

Executive Summary

U.S. EPA proposes to revamp the entire power generation, transmission and distribution system by using Section 111(d) of the Clean Air Act (CAA), a rarely-used section that reserves much authority and flexibility to the states. The U.S. Supreme Court has held that vast regulatory expansions can only stem from clear Congressional authorization. Through its proposed Section 111(d) rulemaking, U.S. EPA is seeking to broadly expand its regulatory reach from emission control to power generation, transmission and distribution control without having the clear authority under the CAA.

As a result, Ohio EPA has reached out extensively to entities that would be regulated under this proposal; other state agencies that will undoubtedly be impacted; state, federal and private organizations with expertise in electricity production and distribution; and numerous other stakeholders, such as environmental organizations. This outreach effort proved essential to understanding the ramifications of this proposal to Ohio and in forming Ohio EPA's comments.

Overall, Ohio EPA has reviewed this proposed regulation and is providing both legal and technical comments. Ohio EPA did not focus on the stated objectives related to climate change, but rather provides a sound detailed analysis on the proposal's cost to consumers, projected impact on power system reliability, as well as identifies omitted information and specifically identifies our concerns regarding the inappropriate use of IPM to predict technical feasibility, reliability and cost-effectiveness. Below are a summary of our findings.

General Comments:

- Since 2005, Ohio has reduced carbon dioxide (CO₂) emissions from 138 million tons to 107 million tons in 2013. Further reductions due to Mercury and Air Toxics Standard (MATS) shut downs could result in as much as an additional 33.8 million tons of CO₂ reductions between 2015 and 2016.
- As a result of U.S. EPA's recent MATS, Ohio will lose roughly 30% of 2012's coal-fired generating capacity. As generating units install control equipment to comply with MATS, this CO₂ proposal layers an even greater degree of uncertainty on the industry.
- U.S. EPA failed to understand and recognize the unique circumstances of Ohio as a deregulated energy marketplace. Within the proposal U.S. EPA compares vertically integrated and deregulated marketplaces, however nowhere does U.S. EPA take these differences into consideration in establishing the best system of emission reduction.

Cost and Reliability:

- Ohio supports diversification of energy sources that responsibly maintain or increase reliability and provides predictable and low costs to consumers. This proposed rule jeopardizes these fundamental benefits to Ohio consumers.

- Currently, it is PJM Interconnection, LLC (PJM), as delegated by the Federal Energy Regulatory Commission (FERC) through the Federal Power Act, whom determines dispatch order by utilizing the least expensive resource first to meet energy demand. Nowhere is U.S. EPA delegated authority for states to usurp the Federal Power Act and mandate generation dispatch based on CO2 emissions rather than cost.
- U.S. EPA disregarded specific and detailed concerns from entities responsible for guaranteeing grid stability. To move forward with a proposed rule without adequately addressing these issues is ill advised. For instance:
 - The analysis includes no state-specific capability assessment for electricity or natural gas generation, transmission or distribution.
 - A third party cost-based model was inappropriately used as the lone justification for demonstrating nationwide power grid stability and security.
 - FERC testified to Congress regarding serious concerns about the impact of this rule on reliability. A proposal of this breadth and impact should rely on FERC, the North American Electric Reliability Corporation (NERC), regional transmission organizations and state Public Utility Commission (PUC) expertise during the early planning and development stage, yet this proposal includes major deficiencies for which these entities have clear authority.
 - One regional transmission organization responsible for dispatching power across multiple states predicts potential “rolling blackouts” and worse, “cascading outages and voltage collapse”.
- Despite a dramatic increase in predicted natural gas usage dedicated to generating electricity, no legitimate analysis of the subsequent impact on natural gas supply and/or prices was conducted.
- In this proposal renewable energy is expected to occupy an ever larger portion of electricity generation. U.S. EPA recognizes the intermittent nature of generation from renewables, yet relies on unproven grid storage technologies to provide quick response backup generation. Reliance on unproven technology, described by the Department of Energy as still in it’s “infancy” will undermine grid reliability.
- NERC completed an Initial Reliability Review of U.S. EPA's proposal. Their concerns include:
 - As directed by the Energy Policy Act of 2005, NERC is directed to conduct periodic assessments of the reliability and adequacy of the bulk power system in North America. U.S. EPA should have consulted, utilized and relied on NERC's knowledge and experience prior to releasing a proposed rule.

- o By not consulting NERC and, instead, explaining that reliability is not a concern because states have "flexibility" in plan development demonstrates a lack of understanding and due diligence on behalf of U.S. EPA.
- o NERC's analysis provides fundamental recommendations for implementing a more timely approach that addresses: resource adequacy and infrastructure deployments; continued assessment of implications by NERC and independent evaluations; coordinated regional and multi-regional evaluation of interdependencies between systems; more accounting for time to plan and build transmission infrastructure; development of a reliability assurance mechanism; assessment and planning for a changing resource mix.
- U.S. EPA's cost analysis is flawed and radically underestimates the projected cost of electricity from this proposal.
 - o Ohio's PUC conducted a state-specific analysis which showed the aggregate total price increase as a result of the Clean Power Plan will be substantial. Compliance with Building Block 2 would cost Ohioans approximately \$2.5 billion (in nominal dollars) more for electricity in 2025 alone.
 - o In a misguided approach to bring costs down, after a notable predicted increase in costs, U.S. EPA relies heavily on renewable energy and energy efficiency development to bring down costs by 2030.
 - o Many Ohio industries depend on affordable power. It is the back bone of Ohio's high quality of life and crucial for business development and expansion. Any increase in electricity and/or natural gas costs is viewed as a threat to their economic viability in Ohio.

Legal:

- Because U.S. EPA has promulgated a Maximum Achievable Control Technology standard under Section 112 for power plants, they are prohibited from regulating CO2 emissions from these same power plants under the plain language of Section 111(d).
- U.S. EPA is limited in Section 111(d) to regulate sources which would be regulated under Section 111(b) if the source had been "new". This proposal inappropriately requires states to exert regulatory authority and impose obligations on "affected entities" which potentially include countless generators and users of energy throughout the state. These "affected entities" would potentially include any renewable energy development, any energy efficiency measures, and industrial users of energy and entities located outside of Ohio.
- U.S. EPA has taken a rarely-used section of the CAA that has always been applied on a source-oriented inside-the-fenceline basis as justification to expand

their regulatory reach and exert authority over the national power generation, transmission and distribution system. U.S. EPA has misinterpreted Congressional silence to imply that Congress would agree to the broad new authority proposed in this rule.

- A companion proposal to regulate Modified or Reconstructed sources under Section 111(b) mandates that sources previously included in a state's Section 111(d) "existing" source plan will be subject to both rules following modifications or reconstruction. This misapplication of the CAA would cause undo confusion and hardships on any source attempting to operate more efficiently.
- The provision in Section 111(d) for U.S. EPA to establish a procedure similar to that provided under Section 110 is only with respect to providing procedures for each state to submit a plan which establishes standards of performance. U.S. EPA cannot expand its authority under Section 111(d) with the wholesale adoption of Section 110 requirements.

Specific Comments on Elements of the Clean Power Plan:

Building Block 1:

- U.S. EPA is mandating a 4 to 6% heat rate improvement for coal-fired power plants through misapplication of a research study (Sargent & Lundy). The use of this study was in direct contradiction to the author's stated purpose and provides an over-simplification of the complexities and variability in coal plant design and function.
- U.S. EPA relies on fundamental flaws in their heat rate improvement justification and feasibility analysis. Specifically:
 - The study incorrectly assumed that heat rate variability beyond ambient temperature and load was under control of the operator.
 - The "presumption" that all heat rate improvements were due to equipment upgrades without any technical basis or situational knowledge.
 - No attempt to recognize that heat rate improvements have already been made at many plants.

These oversights, along with other inadequacies, demonstrate that the best system of emission reduction can only be implemented through unit-specific engineering studies without the burden of federal predetermined conclusions.

- Specifically, application of 4 to 6% heat rate improvement is unrealistic for Ohio. Ohio's coal-fired fleet had an average gross heat rate of 9,788 BTU/kW-h for years 1997 to 2013. Absent this rule, Ohio's post-MATS coal fleet is projected to achieve a gross heat rate of 9,287 BTU/kW-h, representing a 5.4% heat rate improvement. After MATS shutdowns, Ohio's fleet will be extremely efficient and additional reductions will be very costly to achieve from the remaining fleet.

Building Block 2:

- 70% re-dispatch of power generation from coal to natural gas may exert severe strain on Ohio's natural gas distribution and transmission system. No formal capability study was conducted by U.S. EPA to assess the feasibility at the state level for implementing this shift.
- U.S. EPA did not recognize known impediments including designed use of natural gas combined cycle (NGCC) units as load-following versus base load units, and necessary unavoidable costly and time consuming upgrades to the transmission and distribution system.
- U.S. EPA inappropriately justified the feasibility of this capacity increase for every natural gas unit (and some that are not even planned yet) across the state based on isolated units that operate near 70%. Re-dispatch at 70% is described by U.S. EPA in the federal register as possible "not in every individual instance but on average...technically feasible". Indeed, U.S. EPA could only model 64% re-dispatch at the state level. Seventy percent re-dispatch could only be achieved under a regional approach. To determine if re-dispatch is possible and appropriate, a unit-by-unit review is necessary.

Building Blocks 3 and 4:

- As demonstrated by Ohio's existing Renewable Energy Portfolio Standard (RPS), Ohio supports development of renewable energy and energy efficiency programs. However, this new proposal and the associated federalization measures will disincentivize renewable energy and energy efficiency initiatives that states like Ohio have had success implementing at the state level.
- Federalization of renewable energy and energy efficiency is unacceptable. The prospect of U.S. EPA enforcement of all aspects of state plans will create a disincentive to public and private entities already making great strides in renewable energy and energy efficiency development. No entity we had discussions with during our review of this proposal, public or private, communicated their desire for this state-specific activity to be afforded to U.S.EPA.
- States' RPS programs are not uniform. U.S. EPA has provided no indication of how these differing states RPS programs would be incorporated and function under this proposal. States with existing RPS standards may need to adjust their state specific programs to meet U.S. EPA's standards. If not, states will need to duplicate all tracking, measuring, verification and reporting to separately satisfy both regulatory bodies.

Timing:

- U.S. EPA proposes unrealistic timing throughout the proposal. Less than six months is insufficient time to provide comment on a complete overhaul of the

country's power generation, transmission and distribution system. A proposal of this breadth and potential impact should take the form of a multi-year planning and good-faith outreach effort culminating in a proposal that is well researched and attainable. This proposal is none of these.

- For states, developing a comprehensive plan including development of new regulatory and statutory authority, development of a workable state specific plan, and submittal of a plan that meets U.S. EPA's expectations is improbable. To collaborate with other states on a multi-state plan within the time provided is likely unattainable.
- U.S. EPA incorrectly believes heat rate improvement projects at affected EGUs can be implemented and 70% utilization of NGCC units can be achieved by 2020. This is technically unrealistic.
- Ohio compiled several cradle-to-grave timelines of recent efficiency improvement projects at Ohio EGUs. With inclusion of initial planning, engineering, construction and testing, the most optimistic duration is twenty months plus any delays attributable to New Source Review permitting and acquisition of PJM approval. This twenty month timeline was the product of normal, routine, and well established outage schedules via PJM. A second timeline, involving turbine upgrades, required approximately seven years to complete.

Omission of Critical Information:

- This proposal is 129 Federal Register pages in length and references over 1000 pages of guidance documents. U.S. EPA has been unable to respond to fundamental state questions regarding plan feasibility, grid reliability and cost impacts for Ohio and Ohio generating units.
- U.S. EPA omitted numerous documents from the docket that would assist states in understanding their goal development, and impacts including multiple IPM parsed files, heat rate improvement analysis data, details regarding enforceability and evaluation, measurement and validation approvability. In addition, U.S. EPA's recently released NODA excluded data on reformulated state goals, cost analysis, technical analysis and other administrative elements.
- U.S. EPA was unable to provide meaningful guidance on a conversion of their CO2 reduction goals from an emissions rate to mass emission target as requested by Ohio and many other states. Only in mid-November, after multiple requests from states and stakeholders, did U.S. EPA release guidance. To provide an acceptable conversion on a fundamental aspect of the proposal 2-3 weeks before the deadline is problematic. Ohio has commented on this but, simply did not have enough time to analyze the guidance and reconcile it appropriately with the rest of the proposal.

Use of a Flawed Model:

- The feasibility of re-dispatch under this proposal was only possible through the assessment of a “shadow” cost on each ton of CO2 emissions. Only through assessment of an added cost per ton, making increased use of natural gas more affordable than coal over the compliance period, is this proposal possible. U.S. EPA fails to explain where this added revenue stream will be collected, by whom and it's appropriate use.
- Ohio EPA has serious reservations concerning U.S. EPA's over reliance on the IPM model to predict the proposed rule's feasibility, cost to consumers and impact on reliability.
- IPM is a U.S. EPA-developed cost-based model used to determine the least-cost method of meeting energy demand. When inappropriately used as a dispatch model, severe limitations become evident that undermines reliability assessment capabilities. Problems include failure to represent congestion at the local level, failure to properly assess individual units, failure to recognize and account for seasonal variation, lack of detailed transmission and distribution information, inadequate accounting of the intermittent nature of renewable energy generation.
- Ohio EPA identified multiple errors and false assumptions throughout the IPM modeling scenarios which have been identified within this submission including, but not limited to, unrealistic heat rate improvements, overly ambitious renewable energy capacity coming online, significant and potentially unrealistic capacity factors at included coal-fired units, and a notable lack of natural gas expansion in the state.

Health and Climate Effects:

- U.S. EPA provided no scientific evidence of direct health effects of CO2 exposure in either the preamble or the supplementary support documents used to justify the proposal. U.S. EPA justifies enacting this new sweeping expansion of regulatory authority based upon vague links to preventing indirect possible impacts such as intestinal illness resulting from extreme weather impacts. This delegitimizes reasonable efforts to address the consequences of climate change.
- U.S.EPA's attempts to bolster justification and affordability of this proposed rule by identifying health benefits that will be recognized as a result of secondary reductions in criteria pollutants, not CO2. Implementation of current and future ozone, PM 2.5 and SO2 standards, and others, will reduce criteria pollutants in and of themselves, without this proposal.

Conclusion:

Climate change is a global issue and Ohio wants and believes we are already doing our part to address this important issue. However, U.S. EPA's proposal to address climate

change through this Section 111(d) approach is not appropriate. Not only does Ohio strongly believe that U.S. EPA is inappropriately using Section 111(d) to implement this plan, rather than securing authorization from Congress, but the proposal itself is fundamentally flawed in its design and construction and jeopardizes Ohio's ability to provide low-cost, affordable, and reliable power to our citizens.

