

Chart of the Week #2024-17

EPA's Power Plant Rule, Declining U.S. Electricity Generating Capacity, and Growing Power Demand *Have Capacity Requirements Been Underestimated in the Face of Growing Demand?*

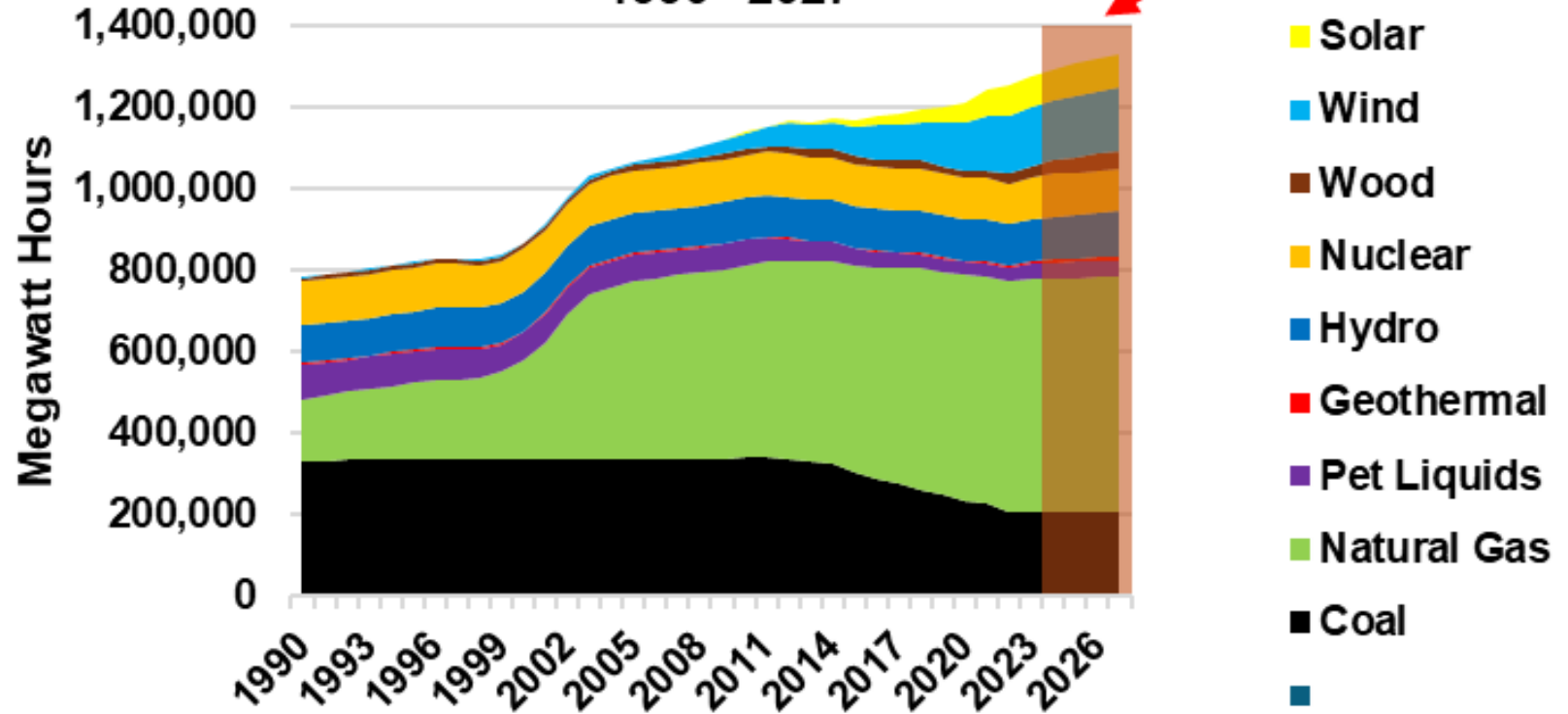


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Washington, DC**



U.S. Electricity Generating Capacity by Energy Source

1990 - 2027



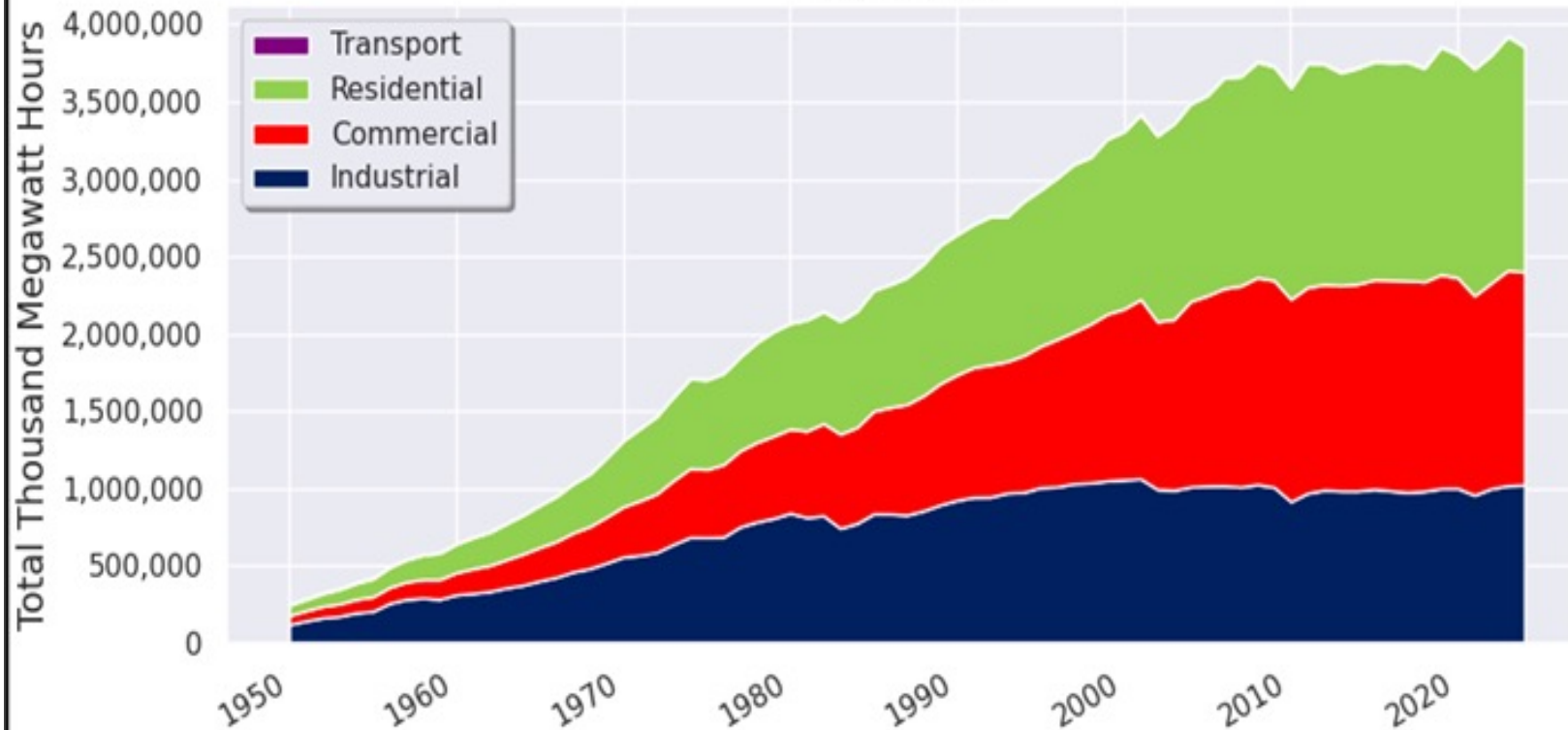
Analysis Based on Annual EIA Data

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According to EIA's estimates, current U.S. coal-fired capacity is 205.5 Gigawatt Hours (GWhs) (16.4% of total U.S. generating capacity of 1,250 GWhs), and down from its peak of 343.8 GWhs in 2011.

Natural gas-powered facilities make up 567.8 GWhs (or 45.2% of total).

U.S. Annual Electricity Consumption: 12/31/1949 to
12/31/2023



In the last twenty years, U.S. electricity demand growth has been low increasing annually at 0.8% (compared to the high-growth period of 1950-1990 where demand grew 5.7% annually).

Notably, residential demand has plateaued due to numerous efficiency mandates and incentives such as the Energy Star program that was begun in 1992 and is run primarily by EPA and to a lesser degree by DOE.

With a variety of residential appliances, lighting systems, home electronics, among others, vying for the Energy Star label, consumers have increased utilization but have kept electricity requirements flat .

Analysis based on Annual EIA Data

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EPA's Power Plant Rule, U.S. Electricity Generating Capacity, and Power Demand Growth



- **Estimates vary as to how much coal-fired generation will be retired or reconfigured. EPA's own impact analysis of its rule indicates that 42 GWhs (or 20.4% of current coal generation facilities) would be shut down as well as 210 GWhs powered by natural gas. With respect to coal, EIA's estimate of the rule's impact is more aggressive forecasting that 155 GWhs (or 75.6%) would be shutdown.**
- **EIA has compiled reported data indicating that through 2027 new capacity additions would total 76.9 GWhs; this would primarily be new solar and wind installations along with some natural gas power.**

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- **With government incentivization for the "onshoring" of U.S. manufacturing, industrial electricity demand is set to rise from the prior twenty-year annual growth rate of 0.2%.**
- **Despite data centers efficiency gains, concerns are being raised over the amount of new power demand that will be coming from additional AI (artificial intelligence) requirements.**
- **Various mandates for the electrification of residential heating are being enacted, and there is uncertainty as to how much more power demand growth will come from the electrification of motor vehicles.**

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- All combined, utilities, system operators, and oversight authorities such as NERC (The North American Electricity Reliability Council) are expressing their concerns over the increasing potential of a sizeable shortfall of reliable generating capacity in the face of rapidly increasing power demand.
- This slide deck is available at: <https://eprinc.org/chart-of-the-week/>
- For more information on these charts, please contact Max Pyziur (maxp@eprinc.org).