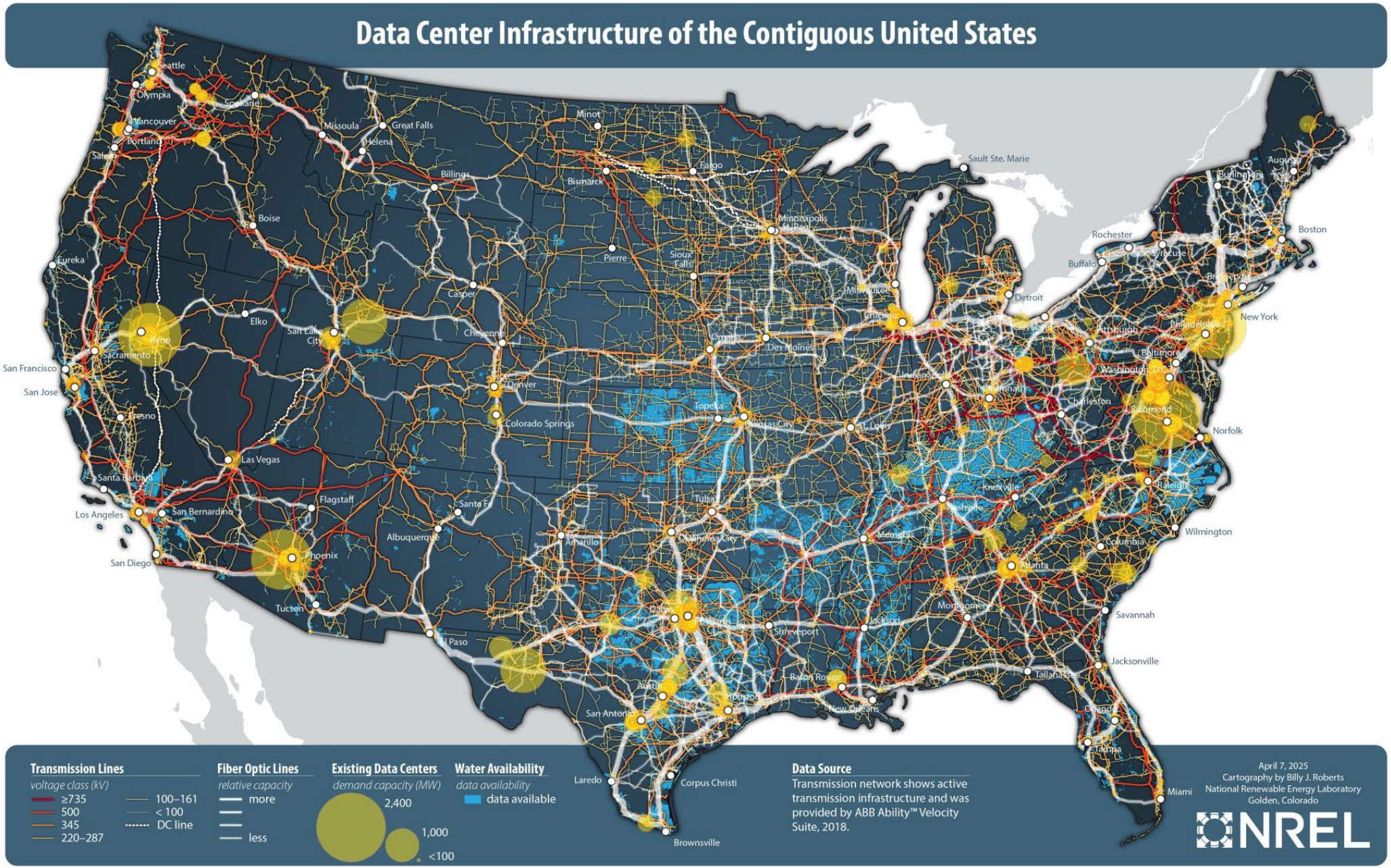
Source: LBNL, 2024

Total data center electricity use is around ~4% of U.S. total (~1.6% in China)

Data centers already consume over 10% of the electricity supply in eight US states, Virginia is at 39%

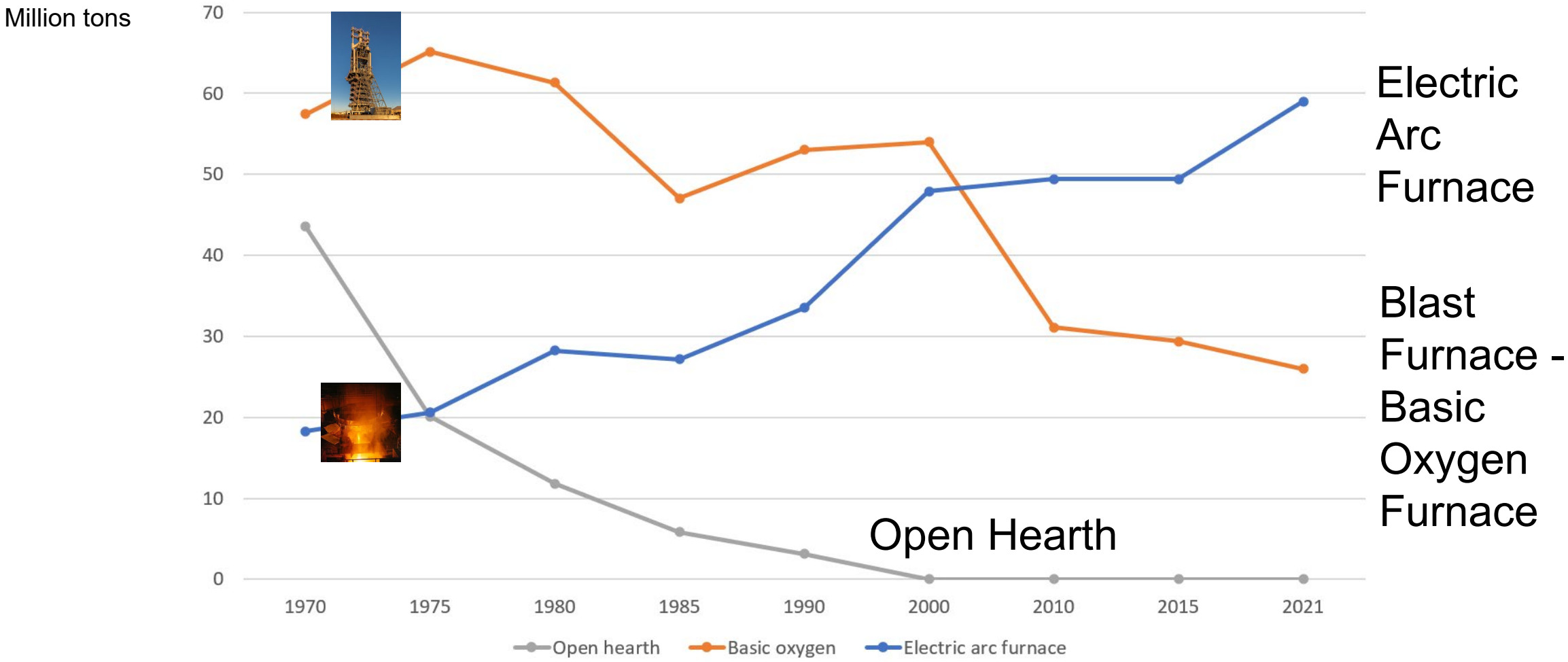


Source: IEA, 2025, Bloomberg

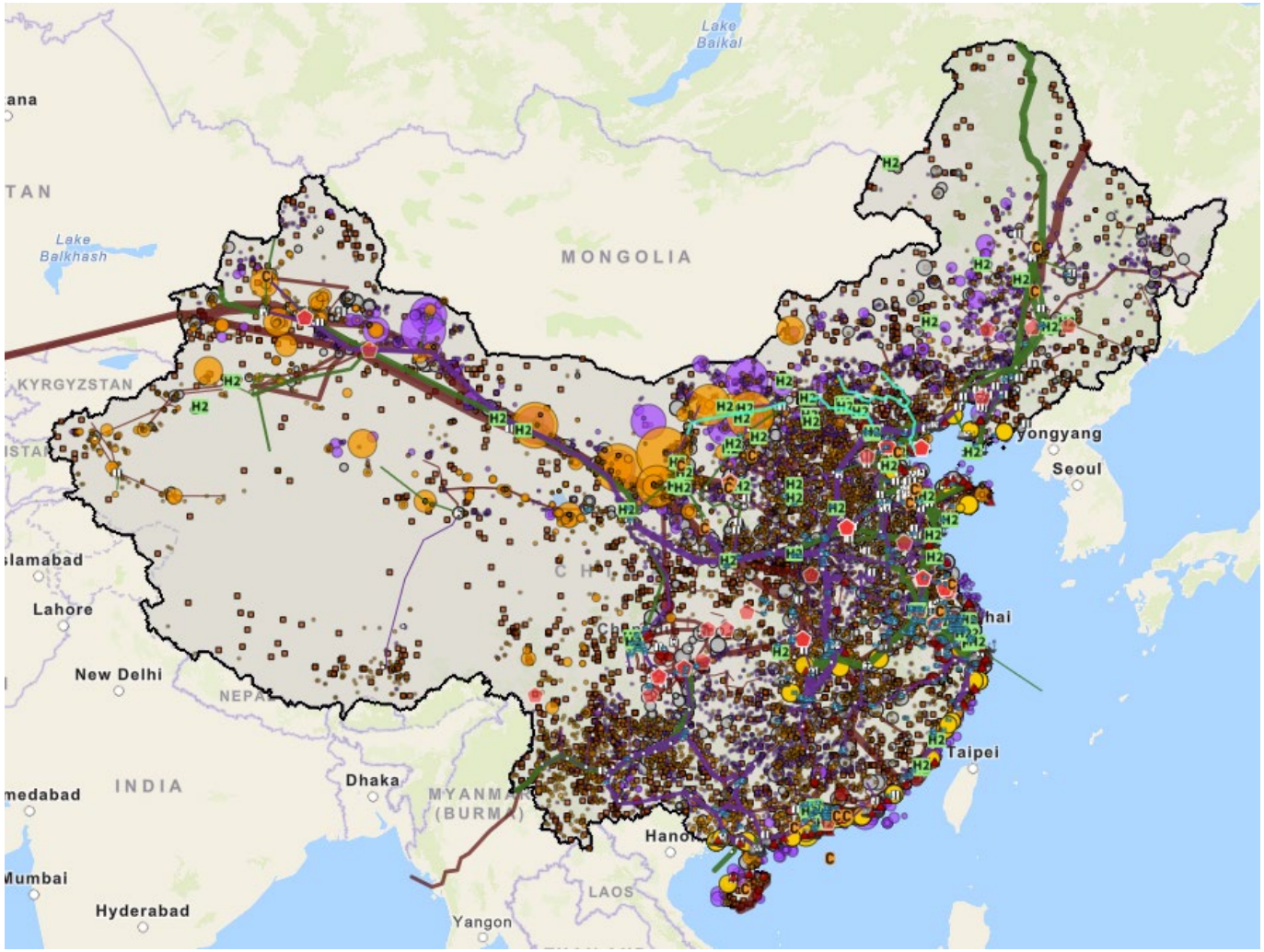


Source: Billy Roberts, NREL

Electricity-based steel production is an example of industrial loads that could be incorporated within energy parks



China has invested heavily in energy production megabases and high-voltage transmission



Source: Global Energy Monitor, Center for Energy Studies, Rice University's Baker Institute for Public Policy, GEI Mapping by Petroleum Economist

Energy Parks – A few takeaways

- **Lessons from hydrogen hubs** – Incentivizing emergence of hubs needs time, guardrails, and the promise of favorable economics
  - May be easier for mature technologies such as solar, wind, and batteries
  - Need to be clear about the case for collocation – and vulnerabilities
- **China's experience** may be only partially instructive for the U.S.
  - Park scale differs – a few GW in U.S. versus 10s/100s of GW in China
  - Governance diverges – role of market and state
- Need greater clarity on **economic and social value of parks**
  - Locating far from existing load centers requires assurances of new demand
  - Need incentives to ensure environmental and health benefits
  - Workforce needs and implications remain unclear
  - Understand sources of community support and concern

Thank you!

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