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In Arizona, EPA's CO2 rules for power plants can reduce emissions while ensuring grid reliability

Key Takeaways

- **EPA's proposed limits on greenhouse gas emissions from existing coal-fired power plants and new gas plants are crucial tools for meeting U.S. climate goals in the electricity sector.**
- **The power grid can meet the requirements of EPA's proposed rule without compromising reliability; accelerated deployment of reliable portfolios of clean energy resources can meet the grid's reliability needs cost-effectively, while EPA's proposed rule supports reliability by providing utilities and states flexibility in how emissions limitations are met.**
- **Arizona utilities are already transitioning away from coal towards solar, wind, storage and limited new gas in line with the proposed EPA rules, providing reliable and low-cost power to customers.**
- **Congressional support is critical to make sure EPA's rules withstand opposition and result in cost-effective emissions reductions in the electricity.**

Overview

In May 2023, EPA proposed limits on greenhouse gas (GHG) emissions for existing coal-fired power plants, and new gas-fired power plants. These regulations represent EPA's most significant action to limit GHGs to date, and are a crucial tool to reduce greenhouse gas emissions. EPA projects that under the rule, coal generation will fall to nearly zero by 2035, and share of electricity from clean energy will grow from 40 percent today to 67 percent by 2035. In particular, the GHG limits for existing coal and new gas are essential to preserve in their proposed form if we hope to meet our climate goals.

Maintaining grid reliability and enhancing resilience is critical to American security and constituents' livelihoods as we reduce carbon emissions. EPA's proposed rules are designed to ensure that the U.S. electricity sector continues to provide affordable and reliable electricity service to customers, while significantly reducing emissions. However, several high-profile utilities and grid operators have voiced concerns about EPA's proposed rules' impact on reliability, particularly around plants closing before replacement resources are in place. In November 2023, EPA called to stakeholders for additional input on the issue of grid reliability, noting significant dissonance in comments received, calling for concrete suggestions. This followed FERC's technical conference in which stakeholders sparred over the same issue. While some utilities and grid operators argue for maximum flexibility to comply with the rules, the concerns raised around reliability can be addressed without compromising the integrity of EPA's proposed rules. In fact, the rules provide an opportunity for clear timelines around plant closures, enabling a smoother transition where customers are guaranteed the cheapest, cleanest, and most reliable power.

Why reliability won't be threatened

The power grid can meet the requirements of EPA's proposed rule without compromising reliability. Existing technology including wind, solar, storage, and transmission capacity increases, can be deployed together to meet the grid's reliability needs, even with resource retirements or modifications spurred by EPA's proposed rule. [1] Three large U.S. regions have already demonstrated that power systems can be reliably operated with no or very low amounts of coal—New York, New England, and California – while an additional 40+ utilities, covering 20% of national electricity demand, have already proposed or approved plans to their regulators to move off coal by 2035 and largely replace this energy and capacity with clean resources. Energy Innovation reviewed six peer-reviewed studies from the National Renewable Energy Laboratory, UC Berkeley, Princeton, and Telos Energy, which showed in aggregate we can reach a 70-100 percent clean, coal-free clean electricity system by 2035 while maintaining adequate resources to match supply and demand. We also surveyed the literature on local operational reliability impacts, finding replacement resources can more than supplement local reliability concerns if grid operators use them to their full capabilities.[2]

The proposed 111 rules also provide significant flexibility to states and utilities if legitimate reliability concerns arise. The rule for new gas allows new gas plants that operate infrequently to add system flexibility and meet growing peak demand. Coal plants can operate at lower capacity factors through 2035, and can blend with gas through 2040, giving utilities the better part of two decades to comply. Individual states with immovable financial or reliability concerns can petition EPA exceptions for specific plants under the "remaining useful life and other factors" (RULOF) exception throughout the compliance period. Existing gas rules, if they remain, provide significant flexibility for most of the existing gas fleet change operational profiles to support grid reliability needs.

Utility and system operators raising reliability concerns are also inhibiting the pace of clean energy additions through outdated planning, procurement and grid interconnection processes, highlighting the necessity of strong, clear 111 rules to ensure utility incentives align around the clean energy transition Americans deserve. The key barrier to reliability isn't technology, it's whether utilities and markets can add new resources at the pace and scale required to address the grid's reliability needs. Fortunately, policy fixes are available that these entities can implement immediately to fix these problems and supercharge clean energy additions. In particular, focus on proactive utility planning for retirement, better regional transmission planning under current and pending FERC rules, and proactive application of Inflation Reduction Act incentives can get us there. More support from Congress on streamlining transmission cost allocation and permitting akin to Reps. Casten and Levin's Clean Electricity and Transmission Acceleration Act would provide additional tools to address reliability needs.

How will Arizona's utilities and consumers be affected?

In Arizona, utilities are already leading a transition from coal to clean energy that is on track to comply with EPA's proposed 111 rules, driven by the favorable economics of clean energy in the state. Analysis by Energy Innovation finds local solar is 60-70% cheaper than the coal plants that serve Arizona's customers, while solar plus storage could fully replace the capacity from these plants without raising costs.[3]

Arizona's largest utility, Arizona Public Service (APS), plans to retire their 1,400 MW of coal-fired power plants by 2031 and meet rapidly growing electricity demand with a significant build out of solar, energy storage, wind and

[1] See generally, O'Boyle et al., Maintaining A Reliable Grid Under EPA's Proposed 111 Rules Restricting Power Plant Emissions, Energy Innovation. November 2023. https://energyinnovation.org/publication/maintaining-a-reliable-grid-under-epas-proposed-111-rules-restricting-power-plant-emissions/.

[2] Milligan Grid Solutions, "Sources of Grid Reliability Services," https://milligangridsolutions.com/Sources%20of%20Essential%20Reliability%20Grid%20Services%20Fact%20Sheet.pdf

[3] Energy Innovation, "Coal Cost Crossover 3.0," January 2023, https://energyinnovation.org/publication/the-coal-cost-crossover-3-0/

new gas peaking power plants that the utility plans to operate at low levels of utilization – plants that are permissible under the proposed rule. APS's preferred plan is the lowest-cost plan presented by the utility, although sensitivity analysis presented by the utility suggests further savings for consumers from retiring coal several years earlier than planned. All told, APS's preferred plan can reliably serve demand with a power mix that is approximately 73% carbon-emissions free after 2031.[4]

Tucson Electric Power intends to retire their remaining 900 MW of coal-fired power at the Four Corners and Springerville power plants by 2031 and 2032, respectively, while planning over 1700 MW of new solar, 500 MW of wind, 1,300 MW of energy storage and 400 MW of low-utilization peaking gas plants by 2038 to meet the reliability needs of the grid while minimizing costs for customers.[5] Salt River Project (SRP) plans to retire 1,300 MW of coal by 2032, while planning to build 7,000 MW of new renewable energy and 2,500 MW of energy storage by 2035.[6] SRP does not yet have plans to retire their 400 MW coal unit at the Springerville Power Plant and intends to build a significant amount of new gas capacity, although plans from other Arizona utilities make clear that clean energy is likely a more cost-effective pathway. The Palo Verde Nuclear Generating Station helps support all of these utilities with clean, firm power that complements variable renewables and storage.

Most of Arizona's largest utilities have system plans that largely align with the requirements of EPA's proposed rule, ensure reliability, and will reduce costs and air pollution that impacts Arizonans. EPA's proposed rule can provide additional certainty to these plans, ensuring that utilities plan and procure the new resources that will be needed, while the few remaining coal plants in Arizona are on a path to significantly reduce emissions.

How Congress can help

Congressional support for this rule ensures that the U.S. has the policy tools we need to achieve our GHG emissions reduction goals. Research clearly indicates reliability won't be threatened by the rules, which come with huge consumer, health, and economic benefits. A near coal-free electricity system is more than feasible, and the rules will create the certainty needed to manage the transition to clean electricity while new resources provide the capacity and reliability services we need to maintain a reliable system. Congress has a key role to play in supporting EPA's rules, protecting the rules from potential Congressional Review Act challenges. Congress should also preserve support for clean energy under the Inflation Reduction Act that will support investment in new resources while reducing costs for customers. In addition, support for complementary federal legislation that makes building and permitting transmission easier can also help. We are happy to answer any questions you have about the EPA rules, grid reliability, and the impacts on your state and region.

For more information, please contact:

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[4] Arizona Public Service, "2023 Integrated Resource Plan," November 2023, https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Doing-business-with-us/Resource-Planning-and-Management/APS_IRP_2023_PUBLIC.pdf?la=en&hash=F601897086C6836F7FD33C5C2F295F47, p. 72, 82.
[5] Tucson Electric Power, "TEP 2023 Integrated Resource Plan", November 2023, https://docs.tep.com/wp-content/uploads/2023-TEP-IRP.pdf, p. 52.
[6] Salt River Project, "SRP's 2023 Integrated System Plan: Executive Summary," 2023, https://www.srpnet.com/assets/srpnet/pdf/grid-water-management/grid-management/isp/SRP-2023-ISP-Executive-Summary.pdf