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In Pennsylvania, 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.**
- **EPA's proposed rule creates an opportunity for Pennsylvania to transition away from expensive and polluting coal-fired power plants, while working with the PJM regional electricity market to interconnect new clean energy resources more quickly and ensure reliability through regional market mechanisms.**
- **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 Pennsylvania's utilities and consumers be affected?

Pennsylvania will have work to do to comply with EPA 111 rules but meeting the requirements of the rules will be both feasible and beneficial for Pennsylvania residents. Pennsylvania is home to more than 8 GW of coal, 7 GW of which have plans to retire or stop burning coal before 2030.[3] The transition of Pennsylvania's electricity sector

[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] Bruner Island will stop burning coal by 2028, Montour by 2025, while Keystone and Conemaugh are planned to be retired in 2028 to comply with EPA water treatment requirements.

away from coal is well underway, with significant notice for market participants and grid operators to address the need for additional resources. The state and region have to embrace the addition of economic solar, wind, and storage to ensure the remainer of Pennsylvania's fossil fleet remains compliant with the rules.

The reliability of Pennsylvania's bulk electricity system is the responsibility of the regional electricity market operator, PJM. This regional market gives Pennsylvania access to reliability options that other states lack. PJM has multiple mechanisms to ensure reliability even in the face of new regulatory requirements and changes to the electricity mix. First, PJM's capacity market is designed to procure adequate capacity to meet growing peak electricity demand, plus an additional reserve margin to account for uncertainty in both demand and supply. PJM's capacity market is cleared three years in advance, providing lead time for the construction of new resources and make sure grid operators have visibility into future market conditions. PJM is also working to significantly increase the amount of new resources that can be interconnected to the grid each year under Federal Energy Regulatory Commission regulation.[4] PJM has more than 280 GW of wind, solar, and storage resources waiting to interconnect,[5] indicating rapid growth in these resources is on the horizon.

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] PJM Inside Lines, "New Interconnection Process Reaches Next Milestone", December 2023, https://insidelines.pjm.com/new-interconnection-process-reaches-next-milestone/

[5] Berkeley Lab, "Generation, Storage, and Hybrid Capacity in Interconnection Queues", https://emp.lbl.gov/generation-storage-and-hybrid-capacity