

**FALSE PROMISES AND REAL SOLUTIONS
IN THE RACE TO SAVE
THE CLIMATE**

REVISED & UPDATED

JOSEPH J. ROMM

Promoting SMRs Will Slow or Stop any ‘Nuclear Renaissance’ and Undermine U.S. Leadership in AI

Joseph Romm, Ph.D.

Penn Center for Science, Sustainability,
and the Media (PCSSM)

December 4, 2025

The New York Times

*'The New Price of Eggs.' The Political Shocks
of Data Centers and Electric Bills*

**Our new nuclear strategy will drive up electric bills
BEFORE producing any electricity, which will**

- Slow or stop any 'nuclear renaissance'**
- Increase the growing unpopularity of data centers, undermining U.S. leadership in AI**

Joseph Romm, PCSSM

1978-1987: B.S. and Ph.D. in Physics from MIT, minor in Economics

1993-1995: Reviewed policy and analysis from the DOE's Office of Nuclear Energy for the Deputy Secretary.

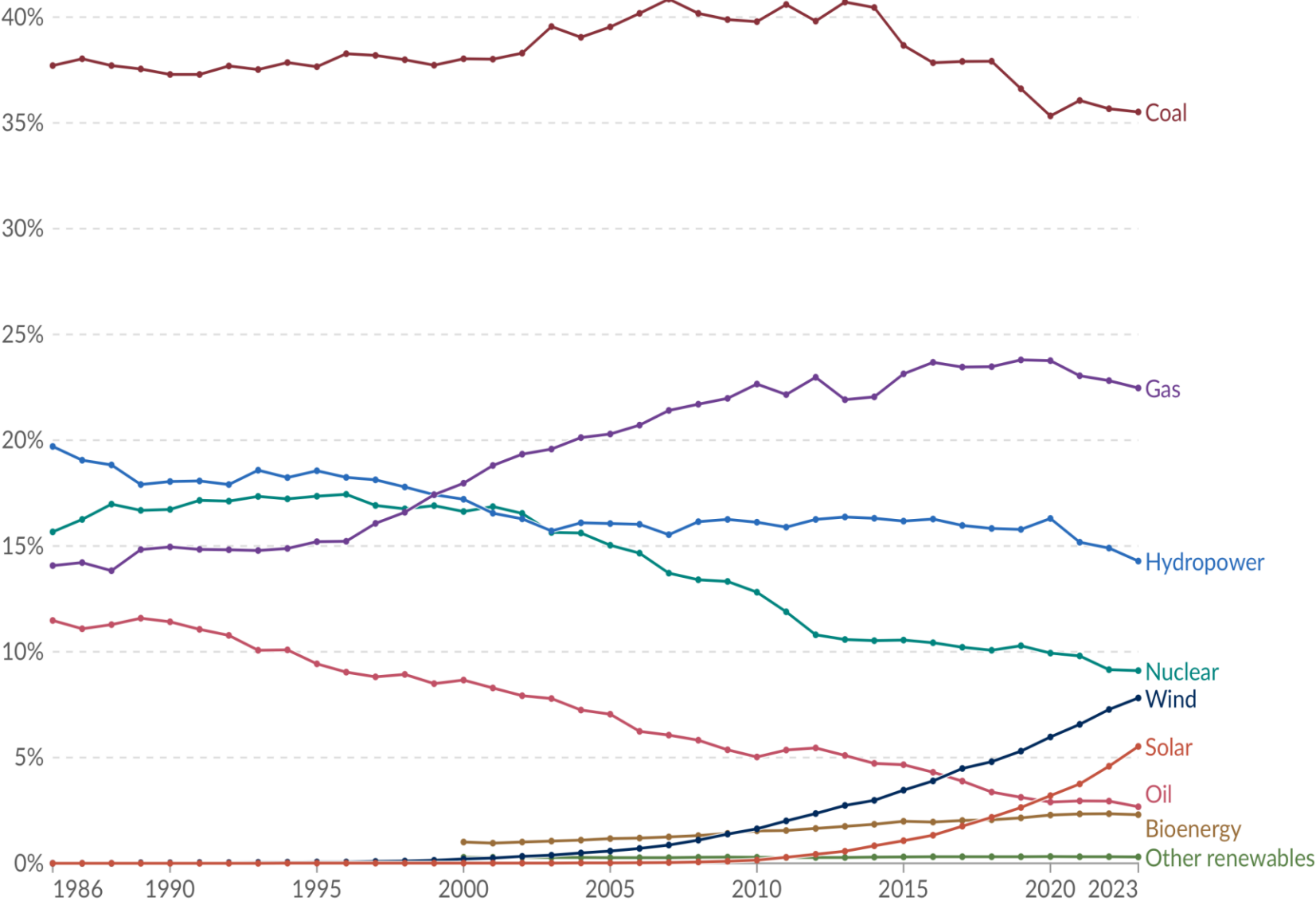
June 2, 2008 Report: *The Self-Limiting Future of Nuclear Power*

July 16, 2008: Testified before the Senate EPW Subcommittee on Clean Air and Nuclear Safety on nuclear power economics.

Feb 1, 2016: "I've learned a lot of what I know about energy economics from Joe Romm"—Paul Krugman, *NY Times*

April 2025: *Smaller nuclear reactors (SMRs) are a costly dead end, especially for AI*, Research Report for Penn Center for Science, Sustainability, and the Media

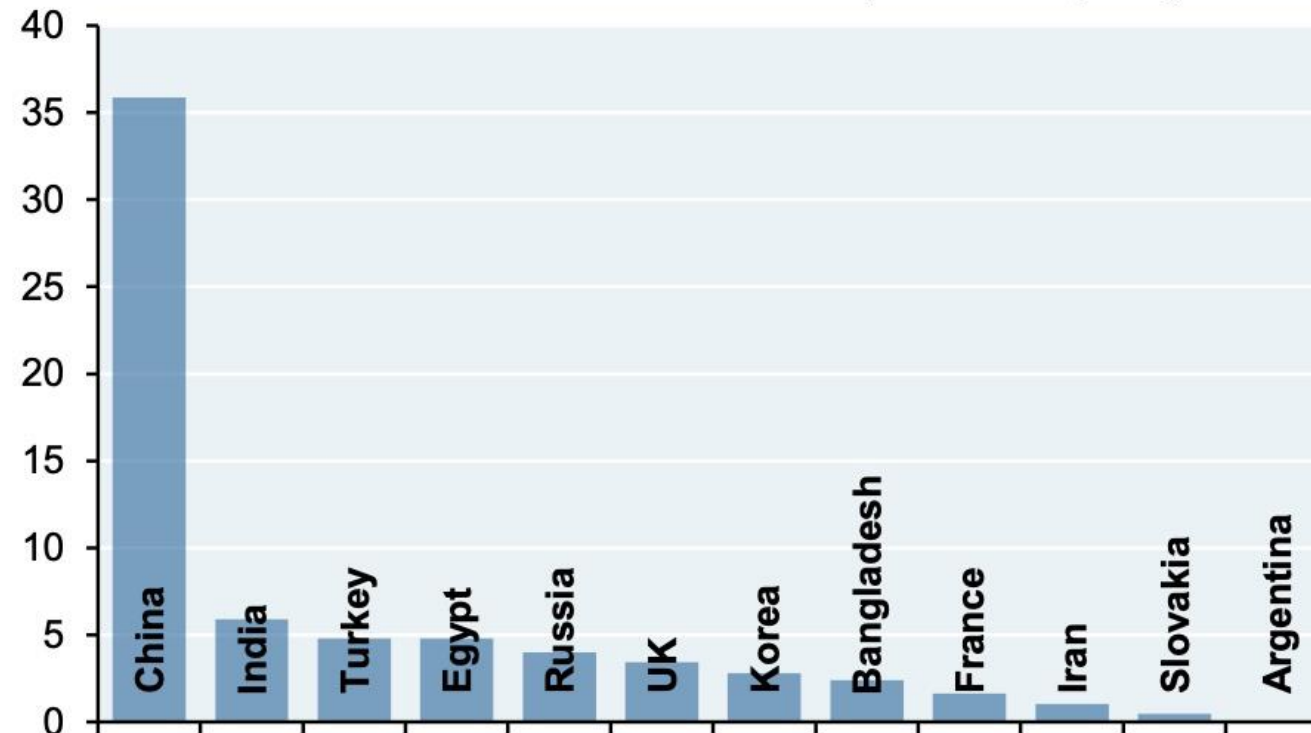
Share of electricity production by source, World



Nuclear’s share of global power peaked at 17% in the mid-1990s but was down to 9.2% by 2022 and 9.1% in 2024

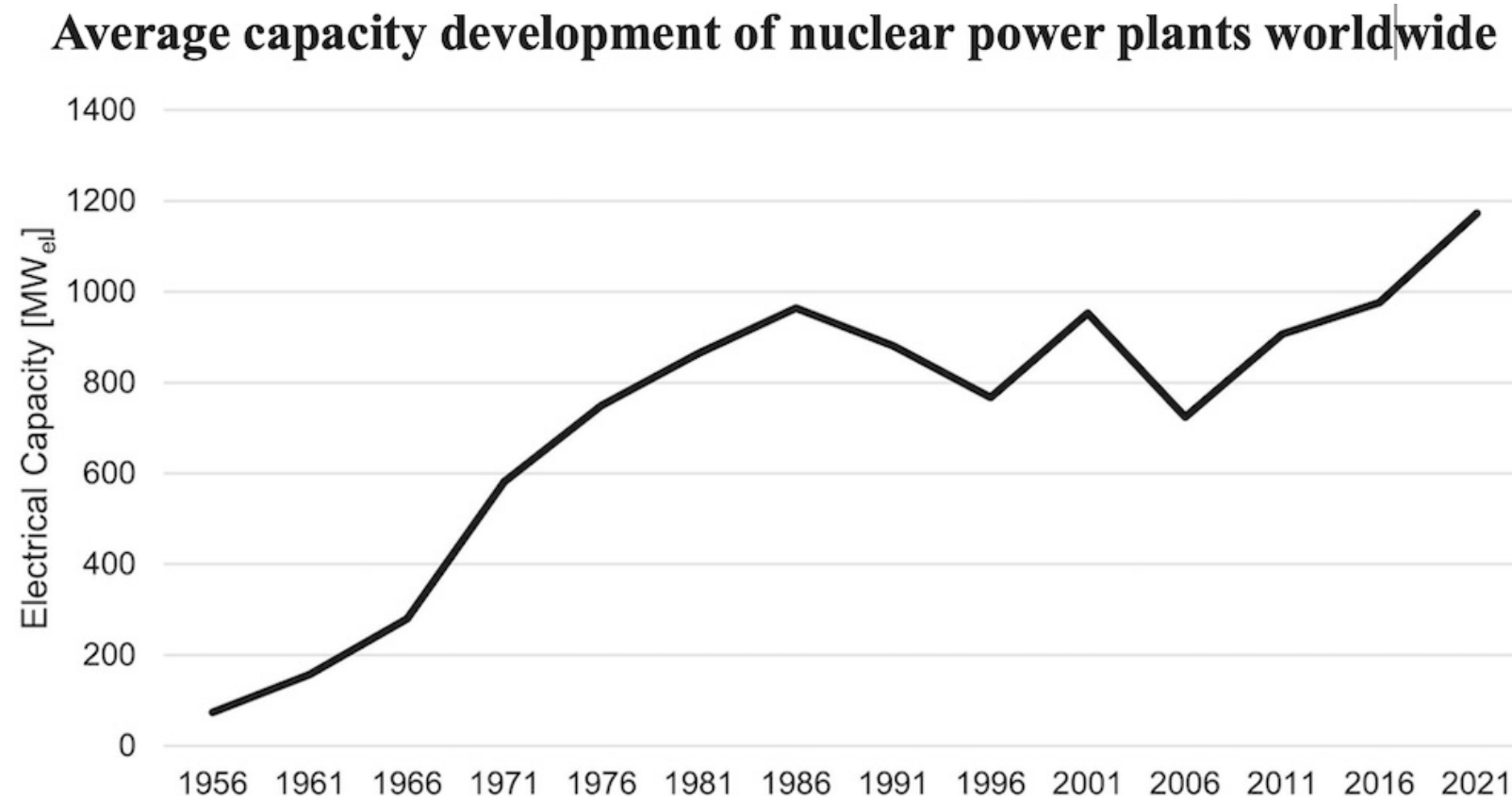
No one is building reactors but China, and even they aren't building many, over 95% of the total capacity will be from reactors 1150+ MW

Nuclear plants under development with estimated grid connection dates between 2024-2030, GW of capacity



Source: World Nuclear Association, JPMAM, 2024

Economies of Scale Are What Nuclear Is About



Source: Böse et al., *Energy Research & Social Science*, April 2024

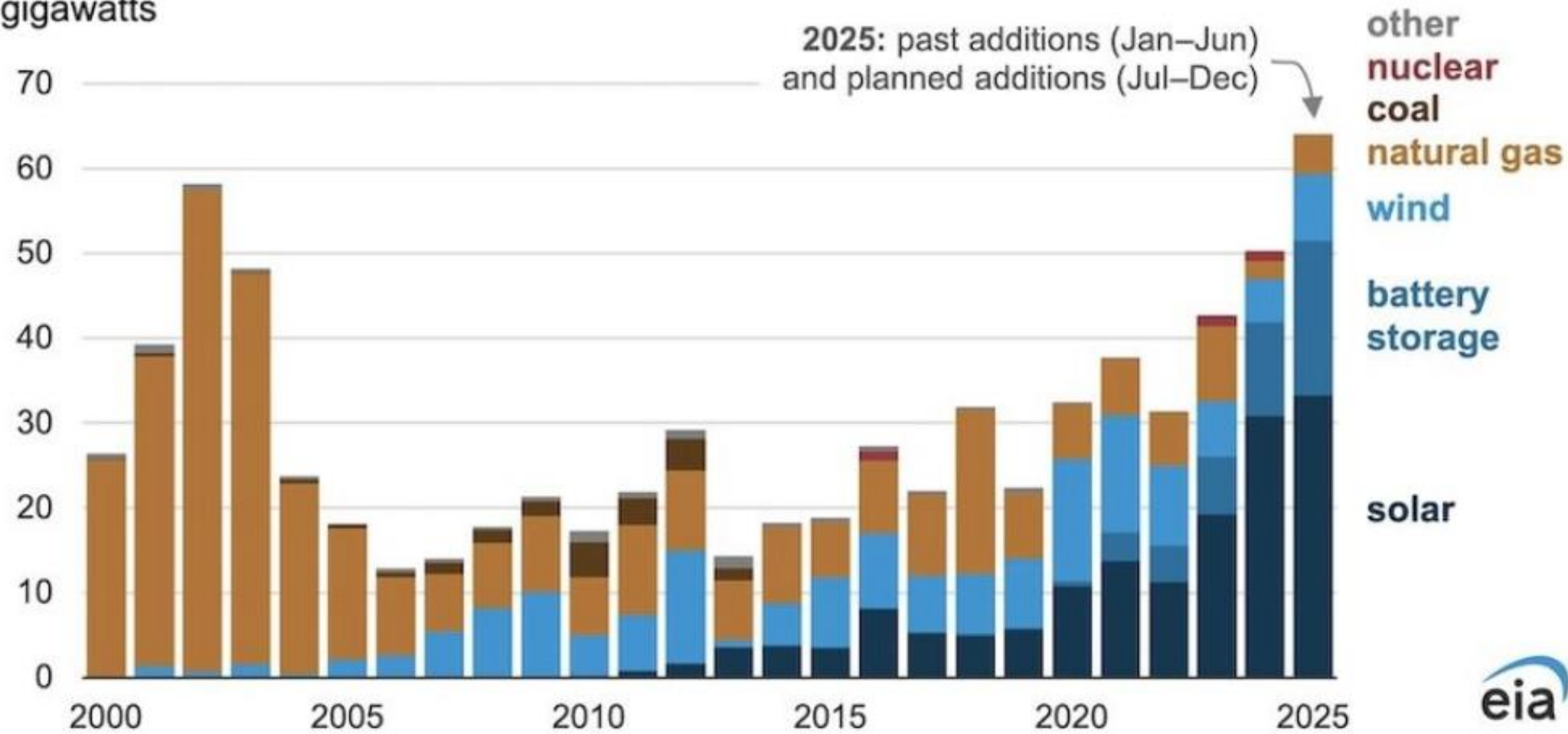
“80% of the electricity generated from nuclear power in the U.S. comes from plants with multiple reactors” for “economies of scale”—NEI, 2018

AUGUST 20, 2025

U.S. developers report half of new electric generating capacity will come from solar

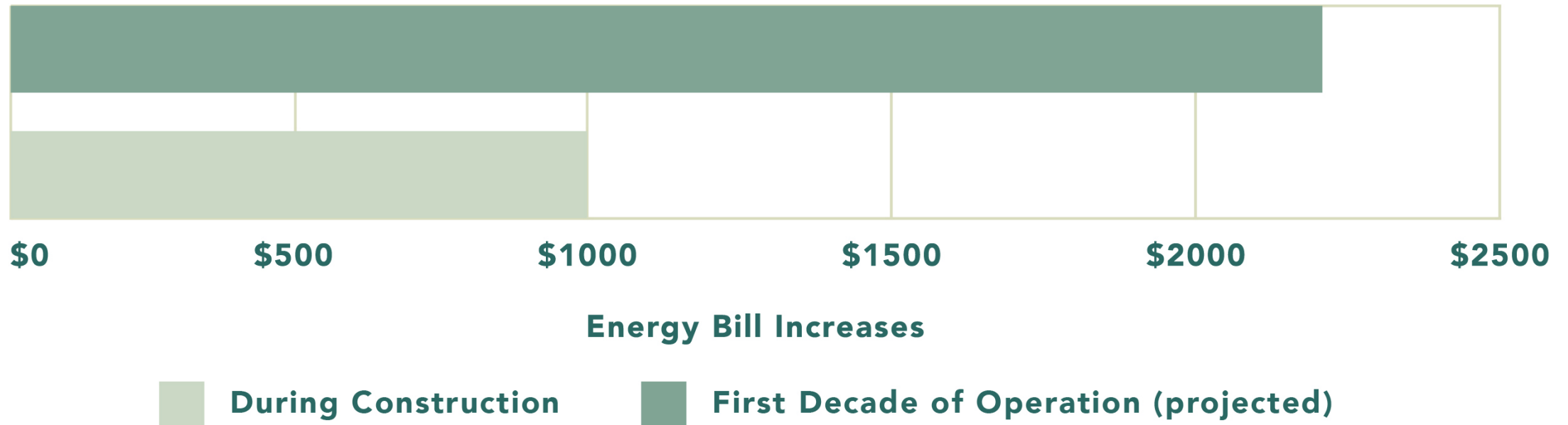
U.S. utility-scale electric generating capacity additions (2000–2025)

gigawatts



The \$35 billion Vogtle plant in Georgia, is “the most expensive power plant ever built on earth” with an “astoundingly high” estimated electricity cost. —*Power Magazine*, 8-23

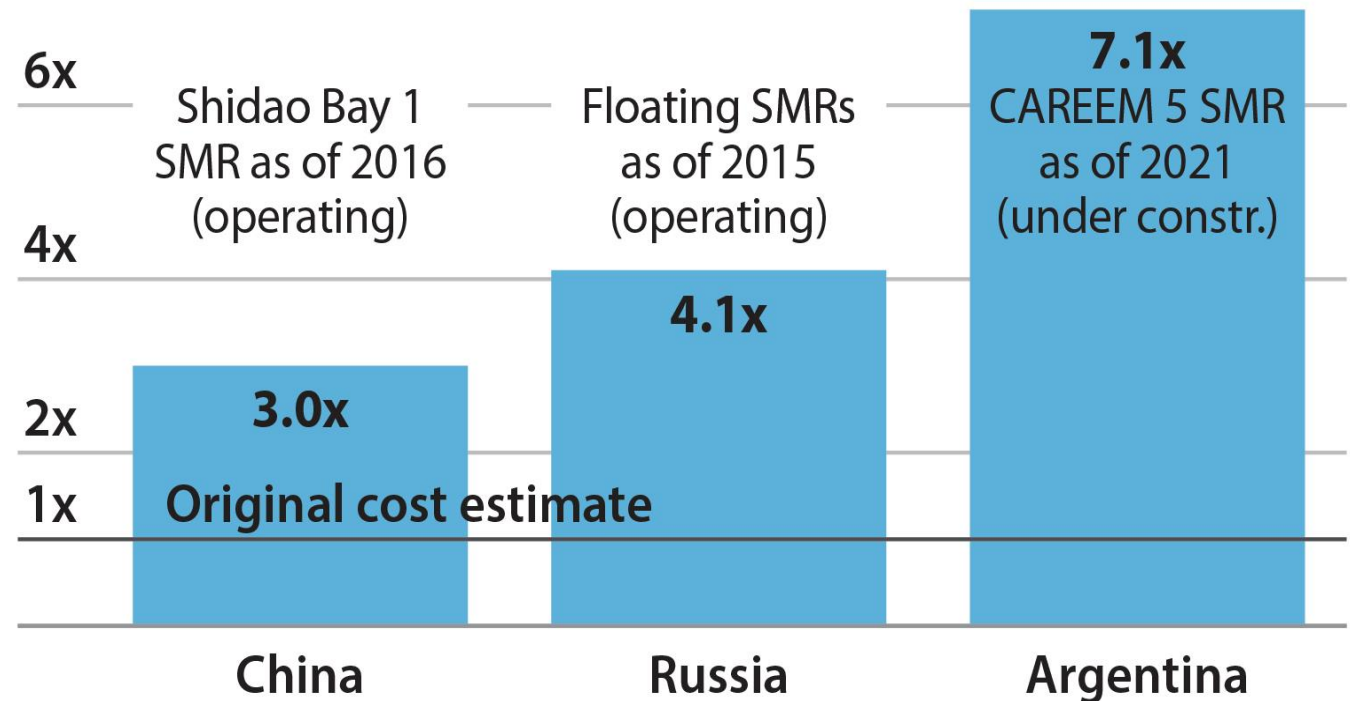
Higher Energy Bills For Georgia Power Customers— During and After Vogtle Construction



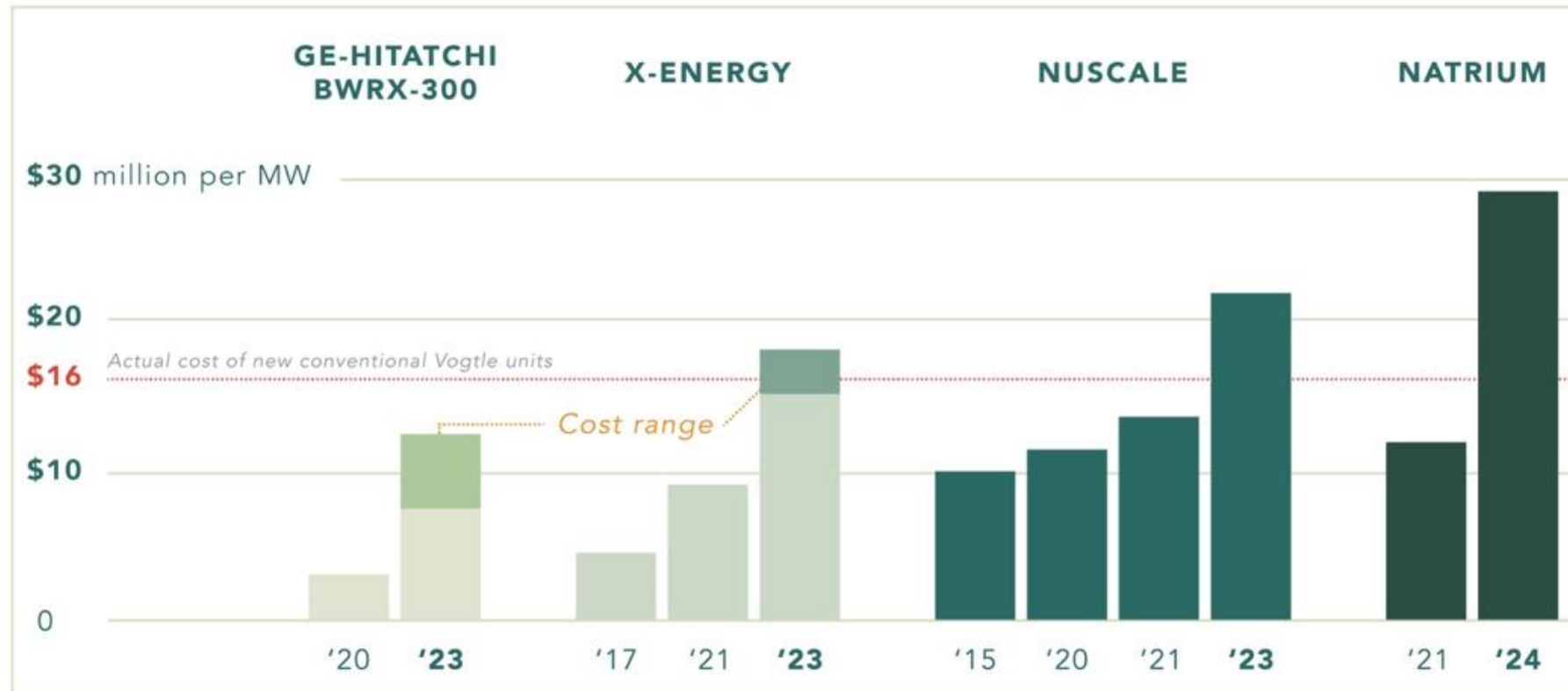
Building SMRs Elsewhere Has Seen Huge Cost Overruns

“Economics Killed Small Nuclear Power Plants in the Past—And Probably Will Keep Doing So.”

– *IEEE Spectrum*, 2015



SMR Construction Costs Are Already High—And Rising



Source: IEEFA data, Penn Center for Science, Sustainability and the Media (PCSSM).

“If the costs of new nuclear end up being much higher” than \$6.2 million/MW “new nuclear appears unlikely to play much of a role, if any, in the US power sector.”

— Columbia Univ. Center on Global Energy Policy 12-23

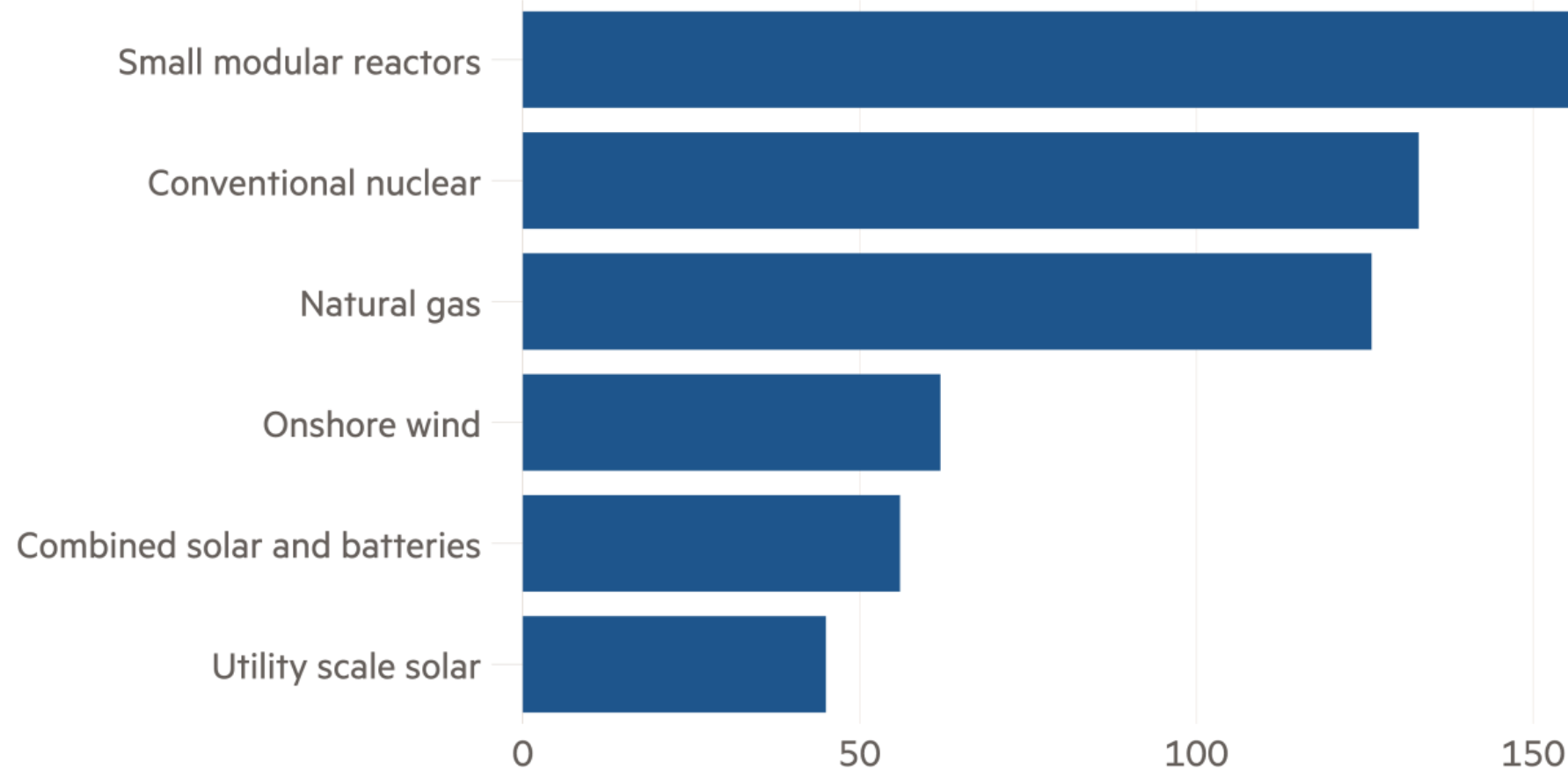
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“It would be unprecedented in the history of energy for smaller nuclear reactors to overcome not only the high cost per megawatt of large nuclear plants but also the diseconomies of shrinking them down—and then to somehow keep dropping in price so sharply that SMRs become such clear marketplace winners as to make a major contribution to cutting greenhouse gas emissions by 2050. This is especially true since SMRs show every sign of the kind of cost escalation that has plagued larger nuclear reactors for decades.”

-- UPenn Research Report, April 2025

SMRs face a steep cost gap with natural gas and renewables

Levelised cost of energy (per megawatt hour)



Values are projected US national averages for projects completed and delivered in 2030, based on state-by-state data.

Source: Wood Mackenzie

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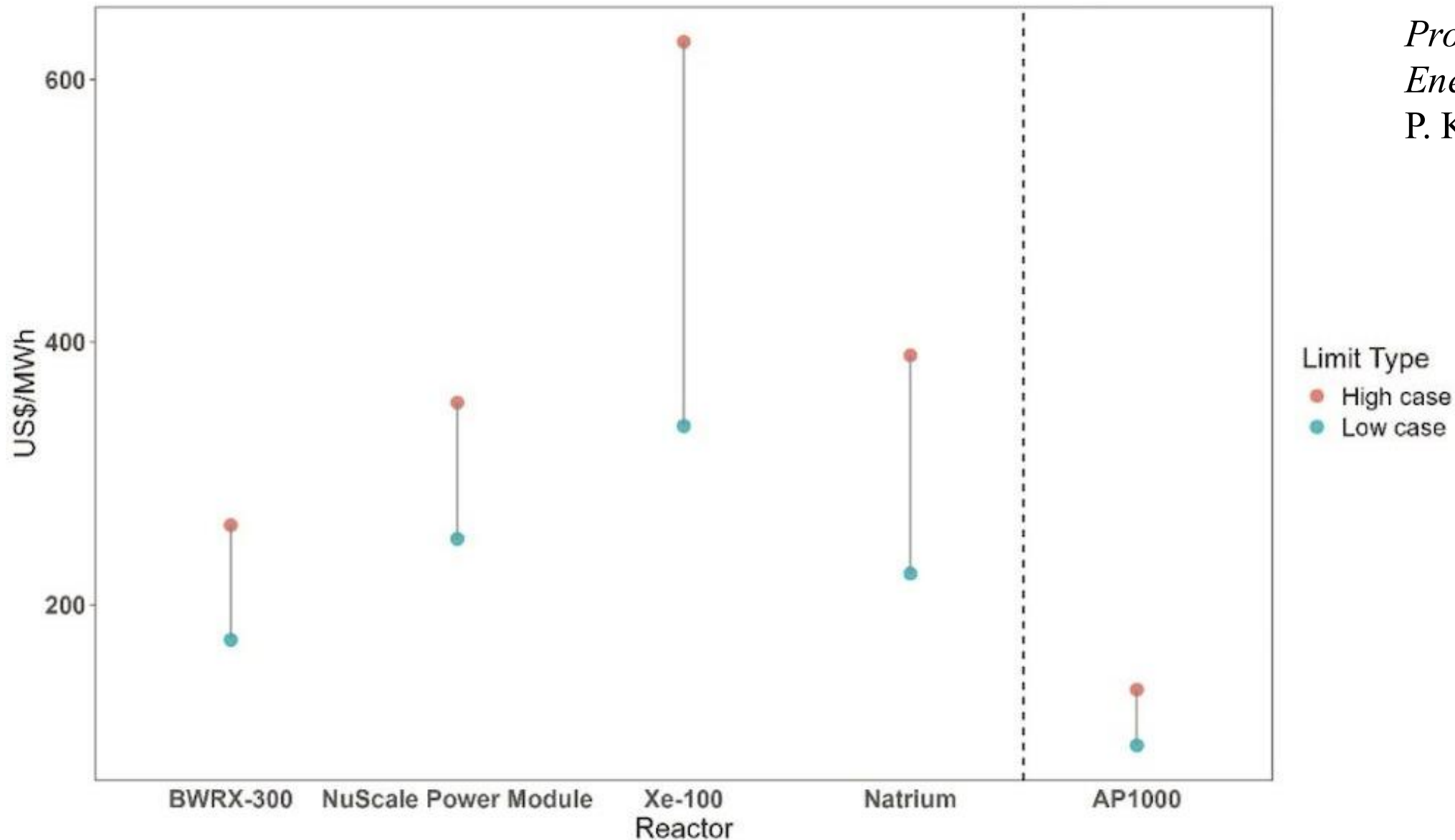
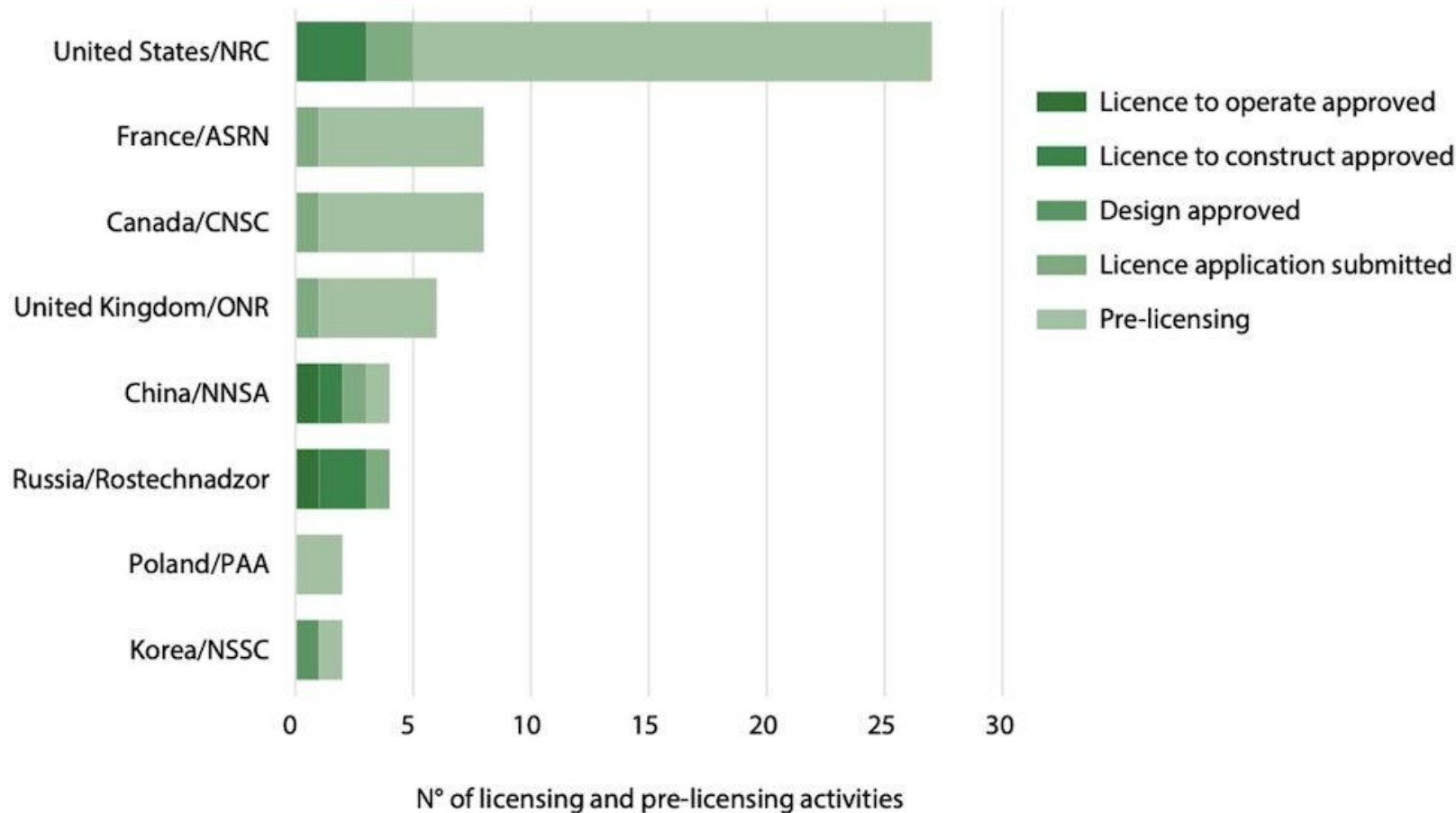


Fig. 1. Results of the LCOE calculation (excluding back-end fuel cycle costs and waste disposal/decommissioning costs).

There are now 127 different SMR designs, finds NEA report

Wednesday, 23 July 2025

Figure 26. Number of SMRs in pre-licensing or licensing activities with nuclear safety regulators, by country



51 SMR designs globally are involved in pre-licensing or licensing, of which 27 are in the U.S.

— OECD Nuclear Energy Agency, via *World Nuclear News*

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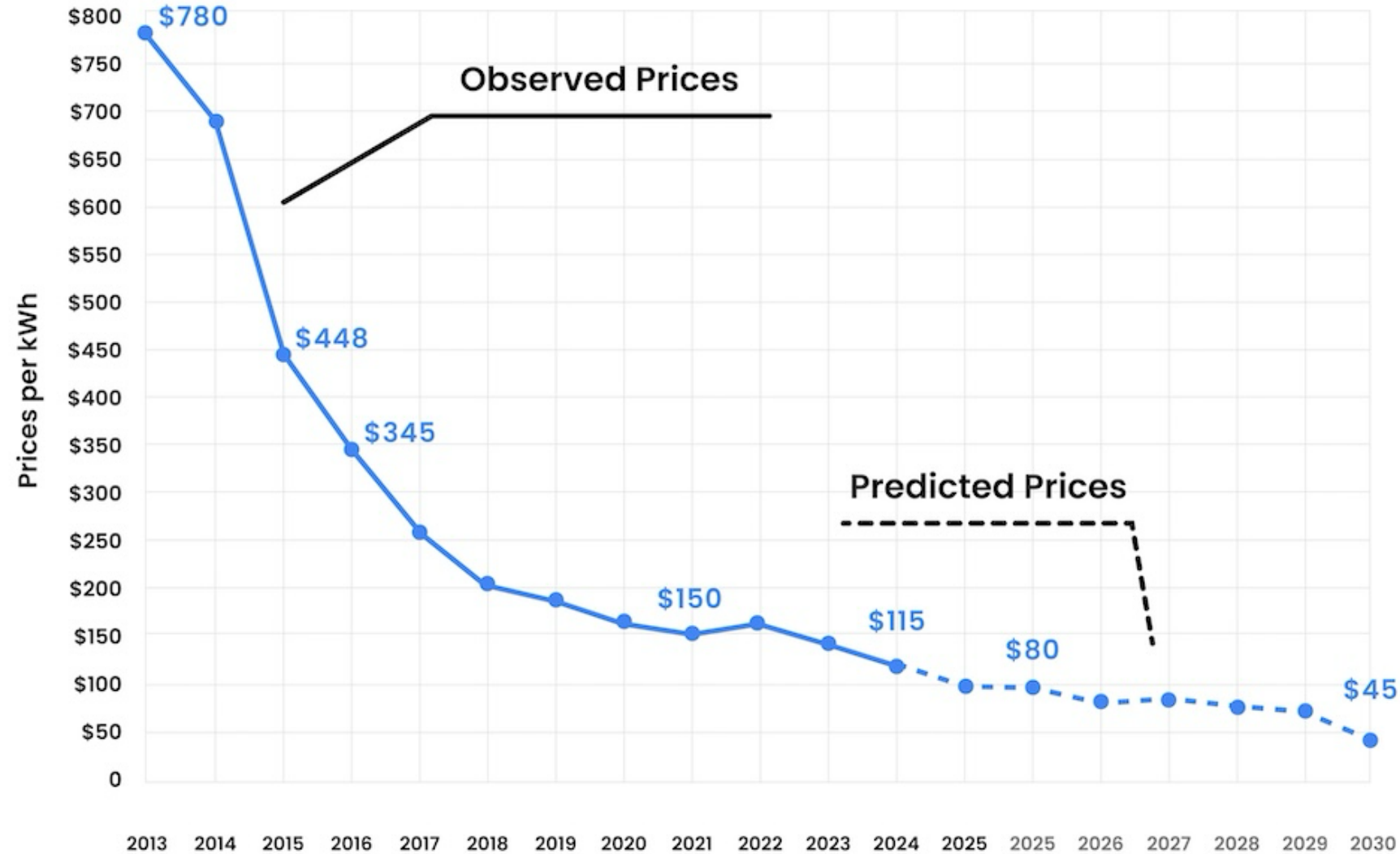
SMRs Not Scalable Before 2040s If Ever

- The DOE's own 2024 "Pathways to Commercial Liftoff: Advanced Nuclear" report modeled a median cost per MW over 50% higher for SMRs than for large reactors!
- "REPORT MAKES CLEAR WE WOULDN'T PURSUE COUNTLESS SMR DESIGNS IF WE WERE SERIOUS ABOUT NUCLEAR. SAVINGS FROM MODULARITY REQUIRE MASS-PRODUCING ONE OR, AT MOST, TWO DESIGNS." —My April UPenn analysis.
- "The current U.S. strategy means virtually all SMR companies will fail, and costs will remain very high for a long time."
- The competition by 2035 will be fierce.



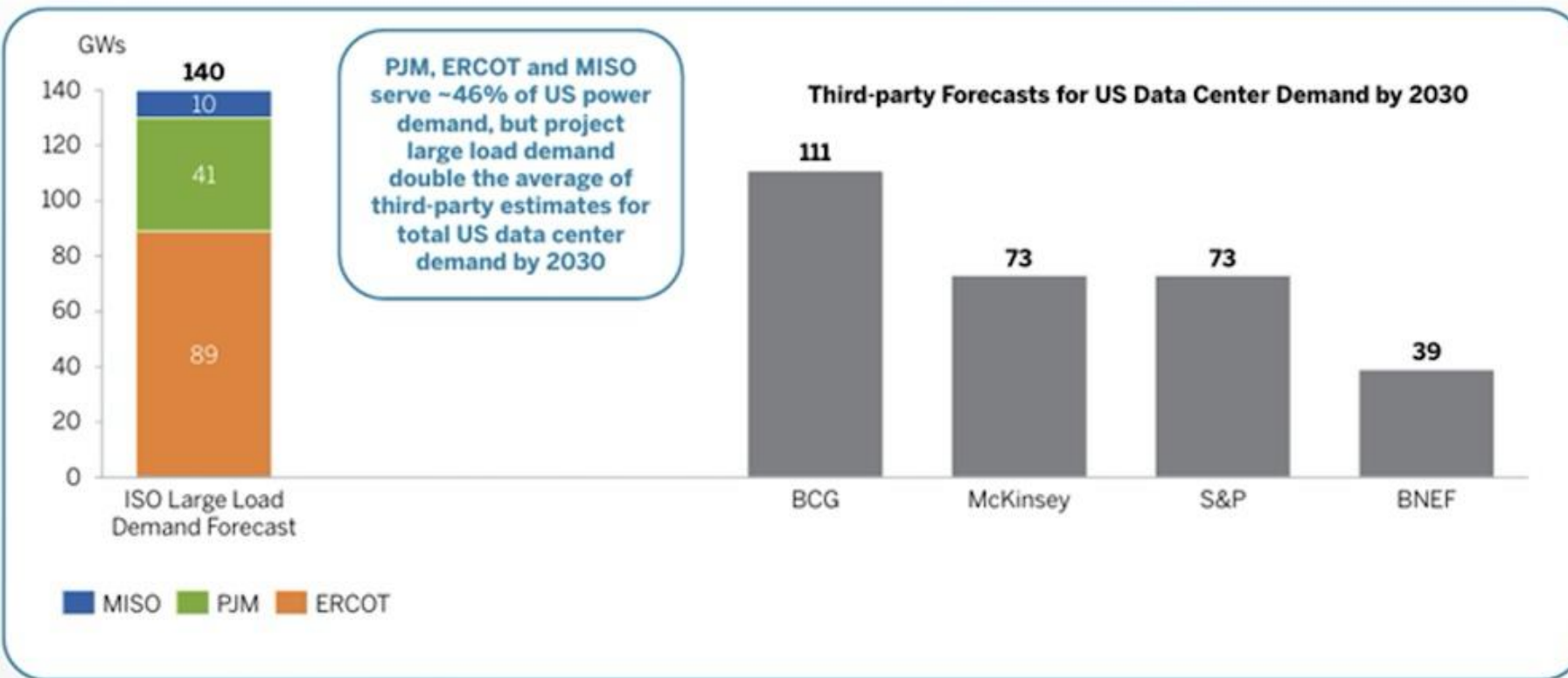
EV Battery Costs Continue to Plummet

Experts estimate prices will hit \$45/kWh by 2030



Risk of AI-driven, overbuilt infrastructure is real

Data Centers Pursuing Multiple Jurisdictions for the Same Project



'MAY BE
OVERSTATED
3 TO 5 TIMES':
Vistra Energy
CEO slams AI-
driven power
demand forecasts
as Sam Altman
and Eric Schmidt
warn of AI
'bubble'.

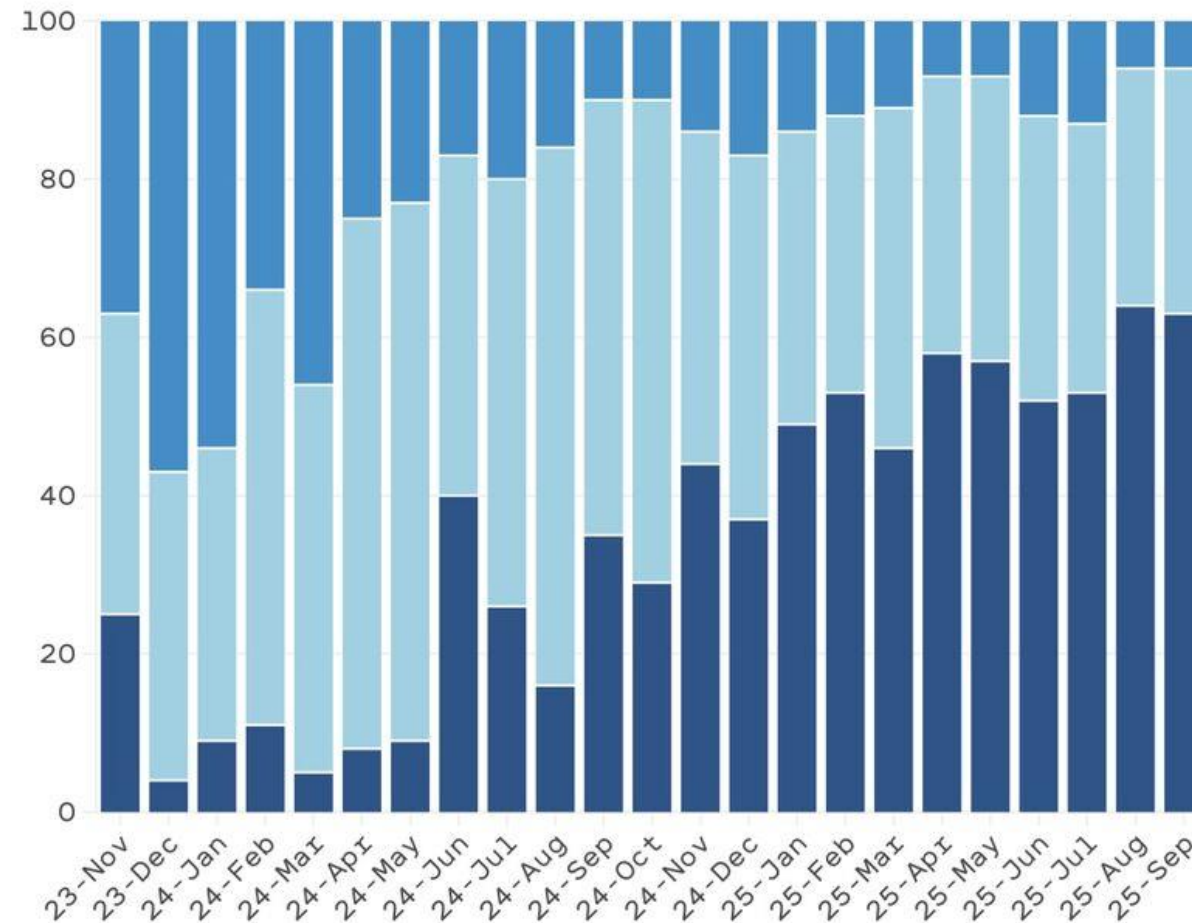
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More of Silicon Valley is building on free Chinese AI

China's open AI models are overtaking the west's

Global regional model adoption (%), by month, Nov 2023 to Sep 2025

China United States EU



Source: Air Street Capital

FINANCIAL TIMES

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