RACHEL CARSON COUNCIL

Fact Sheet

Implications of Coal Plant Retirement and Domestic Critical Mineral Mining on America's Energy Transition and Future

BACKGROUND

Energy demand in America is increasing at an unprecedented rate, and as a result, energy solutions must respond with equal intensity and efficiency without compromising affordability or reliability.[1] Currently, America primarily relies on fossil fuels, with almost over half of its energy demand being met with petroleum and natural gas (38% and 36%, respectively), followed by coal (8%).[2,3] Most coal plants are located in rural areas, with hotspots in Appalachia and the midwest.[4]

However, as unavoidable concerns of dwindling fossil reserves, increasing economic viability of alternate energies, and health consequences arise, complex questions of retiring legacy fuel infrastructure and transition to a post-carbon energy future inevitably follow. Recent reports have shown that renewable forms of energy have begun to dominate when responding to ramped-up energy generation.[5]

Thus as renewable sources become more cost-competitive, domestic mineral stores have become available, and fossil investments become fiscally riskier, warning signs of grid failures and rate hikes strongly indicate a pivotal upgrading of our energy system in both its generation and distribution is overdue, while critically considering the social and economic implications of such a transition.[6,7,8]

KEY FACTS

Under our current energy market America runs primarily on fossil fuels, yet utility bills are rising: reports have shown that Americans are paying 13% more for their electricity than in 2022 and 52% of households struggled to choose between paying for rising energy bills and basic necessities such as groceries (**Figure 1**).[9,10]

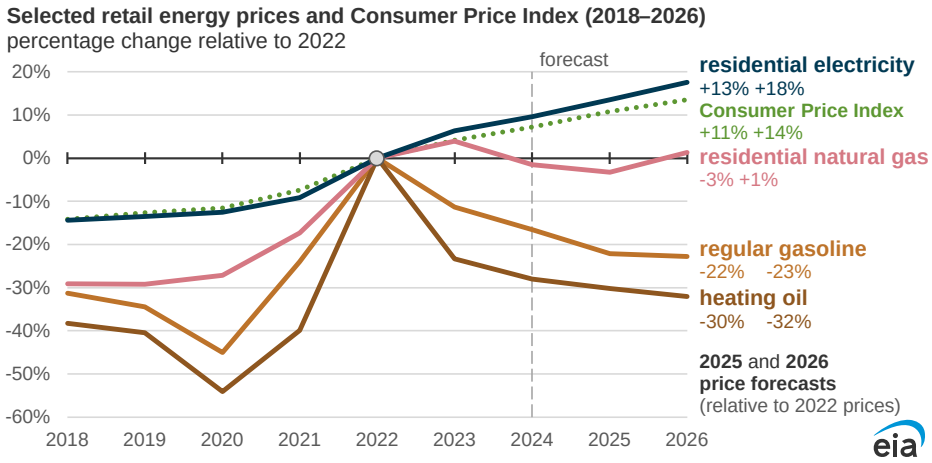

FIGURE 1: *Select energy prices and CPI. Source: EIA*

Legacy fuel investments have become less economically viable: the operating costs of coal plants frequently exceed profit margins, resulting in rate hikes passed onto millions of Americans, and coal's load generation when responding to peak energy demands is highly inflexible compared to solar.[11,12,13] Fossil fuel pollution incidents have also resulted in massive fines and remediation processes, such as the $295 million Dan River Coal Ash Spill.[14]

With grid strain depleting fossil reserves and illuminating the cost-competitiveness of renewables, fundamental questions regarding future energy reliability and affordability emerge.

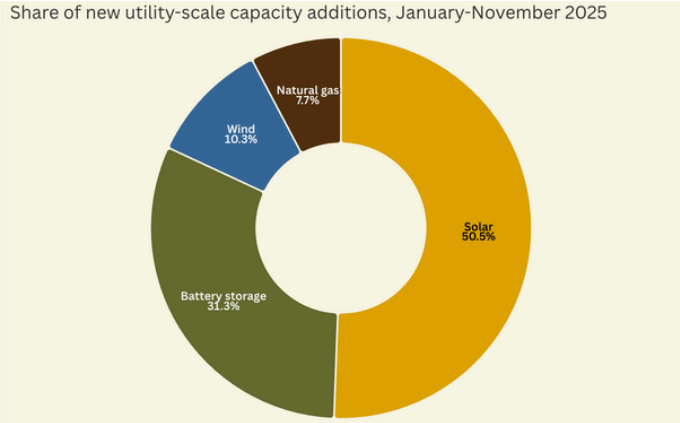

FIGURE 2: *Share of new utility-scale capacity additions. Source: Cleanview, chart by Canary Media*

Significant portions of rising energy strains are being met by renewables, with solar alone supplying over 50% of incoming demand since 2025 and predicted to decrease by 20% in installation costs for each doubling of cumulative energy output (**Figure 2**).[5,6]

Analysis on the western United States' reformed energy market (WIEM) where implementations were made to favor the most cost-competitive energy generation rather than legacy fuels shows annual financial savings of $7 billion and a reduction of 1.07 million metric tons of CO2 emissions.[15,16] Proliferating renewables successfully also requires robust domestic critical mineral supply chains that could present a significant economic opportunity for mineral-rich areas if managed responsibly.[17,18,19]

Despite these prospects, fundamental barriers remain in place when it comes to creating a more affordable, competitive, and adaptable energy grid, including the lack of interregional grid connectivity, lengthy permitting processes, and misaligned economic incentives (**Figure 3**).[17]

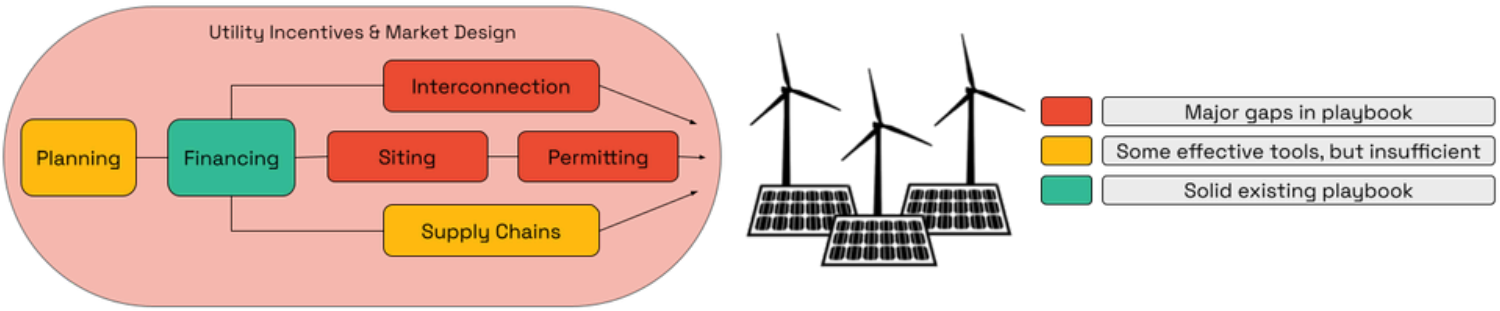

FIGURE 3: *Utility Incentives and Market Design. Source: Federation of American Scientists*

RELEVANCE AND IMPLICATIONS

Energy is a necessity that traverses state and political boundaries, affecting every American in the United States. As such, it should be accessible through avenues that do not compromise affordability or health — regardless of location or socioeconomic status.

As finite fossil reserves are depleted amidst steadily increasing energy demand and alternate sources of energy holding prospects of long-term stability, cost-efficiency, and economic opportunity arise, local and federal governments sit at a critical inflection point in shaping the country's energy future. Restructuring our backlogged, incapacitated grid that has threatened fundamental energy integrity and reliability through rate hikes and rolling blackouts stands to gain billions in savings and massive carbon reductions.[17,20,21] However, such infrastructure takes time and careful planning to implement, and therefore calls for swift and coordinated action to initiate such reforms well before a potential energy crisis takes hold.

ENDNOTES

1. EIA, “After more than a decade of little change, U.S. electricity consumption is rising again”. https://www.eia.gov/todayinenergy/detail.php?id=65264
2. EIA, “Electricity explained”. https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php
3. EIA, “U.S. energy facts explained”. https://www.eia.gov/energyexplained/us-energy-facts
4. EIA, “Coal explained”. https://www.eia.gov/energyexplained/coal/where-our-coal-comes-from.php
5. Canardy Media, “Clean energy remains dominant in the US — despite Trump” https://www.canarymedia.com/articles/clean-energy/us-new-wind-solar-batteries-2025-trump.
6. Goldman Sachs, “The Outlook for Global Solar Energy Continues to Be Bright”. https://www.goldmansachs.com/insights/articles/the-outlook-for-global-solar-energy-continues-to-be-bright
7. USGS, “Lithium in Eastern United States Could Replace Imports for a Century or More”. https://www.usgs.gov/news/national-news-release/lithium-eastern-states-could-replace-imports-a-century-or-more
8. RMI, “Utilities, Analysts, and Customers Agree: Transitioning from Coal Saves Money”. https://rmi.org/utilities-analysts-and-customers-agree-transitioning-from-coal-saves-money
9. EIA, “Electricity Prices Continue Steady Increase”. https://www.eia.gov/todayinenergy/detail.php?id=65284
10. StudyFinds, “Groceries Or Electricity: Half Of Low-Income Families Now Forced To Choose”. https://studyfinds.com/groceries-electricity-low-income-families-forced-to-choose/
11. Energy Innovation, “What is Coal’s Future in the United States?”. https://energyinnovation.org/expert-voice/what-is-coals-future-in-the-united-states
12. Environmental Law and Policy Center, “Coal Plants in the Midwest: What Happens After They Close”. https://elpc.org/blog/coal-plants-in-the-midwest-what-happens-after-they-close
13. ScienceDirect, “Progress and prospects of flexible operation for coal-fired power plants facing increasing renewables”. https://www.sciencedirect.com/science/article/pii/S294988132500037X
14. ScienceDirect, “Damage cost of the Dan River coal ash spill”. https://www.sciencedirect.com/science/article/abs/pii/S0269749114004953
15. Western Energy Markets, “Western Energy Markets”. https://www.westernenergymarkets.com/
16. CAISO, “Western Energy Imbalance Market approaches new milestone”. https://www.caiso.com/about/news/news-releases/western-energy-imbalance-market-approaches-new-milestone
17. FAS, “Barriers to Building: A Framework for the Next Era of Electricity Policy”. https://fas.org/publication/framework-for-next-era-of-electricity-policy/
18. USGS, “Critical Minerals in the EEZ”. https://www.usgs.gov/news/featured-story/critical-minerals-eez
19. WRI, “The Critical Minerals Conundrum: What You Should Know”. https://www.wri.org/insights/critical-minerals-explained
20. Energy Policy Institute, “Duke Energy doubles down on gas in updated NC Carbon Plan, despite unreliability during Winter Storm Elliott”. https://energyandpolicy.org/duke-energy-doubles-down-on-gas
21. NRDC, “Winter Storm Elliott Report Highlights the Risk of Natural Gas Failures”. https://www.nrdc.org/bio/dana-ammann/winter-storm-elliott-report-highlights-risk-natural-gas-failures

RACHEL CARSON COUNCIL

Uniting science, wonder, and action for a sustainable, just and peaceful future.

The Rachel Carson Council (RCC), founded in 1965, is the national environmental organization envisioned by Rachel Carson to carry on her work after her death. We promote Carson’s ecological ethic that combines scientific concern for the environment and human health with a sense of wonder and reverence for all forms of life in order to build a more sustainable, just, and peaceful future. The Rachel Carson Council is a nonpartisan 501(c)(3) nonprofit organization. ***www.rachelcarsoncouncil.org***