Attachment

Ohio EPA Comments on "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Proposed Rule" [79 FR 34830]

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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.

- 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.

- 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.

  - 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.

  - 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.

  - 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.

<u>Legal:</u>

- 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.

<u>Specific Comments on Elements of the Clean Power Plan:</u>

<u>Building Block 1:</u>

- 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 dis-incentivize 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.

<u>Omission of Critical Information:</u>

- 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.

Introduction

Please consider, the State of Ohio has been a manufacturing hub in the heart of the country since the industrial revolution. Fueled by affordable electricity, Ohio is home to a wide range of manufacturing jobs, from steel mills to glass plants to automobile manufacturing plants; these jobs are a vital part of both Ohio's and the country's workforce and economy. Ohio was ranked third in the nation in manufacturing employment in 2011[1]. In 2013, manufacturing employed 662,100 Ohioans which accounts for 12.6 percent of our workforce. In addition, 94.3 percent of Ohio's exports came from manufacturing as well that year[2]. Manufacturing in the state relies heavily on electricity and it is a substantial expense for companies. The U.S. Energy Information Administration (EIA) "ranked [Ohio] fifth in the nation in 2011 in energy consumption by the industrial sector and output from its factories accounted for 17% of the state's gross domestic product (GDP); the state contributed 4.7% to the total U.S. manufacturing GDP in 2012."[3] Any increases to electricity cost, which Ohio EPA expects will occur under this proposal, could be very costly and damaging to the manufacturing industry in Ohio.

Manufacturing is not the only important piece of Ohio's economics, electricity is as well. U.S. Department of Labor, Bureau of Labor Statistics estimated in May 2013 Ohio employed 1,050 power distributors and dispatchers; making Ohio the largest in the nation to employee workers in this category.[4] In fact, based on June 2014 EIA data, Ohio ranks tenth in electricity production in the nation[5].

In the Eastern and Southeastern portions of the state, Ohioans have been mining coal for over two centuries. Ohio coal was mined for the first time in Jefferson County in the 1800s and since that time coal has been providing Ohio with the majority of its energy demand. The Ohio Coal Development Office has "estimated three billion tons of coal have been mined in Ohio since the early 1800s" Sixteen of Ohio's eighty-eight counties currently mine for coal; in 2004, 31 companies produced coal via 94 mines in those counties[6]. In 2013, 69% of net electricity generation in the state came from coal followed by 15% natural gas and 12% from nuclear energy[7].

Our reliance on coal and diverse other mix of generation sources resulted in electricity prices that were 9% below the national 2013 average. [Ibid] Even still, many Ohio families are struggling with high energy prices; 53% of low to middle income households spend an average of 20% of their after-tax income on energy. Increased energy prices will further strain these families[8].

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[1] Page 7: http://www.ohiopoweredbymanufacturing.com/oma/OMA-Manufacturing-Counts-2012.pdf
[2] http://www.nam.org/~/media/24A18E528503452280C68F7B172BBF1B.ashx
[3] http://www.eia.gov/state/?sid=oh
[4] http://www.bls.gov/oes/current/oes518012.htm
[5] http://www.eia.gov/state/?sid=oh
[6] http://www.ohioairquality.org/ocdo/ohio_coal_story.asp
[7] http://www.eia.gov/state/?sid=oh
[8] Eugene M. Trisko, Energy Cost Impacts on Ohio Families, Jan 2014; Appendix B

More recently Ohio has become a part of the shale fracking boom with wet and dry gas wells across the eastern side of the state. These wells contribute to the local and state economy by driving down unemployment and providing an economic boost. The renewable energy (RE) industry continues to grow and diversify Ohio's portfolio with new hydroelectric power plants, wind farms and an emerging solar industry. Several state programs provide significant funding and help in developing end-use energy efficiency (EE). All of these, combined, have worked to lower the emissions of pollutants, including greenhouse gasses (GHG), across the state. Carbon dioxide (CO2) emissions, the GHG at the heart of regulation under this proposal, were at 137.9 million tons in 2005 from EGUs (both coal and natural gas) and were dramatically reduced by 22% to 107.4 million tons in 2013. In addition, Ohio EPA expects CO2 emissions to be reduced further due to closure of approximate 6,111 MW of coal-fired generating capacity between 2015 and 2016[9]. These closures represent an additional 33.8 million tons of CO2 reductions that could be realized between 2015 and 2016. These reductions have occurred due to a combination of programs and initiatives implemented not only by Ohio EPA, but other federal agencies, state agencies and other public entities, each with their own unique authority and ability to regulate and reduce emissions. This proposal by U.S. EPA reaches far into the roles of each of these public entities by undermining their authority and ability to foster these programs in the most effective manner by placing them under the control of the federal government.

Also of great importance is the impact of this rule on Ohio's deregulated energy market. The State of Ohio has transitioned from a vertically-integrated, traditional rate-of-return utility construct, where an incumbent utility would provide service from generation to local distribution, to a competitive retail generation market, where customers can now choose their generation supplier. Electric distribution companies were required to divest their EGUs from their transmission and distribution components. Today, the EGUs that were previously regulated through traditional rate-of-return ratemaking are either entirely divested from Ohio's electric distribution utilities or are currently undergoing corporate separation.

As proposed, the CPP will impact not only fossil fuel-fired electricity generators, but also the energy sector as a whole, from generation to transmission. U.S. EPA's own estimates that electricity and natural gas prices will rise as a result of this rule are of immense concern to Ohioans. The subsequent impact on Ohio residents, Ohio manufacturing, Ohio industrial sector and Ohio commercial sector will be significant. As a result of uncertainties, Ohio is concerned about unintended impacts on Ohio and the nation's generation and delivery of reliable, affordable electricity. In addition, U.S. EPA's predicted electricity price increases of 6-7% in 2020 [79 FR 34934] are a significant concern to Ohio's residential, commercial and industrial citizens and customers. These projections will have a devastating impact on manufacturing in Ohio. And Ohio EPA believes U.S. EPA's has drastically underestimated these prices as reputable sources have reported increases as high as 39% (see Ohio's Cost and Reliability Section of these comments).

[9] U.S. EPA's Clean Air Markets Database

Insufficient Comment Period

U.S. EPA originally provided 120-days for stakeholder comment on this proposal. Ohio requested a much needed extension of 90-days on the comment period on July 16, 2014 [Appendix A] to appropriately analyze the proposal. But that request was denied on July 25, 2014 [Appendix A]. However, at the urging and request of a 60-day comment period extension from 53 United States Senators [Appendix A], U.S. EPA announced on September 16, 2014, one-month prior to the close of the comment period, an additional 45-days would be granted (closing December 1, 2014).

On October 30, 2014 [79 FR 64543] and November 13, 2014 [79 FR 67406], U.S. EPA issued two separate Notices of Data Availability (NODA). The October 30, 2014 NODA requested comment on numerous other alternatives based on early stakeholder comments, all of which have the potential to significantly impact state goals. The November 13, 2014 NODA provides options for a very important aspect of this proposal, the conversion of the rate-based goal to a mass-based goal. U.S. EPA noticed these additional modifications to the original proposal with very little time remaining and offered no extension to the comment period.

U.S. EPA is proposing and requesting comment on not only a regulation, but numerous technical support documents (TSDs) that would greatly impact the implementation of such a regulation. The original rule alone asked for specific comments in 497 different locations. The numerous TSDs, supporting materials and NODA's also specifically request comment. Many more elements not specifically identified for comment most definitely warrant comment from stakeholders. These comment requests stretch from simple requests to requests on long-term strategic impacts regarding what would work best for states, regions and the nation. This rule would impact entities far beyond the scope of what the majority of states have ever traditionally regulated. Ohio EPA has been placed in a situation where consultation with other entities and agencies, in order to understand the true impact of the proposed regulation, was paramount to our ability to provide meaningful comments.

The overwhelming amount of material that was provided in the docket and subject to comment, combined with the magnitude and far reaching impact of the proposed regulation, has made reviewing this proposal and accompanying NODAs in the time provided, and providing a comprehensive analysis, virtually impossible.

Impact of Other Federal Regulations

Ohio EPA is very concerned about the impact of this rule when combined with others that affect the power generation industry. There has been a deluge of regulations affecting EGUs in the recent past, and more anticipated for the future. U.S. EPA cites a few in the proposal [79 FR 34929-34930]:

- February 16, 2012, the MATS rule.
- On May 19, 2014, final rule under Section 316(b) of the Clean Water Act (33 U.S.C. 1326(b)).
- June 7, 2013, proposed the steam electric effluent limitation guidelines (SE ELG) rule.
- June 21, 2010, proposed the coal combustion residuals (CCR) rule.

In addition, there are:

- U.S. EPA's proposal for modified and reconstructed sources under Section 111(b).
- Significant reductions that will be necessitated for compliance with the SO2 National Ambient Air Quality Standards (NAAQS).
- Compliance with the impending Cross State Air Pollution Rule (CSAPR).
- Additional likely reductions as more recent NAAQS are analyzed and addressed under future interstate transport rules.

U.S. EPA states they are "endeavoring to enable EGUs to comply with applicable obligations under other power sector rules as efficiently as possible (e.g., by facilitating their ability to coordinate planning and investment decisions with respect to those rules) and, where possible, implement integrated compliance strategies." [79 FR 34930] Ohio EPA believes that this statement reflects the lack of understanding of the electric utility industry. Each of these numerous regulations require different implementation schedules and timelines. Planning in the utility sector is more demanding and requires more forward thinking than any other industry in order to assure a reliable power system is maintained. Compliance with many of these rules will necessitate shut downs, environmental controls, and other improvements that will require down-time among multiple EGUs within each state. The regulatory roadmap is constantly changing and coordinated planning and integrated compliance strategies are virtually impossible on the timelines proposed by U.S. EPA. Further, U.S. EPA offers no analysis as to the *combined* costs and feasibility of all of these programs on the power generation industry. U.S. EPA even attempts to place the onerous task of coordinating U.S. EPA regulations, compliance options and timing requirements on states that will regulate these entities stating we will have ample opportunity to design Section 111(d) plans that coordinate with these other regulations "…and to do so in a manner that will help reduce cost and ensure reliability, while also ensuring that all applicable environmental requirements are met." [79 FR 34929] Based on the time frames presented in this proposal it is obvious U.S. EPA does not have an understanding of the complexity of its own proposal. State air quality agencies have never been given the authority or responsibility, nor do they have the knowledge, to ensure reliability of the power system.

Health and Climate Effects

Throughout this proposal, U.S. EPA has repeatedly proclaimed the benefits of great reductions in many potential human health disorders resulting from implementation of

this proposed rule. The U.S. EPA Administrator has gone so far as to casually use children's health concerns to justify the rule:

> I want to begin by telling you a little bit of a story about a month ago I took a trip to the Cleveland Clinic and met a lot of really great people but one person stood out, even if he needed to have to stand on a chair to make himself seen while he was talking. Parker Frey, he's ten years old and has struggled with severe asthma his entire life. His mom said that despite his challenges, Parker is a tough, active kid and a really good hockey player. But sometimes, she said, the air is too dangerous for him to play outside. In the United States of America, no parents should ever have to have that worry.[10]
>
> Rising temperatures bring more smog, more asthma, and longer allergy seasons. If your kid doesn't use an inhaler, you should consider yourself a very lucky parent because one in ten kids in the U.S. suffers from asthma.[11]
>
> All of that means it's going to result in lower medical bills, fewer trips to the emergency room especially for those most vulnerable: those kids, especially those kids that have asthma, our elderly and our infirmed.[12]

Other examples of public health effects that U.S. EPA uses to justify the rule are wildly extrapolated from the potential indirect impacts of GHG emissions:

> Changes in temperature, precipitation patterns, and extreme events could enhance the spread of some diseases.[13]
>
> - Heat waves can lead to heat stroke and dehydration, and are the most common cause of weather-related deaths.
>
> - Extreme events can also indirectly threaten human health in a number of ways. For example, extreme events can:
>
> •Contribute to carbon monoxide poisoning from portable electric generators used during and after storms.
>
> •Increase stomach and intestinal illness among evacuees.
>
> •Contribute to mental health impacts such as depression and post-traumatic stress disorder (PTSD).

[10] Video: "EPA's Clean Power Plan": http://www.youtube.com/watch?v=P5WNWXP5EYw
[11] Video: "EPA's Clean Power Plan": http://www.youtube.com/watch?v=P5WNWXP5EYw
[12] Video: "EPA's Clean Power Plan": http://www.youtube.com/watch?v=P5WNWXP5EYw
[13] Human Health Section of U.S. EPA website: http://www.epa.gov/climatechange/impacts-adaptation/health.html

- Climate change may affect allergies and respiratory health.

- Changes in climate may enhance the spread of some diseases.

When writing this proposal, U.S. EPA appears to have initially recognized, but then goes on to ignore, the inherent problems with justifying and enacting a new sweeping expansion of regulatory authority based upon vague links to indirect possible impacts including: extreme weather events, intestinal illness, spread of disease, dehydration, heat stroke, mental health impacts including PTSD, Lyme disease, West Nile virus, etc. U.S. EPA's use of the alleged prevention of "intestinal illness among evacuees" during a potential extreme weather event to justify a new regulatory program of this magnitude undermines the scientific integrity of the proposed regulations. To extrapolate from documented potential health effects to wildly speculative assertions of wide-ranging conclusions detached from the type of traditional air pollution control impacts that environmental regulators traditionally consider delegitimizes the effort by U.S. EPA to address the consequences of climate change.

U.S.EPA attempts to bolster the justification and affordability of this proposed rule by identifying health benefits that will be recognized as a result of secondary reductions in criteria pollutants. U.S. EPA has promulgated other rules such as the mercury and air toxics standards (MATS), the more restrictive ozone, PM2.5 and SO2 NAAQS, CSAPR, and others, all of which reduce criteria pollutants in and of themselves, without this proposal. U.S. EPA and Ohio environmental regulators have extensive programs embedded in SIPs to address the precise health issues, such as children's asthma, that U.S. EPA draws on to justify the rule. Traditional SIP programs work well to achieve and maintain compliance with the NAAQS and address the health effects of non-criteria pollutants such as HAPs, and U.S. EPA is obligated to continually review those standards to ensure the protection of public health. Attempting to overhaul the entire electricity market to address the same acute health impacts already more thoroughly regulated as criteria pollutants is the wrong approach. By justifying this rule based almost entirely on secondary criteria pollutant reductions of pollutants already regulated, U.S. EPA has overstepped logical regulatory authority. U.S. EPA cannot ride the coat tails of reductions applicable under other Clean Air Act (CAA) programs as justification for a proposal to reduce CO2 emissions.

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. No directly dangerous CO2 emissions levels to humans, ground level concentrations, or impacts are predicted by U.S. EPA or demonstrated by research.

Our own toxicological research was not able to establish any direct health effects from the regulation of GHGs. The supposed logic behind the determinations of any health costs associated with potential climate change are shrouded in the interpretations of several compilations of international research and conclusions, not readily available to be tested.

Furthermore, although U.S. EPA finds it "especially important…to achieve a significant amount of emissions reductions in response to the urgency and the magnitude of the need to mitigate climate change" [79 FR 34890], the proposed rule will have little, if any benefit of reducing worldwide CO2 emission on a percentage basis.

Global climate change is indeed a global issue. The "location of CO2 emissions is less important than other pollutants." [79 FR 34883] To this end, Ohio EPA conducted a brief analysis of the role this proposal will have on global CO2 emissions. As a baseline, Ohio EPA selected the reference projection contained in the U.S. Energy Information Administration's (EIA) 2013 International Energy Outlook, DOE/EIA-0484(2013). In 2005, the United States emitted 5,985 million metric tons, approximately 21% of the global total of 28,052 million metric tons. According to the EIA's August 2014 Monthly Energy Review, 2,417 million metric tons of the United States emissions in 2005 were attributed to the production of electricity, across all source types. Following U.S. EPA's stated goal of a 30% reduction in CO2 emissions from the power sector by 2030, Ohio EPA estimates a reduction in CO2 emissions by 2030 of 725 million metric tons, well in line with the 730 million metric tons suggested in the fact sheet released by U.S. EPA entitled "By The Numbers: Cutting Carbon Pollution From Power Plants". By 2030, the EIA projects that global CO2 emissions from energy production alone will be 41,464 million metric tons. Thus, the estimated reduction of 725 million metric tons results is a small fraction of the global energy-related CO2 emissions estimated for 2030. When taking into account the other non-energy sources of CO2, the estimated CO2 reductions from the proposed rule would result in an even smaller fraction of overall global CO2 emissions.

Justification of this proposal using health benefits uniquely related to GHG emissions reductions without weighing the diminutive effect of the proposed rule on global emissions against the unauthorized disruption of the power system and huge potential cost to electricity consumers, both individual and industrial, is inappropriate.

Legal Concerns

I. Congress did not grant U.S. EPA under CAA Section 111(d) the authority to revamp the entire power generation, transmission and distribution system.

U.S. EPA proposes to use a rarely-used subsection of the CAA to revamp the entire power generation, transmission and distribution system. U.S. EPA tries to assert this wide-ranging authority based on an interpretation of Section 111(d) that relies on Congressional silence: "The terms of Section 111(d)(1) do not explicitly address whether, in addition to emission limits on affected EGUs, state plans may include other measures for achieving the emission performance level. Nor do they address whether the entities other than affected EGUs may be subject to requirements that contribute to

reducing EGU emissions." [79 FR 34830, 34902 (June 18, 2014)] Congress could not have meant for this provision of the CAA to be used in such an expansive way.

To begin with, U.S. EPA does not have the authority to proceed with this rulemaking under Section 111(d) because the plain language of the statute prohibits U.S. EPA's regulation of air pollutants emitted from source categories that are otherwise regulated under Section 112, which addresses the emission of hazardous air pollutants. Specifically, Section 111(d)(1) provides, in part:

> "The Administrator shall prescribe regulations which shall establish a procedure similar to that by section 7410 of this title under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 [CAA section 112] of this title . . . . "

In 2012, U.S. EPA promulgated the MATS/Maximum Achievable Control Technology (MACT) rule to regulate coal-fired power plants under Section 112. [77 FR 9303 (Feb. 16, 2012)] Because coal-fired power plants are now regulated under Section 112, U.S. EPA is prohibited from regulating CO2 emissions from power plants under Section 111(d). For a full discussion of U.S. EPA's authority under Section 111(d), Ohio EPA refers U.S. EPA to the arguments set forth in the amicus brief submitted by a group of states including Ohio in support of the petitioner in the case of *In re: Murray Energy Corporation*, Case No. 14-1112 (D.C. Cir. Ct. App.), document #1499435, which is incorporated by reference herein. Ohio EPA also refers U.S. EPA to the comments submitted on this Section 111(d) rulemaking by the Ohio Attorney General.

Furthermore, even if Section 111(d) could be interpreted to grant U.S. EPA the authority to proceed now to regulate existing power plants, U.S. EPA has clearly exceeded any reasonable bounds set forth in statute. The statute plainly focuses on particular sources, not the entire power generation, transmission and distribution. Section 111(d)(1) specifically requires a state plan which "establishes standards of performance for any existing source" and goes on to state that "[r]egulations by the Administrator under this paragraph shall permit the state in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source in which such a standard applies." "Existing source" is defined as "any stationary source other than a new source," [Section 111(a)(6)] and "stationary source" is "any building, structure, facility, or installation which emits or may emit any air pollutant" [Section 111(a)(3)]. The statute directs a state to establish and apply a standard of performance only to particular existing sources and to take into account the remaining useful life of those particular existing sources. A plain reading of this provision can only lead one to conclude that Congress meant for the provision to apply to specific individual sources, and cannot be read to have left the sort of gap in the statute that an agency must fill

with its own interpretation. "[Court decisions] establish a simple and sensible rule: EPA cannot rely on its gap-filling authority to supplement the CAA's provisions when Congress has not left the agency a gap to fill." [*NRDC v. EPA*, 749 F.3d 1055, 1064 (D.C. Cir. 2014)] So it is here.

U.S. EPA's "alternative" approach to BSER is similarly unjustifiable. U.S. EPA identifies the "system of emission reduction" to be, in the alternative, the reduction of affected EGUs' mass emissions that are achievable through reductions in generation, in addition to the efficiency gains set out in Building Block 1. [79 FR 34852] This formulation is far afield from what can be required of a state plan under Section 111(d). A Section 111(d) plan "establishes standards of performance for any existing source." The plain language construction of the phrase "for any existing source" can only mean that the emissions standard must be set at a level that a source itself can achieve. This is consistent with Section 111(d)'s focus on control technology at the particular source, as will be discussed later in these comments. Finding that a reduction of utilization at an EGU through Building Blocks 2, 3 and 4 could satisfy a standard of performance for a source would set U.S. EPA up in the role as an environmental super-regulator who could require any industry subject to an new source performance standard (NSPS) to produce less and its associated customers to consume less, thereby substituting the agency's judgment on investment and production decisions for that of the company's owners and operators, undermining commercial needs and expectations. Congress could not have given U.S. EPA the authority to micromanage the nation's economy through the CAA.

U.S. EPA relies on Congressional silence to develop a vast new regulatory program, which the U.S. Supreme Court has consistently not allowed. "Congress, we have held, does not alter the fundamental details of a regulatory scheme in vague terms or ancillary provisions – it does not, one might say, hide elephants in mouseholes." *Whitman v. American Trucking Assoc.*, 531 U.S. 457, 468 (2001) (citations omitted) (concluding that there was no textual commitment of authority to the EPA to consider costs in setting NAAQS under Section 109(b)(1)). Accord *Burwell v. Hobby Lobby Stores*, 573 U.S. __, 134 S. Ct. 2751, 2796 (2014) (Ginsburg, dissent) ("Had Congress intended [the statute under review] to initiate a change so huge, a clarion statement to that effect likely would have been made in the legislation." p.17).
The legal principle that Congressional intent must be clear before a federal agency can embark on a wide-ranging, comprehensive regulatory scheme was well developed in the recent U.S. Supreme Court case that addressed U.S. EPA's authority under the CAA to require major source permits for GHG emissions. Considering U.S. EPA's interpretation to allow prevention of significant deterioration (PSD) and Title V to be triggered by GHG emissions, the Court found that:

> EPA's interpretation is also unreasonable because it would bring about an enormous and transformative expansion in EPA's regulatory authority without clear congressional authorization. When an agency claims to discover in a long-extant statute an unheralded power to regulate "a significant portion of the American

> economy," we typically greet its announcement with a measure of skepticism. We expect Congress to speak clearly if it wishes to assign to an agency decisions of vast "economic and political significance." [*Utility Air Regulatory Group v EPA*, 573 U.S. __, 134 S. Ct. 2427, 2444 (2014) (citations omitted)]

In the present rulemaking, U.S. EPA interprets little-used Section 111(d) broadly to go well beyond the plain meaning of the source-oriented statute in order to bring under Section 111(d) rulemaking any entity or person that produces, distributes or utilizes electricity. Such an extremely broad reading was not clearly intended by Congress.

II. The Proposed Rule exceeds U.S. EPA's legal authority under CAA Section 111(d) by regulating entities beyond those to which the Section 111(b) Rule would apply.

Section 111(d) of the CAA allows U.S. EPA to issue emission guidelines for any existing source "to which a standard of performance under this section would apply if such existing source were a new source." [Section 111(d)(1)(A)(ii)] U.S. EPA published a proposed rule creating NSPS under Section 111(b) for CO2 emissions from electric utility generating units on January 8, 2014. [79 FR 1430 (Jan. 8, 2014)] The proposed performance standards would apply to any new steam generating unit, integrated gasification combined cycle unit (IGCC), or stationary combustion turbine that meets the relevant applicability conditions. Under Section 111(d), therefore, guidelines must be created for an existing steam generating unit, IGCC, or stationary combustion turbine that would be regulated under the NSPS for CO2 emissions if it were new.

U.S. EPA's proposed emission guidelines apply to affected electric generating units (EGUs), which are defined as: a steam generating unit, IGCC facility, or a stationary combustion turbine that meets certain applicability conditions. The guidelines are correctly applied to these facilities because, if they were new, they would fall under the NSPS discussed above. The proposed emission guidelines, however, also apply to "affected entities," which are defined as: an affected EGU or another entity with obligations under this subpart for the purpose of meeting the emissions performance goal requirements in the emission guidelines.

In the preamble, U.S. EPA explains that affected entities may include: an owner or operator of an affected EGU, other affected entities with responsibilities assigned by a state, such as an electric distribution utility or a private or public third-party entity, and a state agency, authority or entity. Under the proposed emission guidelines, states are required to identify each affected entity responsible for meeting compliance obligations and the means by which compliance with each plan requirement will be met. Most importantly, compliance obligations for affected entities include any emission standards set by the state in its plan. [40 CFR 60.5780] Under the proposed emission guidelines, therefore, states are expected to establish standards of performance for a wide range of

existing entities that would not fall under the purview of the NSPS for CO2 for a narrow range of new sources.

Not only does U.S. EPA expect states to impose emission limits on a wide range of affected entities to meet the state's performance goal under the proposed emission guideline, but U.S. EPA arrived at the BSER, comprised of the four building blocks, that also incorporates obligations imposed on those affected entities. Building Blocks 2 (dispatch changes) and 3 (increased RE), for example, require regulating entities across the entire power system, and not just the EGUs alone. In no other Section 111(d) rule have sources other than those that, if new, would be regulated under a Section 111(b) standard of performance been subject to an emission limit. By essentially requiring states to impose emission limits on affected entities, as well as using obligations on affected entities to arrive at the BSER, the proposed emission guideline exceeds U.S. EPA's statutory authority by regulating sources to which the NSPS would not apply if those sources were new.

III. The Proposed Rule's interpretation of standard of performance is unreasonably broad and exceeds U.S. EPA's authority.

Section 111(a)(1) defines standard of performance as: "A standard of emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the BSER which (taking into account the cost of achieving such reduction and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated." Emission guidelines set by U.S. EPA under Section 111(d), therefore, are based on BSER. In the proposed rule, U.S. EPA derived the state's performance goal by defining the BSER to be a combination of the four building blocks. Building Blocks 2, 3, and 4 rely on measures that are not only beyond the control of affected EGUs but that are also vastly broader than any other Section 111(d) rule U.S. EPA has promulgated.

In the Section 111(d) implementing regulations, U.S. EPA frequently refers to Section 111(d) as a technology-based approach. [40 FR 53340 (Nov. 17, 1974)] For example, in describing the legislative history of Section 111(d), the preamble states that: "the intent to require a technology based approach [can] be inferred from placement of the provision in Section 111." [Id. at 53342] The preamble goes on to explain that: "In summary, EPA believes Section 111(d) is a hybrid provision, intended to combine primary state responsibility for plan development and enforcement (as in Section 111) with the technology-based approach (making allowances for the costs of controlling existing sources) taken in Section 111 generally." Because the implementing regulations make clear that Section 111(d), like Section 111(b), is a source-specific technology-based provision, it follows that the emission guideline based on BSER should be of that nature as well. And in fact, all prior Section 111(d) rules have interpreted the CAA in this way.

Of the five source categories regulated solely under Section 111(d) (phosphate fertilizer plants, sulfuric acid plants, kraft pulp mills, primary aluminum plants, and municipal solid waste landfills), all of the emission guidelines were based on a BSER that was technological in nature. For example, the guideline for fluoride emissions from existing phosphate fertilizer plants was based on the application of spray cross-flow packed scrubbers, and the guidelines for sulfuric acid mist emissions from sulfuric acid plants were based on the use of fiber mist eliminators. In the preamble to the final rule for sulfuric acid mist, the U.S. EPA stated that: "Section 111(d) requires emission controls based on the general principle of the application of the best adequately demonstrated control technology, considering cost." [42 FR 55796 (Oct. 18, 1977)]

Four source categories have also been regulated under Section 129, which requires U.S. EPA to establish guidelines under Section 111(d) for certain solid waste incineration units. Under Section 129, U.S. EPA must base the emission guidelines on levels reflecting the maximum degree of reduction in emissions and, similar to the previous Section 111(d) rules, the Section 129 emission guidelines were derived from the installation of control technologies on-site. For example, the guideline for municipal waste combustors is based on the application of various controls including spray dryers, fabric filters, and electrostatic precipitators, and the guideline for commercial and industrial solid waste incineration units is based on the use of wet scrubbers. [60 FR 65387 (Dec. 19, 1995); 65 FR 75338 (Dec. 1, 2000)] U.S. EPA allows municipal waste combustors to participate in averaging and trading programs to meet the nitrogen oxide emission requirements and thus look for control methods beyond the fenceline, the actual requirements themselves were set on what could be achieved at the facility, unlike the current proposed guidelines. [See 60 FR 65402]

Other examples of beyond the fenceline controls that can be taken into account to meet emission guidelines are the guidelines for hospital/medical/infectious waste incinerators and the guidelines for commercial and industrial solid waste incineration units, both of which require that affected facilities submit a waste management plan that identifies both the feasibility and the methods used to reduce or separate certain components of solid waste from the waste stream to reduce or eliminate toxic emissions from incinerated waste. While it is true that material separation is not a pollution control device and would be implemented off-site, U.S. EPA did not make material separation a part of the BSER and it was not used to calculate the emission guideline. Instead, it is more akin to other Section 111(d) procedural requirements such as performance testing and monitoring that are often included in Section 111(d) rules. As with municipal waste combustor NSPS, this is unlike the current proposed emission guideline for CO2 where U.S. EPA factored in expansive measures such as re-dispatching, increased renewables, and demand-side EE as part of the BSER itself.

U.S. EPA's most expansive interpretation of the meaning of standard of performance under Section 111(d) was for mercury emissions from EGUs. [70 FR 28606 (May 18, 2005)] After delisting EGUs from Section 112(c), U.S. EPA promulgated the Clean Air Mercury Rule (CAMR). CAMR established a national mercury emissions cap for new and existing EGUs. The federal appeals court later held that U.S. EPA could not

regulate mercury emissions under Section 111 because the initial delisting of EGUs under Section 112 was unlawful. *New Jersey v. EPA*, 517 F.3d 574 (D.C. Cir. 2008) While defining a cap and trade program as the BSER seems a broad enough interpretation of standard of performance to justify the proposed emission guideline for CO2, there are important differences between the two.

First, the cap and trade program created by CAMR was based on the availability and installation of control technology. The preamble to the final rule emphasized the fact that the BSER was a combination of the cap and trade mechanism and the technology needed to achieve the chosen cap level. In justifying the emission limits in CAMR, U.S. EPA explained in the preamble that "the technologies necessary to achieve the emission cap limits . . . have been adequately demonstrated." Therefore, CAMR maintained the source-specific technology-based approach that is the foundation of Section 111. This is unlike the proposed emission guideline for CO2 that defines the BSER as the four building blocks, which include measures such as demand-side EE and re-dispatching that have no underlying basis in the installation of control technologies onsite.

Secondly, the affected source under CAMR was defined as coal-fired utility units for both Section 111(b) and Section 111(d). It was only the emission limits achievable by applying BSER to the affected sources that were used to calculate the emission guideline in the form of a state emission cap. And the cap and trade program, including the transfers of credits, was limited to affected sources. In the proposed emission guideline for CO2, U.S. EPA has broadened who the rule applies to by including affected entities that are not a part of the Section 111(b) performance standard. Additionally, U.S. EPA imposed obligations on sources comprising the entire power system in determining the BSER and the individual state emission guidelines; sources which it has no authority to regulate under Section 111.

It is clear that CAMR, while broader than previous Section 111(d) rules, was still within the traditional interpretation of standard of performance based on source-specific control technologies and limited to affected facilities. It in no way supports U.S. EPA's current proposed emission guideline for CO2 that is based on measures imposed on entities beyond the scope of the proposed Section 111(b) performance standard and outside of the control of affected EGUs.

IV. The significant differences between the Proposed Rule and proposed New Source Performance Standard under Section 111(b) is contrary to legislative intent.

Before U.S. EPA can establish emission guidelines under Section 111(d) it must set NSPSs for new and modified stationary sources under Section 111(b). Although Section 111(b) and Section 111(d) have different regulatory mechanisms (emission limits for affected sources under Section 111(d) are set and enforced by the states, and by U.S. EPA under Section 111(b)), U.S. EPA's approach for developing the performance

standards and emission guidelines are virtually identical. In addition, both performance standards and emission guidelines are derived from the same legal standard: they must reflect the BSER for their respective source categories. U.S. EPA recognizes as much by applying to Section 111(d) the same case law that interprets "standard of performance" under 111(b): "Although this case law concerns the meaning of the definition of 'standard of performance' for purposes of rulemakings that the EPA promulgated under Section 111(b), the same term is used for Section 111(d), and as a result, this case law is relevant for the present rulemaking under Section 111(d)." [79 FR 34879 n.194]

The major differences between Section 111(b) and Section 111(d) allow for more flexibility and less stringency for existing sources, including the different regulatory mechanisms. For example, under Section 111(d), U.S. EPA must specify different emission guidelines for different sizes, types, and classes of designated facilities when costs of control, physical limitations, geographical location, or similar factors make subcategorization appropriate. [40 CFR 60.22(b)(5)] In addition, states may establish less stringent emission standards on a case-by-case basis if it is justified by an unreasonable cost of control resulting from plant age, location, or basic process design, or physical impossibility of installing specified control systems. [40 CFR 60.24(f)] As explained in the preamble to the implementing regulations: "Although the general principle (application of best adequately demonstrated control technology, considering costs) will be the same in both cases, the degrees of control represented by EPA's emission guidelines will ordinarily be less stringent than those required by standards of performance for new sources . . . ." [40 FR 53341] Section 111(d), therefore, was created to be a technology-forcing provision like Section 111(b), but with added flexibility in light of the higher retrofitting costs for existing sources.

A survey of prior emission guidelines supports this conclusion. For example, the major provisions of the standards and guidelines for emissions from municipal solid waste landfills are identical. [56 FR 24468 (Mar. 30, 1991)] As were the emission limits for new and existing commercial and industrial solid waste incineration units. [65 FR 75338 (Dec. 1, 2000)] And under CAMR, new and existing sources were all brought under the same cap and trade system for mercury. In cases where they differed, the emission guidelines either defined the BSER to be another type of pollution control device, or had less stringent emission limits. For example, the NSPS for sulfuric acid mist emissions is 0.15 pounds of acid mist per ton of acid produced and is based on dual absorption processes or scrubbers, while the emission guideline for existing sources is 0.50 lb/ton based on electrostatic precipitators and fiber mist eliminators, which have lower installation and operating costs. Similarly, the standards for new municipal waste combustors requires the submission of a siting analysis and materials separation plan, while existing sources have no such requirements under the guidelines.

The vast difference between U.S. EPA's proposed NSPS and emission guidelines for CO2 emissions from EGUs is unprecedented. Not only do the proposed emission guidelines impose obligations on "affected entities" that have no obligations under the proposed performance standard, but the guidelines are also significantly broader in

scope and are in no way grounded in the proposed Section 111(b) rule. While the proposed performance standard is based on the use of carbon capture and storage, the proposed emission guidelines are based on a combination of four building blocks that involve a wide range of measures (the majority of which take place off-site from the affected EGUs) that implicate the entire power system and beyond.

Performance standards and emission guidelines under Section 111 are both bound by the same definition of standard of performance. Section 111(d)(1)(A)(ii) even refers to standards of performance that would apply if the existing source were a new source. In essence, Section 111(b) can be seen as setting the high bar for emission control on new sources that are working from a clean slate and are capable of installing and investing in the lasted technology. After the performance standard is set, states are then given the freedom under Section 111(d) to work off of the high bar set by a standard of performance, but ratchet down the emission limit given the constraints faced by existing sources.

Because Section 111(b) and Section 111(d) rules are both derived from the application of BSER for a specific source category, emission guidelines have always been within the same class of "system for emission reduction" as the performance standards. Any differences between Section 111(b) and Section 111(d) rules have resulted solely because of the higher cost of retrofitting existing sources, resulting in a different BSER for emission guidelines based on a control technology that is more affordable. The definitions of BSER for new and existing EGUs suggest that U.S. EPA exceeded its legal authority in creating an emission guideline that is entirely different from the proposed performance standard.

Furthermore, U.S. EPA obviously is well aware of how to determine a standard of performance consistent with forty years of Section 111 interpretation. The agency has already proposed under Section 111(b) that the standard of performance for new coal-fired power plants take into account carbon capture and sequestration (CCS) as the BSER that has been adequately demonstrated. This is a way more expensive approach to reduce CO2 emissions than what is proposed under Section 111(d). If the enormously expansive approach under Section 111(d) can be justified as the "best system," then U.S. EPA should have applied that approach to new sources as well. The fact that it was not further indicates that the proposal for existing sources is a far departure from how "standard of performance" has been used in the past and should be used now.

V. U.S. EPA's proposal violates the essential principle of cooperative federalism

Section 111(d)(1) commits U.S. EPA to a state planning procedure similar to that of a SIP under Section 110. Accordingly, U.S. EPA must integrate the federal-state division of labor embodied in Section 110 with the Section 111 directive to ensure that sources are subject to emission limits achievable by the BSER that has been adequately

demonstrated. U.S. EPA's proposal gives lip service to state responsibility and flexibility but in fact undermines the ability for a state to meet the type of source-oriented performance goal contemplated by Section 111(d).

The cooperative federalism structure of the CAA is set forth right at the outset in the congressional findings that underpin the act: "The Congress finds . . . that air pollution prevention (that is, the reduction or elimination, through any measures, of the amount of pollutants produced or created at the source) and air pollution control at its source is the primary responsibility of states and local governments . . . . " [Section 101(a)(3)] Courts have consistently asserted this principle: "It is to the States that the CAA assigns initial and primary responsibility for deciding what emissions reductions will be required from which sources." [*Whitman v. American Trucking Assoc.*, 531 U.S. 457, 470 (2001)]

Section 111(d) may allow a state the flexibility to develop a plan that allows an affected EGU to use beyond-the-fenceline measures to comply with an emissions limit, perhaps along the state commitment plan approach, but the emissions limit must be set based only on inside-the-fenceline considerations. By using beyond-the-fenceline measures to determine a state's performance goal and thus a source's emissions limit, U.S. EPA is coercing a state to regulate activities way beyond its authority to enforce. The state does not have the option to only regulate inside-the-fenceline because it would be impossible for the performance goal to be met with only inside-the-fenceline measures. For example, U.S. EPA cannot set a state's emission goal at such a stringent level that a state could find itself unable to meet the goal solely through in-state actions and thus would essentially require a state to allow their EGUs to trade with EGUs in other states in order to comply. U.S. EPA's performance goal then would essentially provide the state with no real choice but to participate in a national emissions trading program.

Giving real meaning to the cooperative federalism structure of CAA in general and Section 111(d) in particular is not some academic exercise with little real world consequences. Ohio's electricity market is deregulated, which raises unique challenges. The State of Ohio has transitioned from a vertically-integrated, traditional rate of return utility construct, where the utility would provide service from generation to local distribution, to a competitive retail generation market, where customers can now choose their generation supplier. Electric distribution companies were required to divest their EGUs from their transmission and distribution components. Today, the EGUs that were previously regulated through traditional rate of return ratemaking are either entirely divested from Ohio's electric distribution utilities or are currently undergoing corporate separation.

Because Ohio does not directly regulate generation facilities, it relies entirely on the wholesale electric market to meet the state's energy and capacity needs. This is in sharp contrast to the majority of states that have traditional, vertically integrated utilities. Those states still maintain exclusive jurisdiction over individual generation units, whereas much of Ohio's jurisdiction over generation units has shifted to other regional and federal entities. As a result, the Federal Energy Regulatory Commission (FERC) determines whether Ohio's wholesale electric market rates are just and reasonable. In

addition to regulating the transmission and wholesale sales of electricity in interstate commerce, consistent with the FPA, FERC is responsible for protecting the reliability of high voltage interstate transmission systems and setting reliability standards. FERC created regional transmission organizations (RTO) to move electricity from generation units across interstate regions. PJM Interconnection, LLC (PJM) is the RTO charged with moving wholesale electricity across Ohio, in accordance with a model that dispatches the least expensive generation resource first to meet energy demands. PJM must dispatch power on an economic basis to ensure a reliable source of electricity to Ohio's electricity consumers at a reasonable price.

Owners of EGUs that are not part of any vertically integrated utility system, such as in Ohio, are not subject to state renewable portfolio standards (RPS) and do not have direct access to end-users of electricity. Because generators are subject to market constraints and cannot control the state-wide mix of generation or directly influence end-users' consumption, U.S. EPA cannot determine the performance goal for Ohio based on the availability of third-party measures such as deployment of new renewable generation or increased end-use EE. A BSER that results in a performance goal based on the implementation of such measures would not be "achievable" or "adequately demonstrated" for those EGUs in Ohio as required under Section 111(a)(1). For a more detailed description of Ohio's power system and the difficulties raised by U.S. EPA's proposal, Ohio EPA refers U.S. EPA to the comments submitted by the Public Utility Commission of Ohio.

States have the authority to establish and enforce a standard of performance that "reflects the degree of emission limitation achievable through application of the best system," Section 111(a)(1), and to devise the rules for implementing and enforcing that standard, Section 111(d)(1). Just as a state develops a SIP under Section 110, a state must come up with a Section 111(d) plan that is workable and cost-effective for that state, taking into account real world realities and challenges.

If a state does not regulate the generation of electricity, it cannot require the dispatch to lower emitting EGUs nor impose and enforce third-party renewable or EE measures. It can only develop a source-specific plan that looks within the fenceline. This is the real world reality. Consequently, U.S. EPA cannot develop a performance goal that can only be met by beyond-the-fenceline measures that a state cannot require and enforce.

Similarly, U.S. EPA must also take into account real world realities and challenges when devising a federal plan in the event a state fails to submit a plan or U.S. EPA disapproves a state plan. U.S. EPA can only require measures that it has the authority to impose. U.S. EPA does not have the authority to force the re-dispatch of power plants subject to FERC/RTO reliability, cost, and contractual constraints. U.S. EPA does not have the authority to force the merchant owners of power plants to purchase RPS credits or fund demand-side EE projects, placing them at a competitive disadvantage in the electricity market.

Enforceability issues also present serious federalism concerns. One essential criterion for U.S. EPA approval is for a state to ensure that its plan is enforceable. [See 79 FR 34909] As described by U.S. EPA, a state plan must include enforceable emission limits that apply to affected EGUs and can also include enforceable measures such as RE standards or demand-side EE measures under a portfolio approach. U.S. EPA admits that requiring enforceable measures beyond the affected EGUs present a special challenge:

> [A] plan that assigns responsibility to affected entities other than affected EGUs may be more challenging to implement and enforce than a plan with requirements assigned only to affected EGUs. Furthermore, it may be more challenging for a state to demonstrate that it has sufficient legal authority to subject such affected entities other than affected EGUs to the federally enforceable requirements specified in its state plan. [79 FR 34917]

Ohio EPA posits that it is not just challenging but impossible, and forcing a state to extend its authority is such a manner violates the basic precepts of federalism embedded in the CAA. Similarly, forcing a state into a regional multi-state plan would violate not only the basic precepts of federalism but also the Compact Clause of the U.S. Constitution, Art. I, Sect. 10, Clause 3, without the express approval of Congress.

U.S. EPA has developed a State Plan Considerations Technical Support Document (hereinafter referred to as State Plan TSD) to help inform the enforceability considerations for affected entities other than EGUs. [79 FR 34917-34918] The State Plan TSD, however, does not address whether affected entities other than EGUs can be enforced against, but rather how. For example, U.S. EPA asserts that an enforceable state plan measure might apply to an electric distribution utility under a state end-use EE resource standard or RPS. [State Plan TSD, Page 14] But U.S. EPA cannot require a state to impose such an enforceable measure by establishing the state performance goal at a level that can only be met by end-use EE and RPS. Furthermore, U.S. EPA admits that a "state [EE resource standard] and [RPS] mandates may not guarantee achievement of a given level of end-use energy efficiency or renewable energy deployment during a plan performance period." [Id. at 15] Enforceability of such a standard is simply not workable.

U.S. EPA goes on to admit that "[i]n some cases, new state statutory authority might be enacted to support a state plan, specifying enforceable obligations for . . . private or public third-party entities under the plan," [id. at 16] and that "measures included in an approved Section 111(d) state plan would be federally enforceable by EPA, and that citizens would also have the ability to file citizen suits to compel enforcement of state plan obligations, under CAA Section 304." [Id. at 17 n.17] Again, coercing a state to have to pass new legislation to impose obligations on entities that are not subject to Section 111 but that can be enforced against not only by the state and federal governments but also by citizens is far beyond the pale of any authority that U.S. EPA could legitimately claim to hold.

For further enforceability guidance, U.S. EPA cites to its "Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans, Appendix F" (July 2012). (hereinafter referred to as Roadmap Guidance) [79 FR 34909 n.283] The Roadmap Guidance describes how a state can incorporate EE and renewable energy policies in a state implementation plan (SIP). The Roadmap offers four pathways, one of which (the Control Strategy Pathway) is recommended if the EE/RE policy or program is to be a federally enforceable control strategy, like the one required under U.S EPA's proposal. [Roadmap Guidance, Page 28-9] The Control Strategy Pathway is described further in Appendix F to the Roadmap. This pathway presents a whole host of problems. For example, U.S. EPA envisions that if the state relies on a RPS policy to meet its performance goal, "such measure could be enforceable against the entities required to purchase the renewable electricity, even if those entities are not responsible for the operation of the electricity generating unit at which the emission reductions are expected to occur." [Roadmap Guidance, App. F, Page F-8] And the RPS policy would have to be permanent: "The impacts of the EE/RE policy and/or program control strategy need to continue through the future attainment year unless it is replaced by another control measure or the state demonstrated in a SIP revision that the emission reductions for the EE/RE policy or program are no longer needed to meet applicable statutory and regulatory requirements." [Id. at F-9] U.S. EPA goes on to acknowledge the likely need for formal agreements between state environmental agencies and the state public utility commission to outline each agency's obligations for implementing the state's EE/RE activities, quantifying their impacts, and including them in the SIP. [Id. at F-6] So such a program would require enforcement obligations against entities not responsible for the operation of EGUs based on EE or RE policies that can never be changed without U.S. EPA approval, and involve the need for various state agencies to coordinate through formal agreements. Again, this scenario is far beyond U.S. EPA's authority.

VI. U.S. EPA Cannot Subject Modified Sources to the Existing Source Rule.

U.S. EPA claims that existing sources that are modified are subject not only to the modified source rule but also continue to be subject to the existing source rule by asserting that Section 111(d) does not speak to what to do with modified sources so U.S. EPA is free to interpret the statute to continue to subject the modified source to Section 111(d). "Because CAA Section 111(d) does not address whether an existing source that is subject to a CAA Section 111(d) program remains subject to that program even after it modifies or reconstructs, the EPA has authority to provide a reasonable interpretation, under [Chevron]. The EPA's interpretation is that under these circumstances, the source remains subject to the CAA Section 111(d) plan." [79 FR 34904] However, Section 111 is not silent about what to do with modified sources.

Modified sources are considered new sources under Section 111, and an existing source that is modified becomes subject to Section 111(b) rather than Section 111(d). Section 111(a)(2) defines a "new source" as "any stationary source, the construction or

modification of which is commenced after the publication of regulations . . . prescribing a standard of performance under [Section 111] which will be applicable to such a source." "Modification" is defined as "any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such a source or which results in the emission of any air pollutant not previously emitted." [Section 111(a)(4)] Any building, structure, facility, or installation which emits or may emit any air pollutant is a "stationary source" under Section 111(a)(3), and any "stationary source" other than a "new source" is an "existing source." [Section 111(a)(6)] U.S. EPA has proposed a new source rule under Section 111(b) at 79 FR 1430 (January 8, 2014), and an existing source rule under Section 111(d) at 79 FR 34830 (June 18, 2014). When an existing source is modified, it moves from being covered by the existing source rule to being covered by the new source rule. That is the whole purpose for Congress defining "new source" to include modifications. The plain language of the CAA distinguishes between an existing source that is modified and so becomes a new source from one that remains an existing source. Otherwise a modified source would be considered both a new source and an existing source, subject to different and potentially conflicting sets of regulations, which is nonsensical and inconsistent with the whole structure and purpose of the Section 111 NSPS program. Ohio EPA refers U.S. EPA to the comments we submitted on the modified and reconstructed source rule.

By defining "new source" to include modifications and defining just what "modification" means, Congress clearly intended a modified source to be treated as a new source and no longer as an existing source. U.S. EPA's interpretation is unreasonable on its face. U.S. EPA's Chevron interpretation is also unreasonable since, according to U.S. EPA logic, unless Congress specifically prohibits U.S. EPA from creating a new and unique interpretation of the CAA, it is acceptable to apply the CAA in any way, manner, or form it so desires. Not only does this interpretation misapply the U.S. Supreme Court *Chevron* decision, it also conflicts with the U.S. Supreme Court decision on U.S. EPA's Tailoring Rule in *Utility Air Regulatory Group v. EPA*, 573 U.S. ___, 134 S. Ct. 2427 (2014).

U.S. EPA tries to justify its position that units in a Section 111(d) plan must remain in that plan for two reasons. First, if units in a Section 111(d) plan left the plan it would disrupt a plan that was integrated to include all of a state's EGUs, such as a trading program. [Id.] But that is exactly why Section 111(d) plans are meant to be source-oriented and only regulate within the unit's fenceline. An existing source that is modified is no longer considered an existing source and must become subject to new source regulations rather than existing source regulations. Second, U.S. EPA is concerned about incentivizing sources to seek to avoid potential discrepancies in the stringency of a Section 111(b) program and a Section 111(d) program. [Id.] But Section 111 is structured to be more stringent to new and modified sources because it is more cost-effective to add controls on new and modified sources than existing sources. Section 111(d) is designed to address existing sources with a less stringent set of requirements. Because U.S. EPA has proposed a total misapplication of Section 111(d), U.S. EPA attempts to backfill with another strained interpretation of the CAA. That is, a "modified

or reconstructed" source is not only a "new" source, but also remains an "existing" source since the existing source rules are more stringent than the modified or reconstructed source rules.

Presumably to be consistent, U.S. EPA further asserts in the existing source rule that this once-in-always-in interpretation must apply to all sources in any source category regulated under Section 111(d), not just to this rulemaking. "It should be noted that this proposal applies to any existing source subject to any CAA Section 111(d) plan, and not only existing sources subject to the CAA Section 111(d) plans promulgated under this rulemaking." [Id. at 34903] Not only is this not allowed under the plain language of Section 111 as discussed above, subjecting all sources that are covered by any Section 111(d) plan to forever be subject to that plan changes how all Section 111(d) programs are to be applied with real substantive consequences for the sources subject to the plans, and is illegal and a retroactive application of a complete regulatory program. Other source categories have no notice that under the proposal for "Carbon Pollution Standards for Modified and Reconstructed Stationary Sources: Electric Utility Generating Units: Proposed Rules" U.S. EPA is proposing this retroactive application of Section 111(d) applicability. This "sleight of hand" rulemaking approach violates the basic tenets of the Administrative Procedures Act (APA) and good government practices.

U.S. EPA is statutorily required to provide adequate notice and opportunity to comment under the APA and the CAA. [5 U.S.C. 553(b) and (c); 42 U.S.C. 7607(d)(3)] More stringent than the APA's general notice and comment provisions, the CAA specifically requires that a notice of proposed rulemaking be published in the Federal Register with a "statement of basis and purpose" that summarizes: "(A) the factual data on which the proposed rule is based; (B) the methodology used in obtaining the data and in analyzing the data; and (C) the major legal interpretations and policy considerations underlying the rule." [42 U.S.C. 7607(d); *see Union Oil v. EPA*, 821 F.2d 678, 681-82 (D.C. Cir. 1987)] These procedures place a premium on transparency, participation of interested parties, and fairness in a deliberative process designed to advance the public interest. *Int'l Union, United Mine Workers of Am. v. Mine Safety & Health Admin.*, 407 F.3d 1250, 1259-60 (D.C. Cir. 2005). Adequate notice and a meaningful opportunity to comment are imperative values in rulemaking premised on the "assumption that notice and comment rulemaking, by virtue of its accessibility to public scrutiny, will achieve rational results." [*Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 547 (D.C. Cir. 1983) (citations omitted)] By applying the once-in-always-in interpretation to past settled Section 111(d) rulemakings, U.S. EPA violates the fundamental principles underlying notice and comment rulemaking.

VII. The Combination of Building Blocks Must be Considered as a Whole and One Part of the Proposal Cannot be Severed from Other Parts.

A state's Section 111(d) plan must establish standards of performance that reflect an "achievable" degree of emission limitation through the application of the "best system of

emission reduction" which has been "adequately demonstrated." [Section 111(a)(1)] Even if U.S. EPA could legitimately determine that the BSER for each state to be a combination of building blocks, U.S. EPA has not demonstrated that such a "system" has been "adequately demonstrated" for each state or that the resulting standards are "achievable" for each state. This point is made clear by the proposal's discussion of severability.

U.S. EPA asserts that if a court invalidates one building block, BSER would consist of the remaining building blocks, meaning that each building block is severable. [79 FR 34892] Yet U.S. EPA repeatedly considers the combination of the building blocks to be a crucial feature that drives the determination of a state's goals: "*Together* the building blocks establish a reasonable overall level of reductions," noting that this amount is "significant and will require effort and adjustments throughout the electricity sector . . . to achieve the state goals based on a *combination* of all four building blocks at the levels specified. . . ." [79 FR 34893 (emphasis added)] U.S. EPA goes on to acknowledge that "a state may demonstrate during the comment period that application of one of the building blocks to that state would not be expected to produce the level of emissions reductions quantified by EPA because implementation of the building block at the levels envisioned by the EPA was technically infeasible, or because the costs of doing so were significantly higher than projected by the EPA." [79 FR 34893] However, because the buckets are severable, if a state falls short in one goal, U.S. EPA assumes they could implement another block more stringently. "[T]he EPA expects that, for any particular state, even if the application of the measures in one building block to that state would not produce the level of emission reductions reflected in the EPA's quantification for that state, the state will be able to reasonably implement measures in other of the building blocks more stringently, so that the state would still be able to achieve the proposed goal." [Id.]

Ohio EPA does not believe the building blocks should be severable. U.S. EPA is attempting to set a state goal based on individual aggressive goals for four building blocks and justifying it as an achievable "best system" of emission reductions. However, if the combination of the four building blocks is the "best system" that has been "adequately demonstrated," severing one or more of the building blocks would result in a system that cannot be considered the "best" or to have been "adequately demonstrated." Interestingly, when discussing severability in the proposed modified and reconstructed source rule that was issued the same day as the proposed existing source rule, U.S. EPA cites to a court case "holding that a regulation was severable because '[t]he severance and invalidation of [the subsection at issue would] not impair the function of the statute as a whole . . . ." [79 FR 34963 n.2 (citing *K Mart Corp. v. Cartier, Inc*., 486 U.S. 281, 294 (1988))] It is no wonder that U.S. EPA does not try to apply the holding of that case to this proposed rule. Because U.S. EPA considers the "best system" to be a combination of the four building blocks, severing one can only be viewed as impairing the function of Section 111(d) as a whole under U.S. EPA's conception of the statute.

Further, U.S. EPA is setting these goals based on what is achievable from a national perspective and not looking at individual state characteristics such as sufficiency of the natural gas pipeline or what heat rate improvements (HRI) have already occurred at specific units. If any single building block is invalidated, the perceived "flexibility" being afforded to states under this approach becomes even more misleading. If any building block is invalidated, U.S. EPA should be required to review the proposal in its entirety to ensure whatever goals remain are still adequately demonstrated to be an achievable system of emission reductions.

Finally, Ohio EPA does not believe U.S. EPA should be declaring the legitimacy of severing different elements of a proposed rule in advance. At the time of action, each element of the rule should be reviewed and only at that time should it be determined the impact of, and therefore, appropriateness of severing portions of a proposed rule. Ohio EPA wonders if U.S. EPA even has the authority to declare in advance that portions of a regulation are severable as this more appropriately should be left for a court to decide.

Technical Concerns

Applicability and Affected Entities

Incompatible Applicability Language

Apart from the legal considerations regarding affected units and entities presented above, Ohio EPA has concerns with the applicability of the proposed rule with regards to affected units. U.S. EPA presents the applicability criteria in this manner [79 FR 34854]:

> "in all other respects would meet the applicability criteria for coverage under the proposed GHG standards for new fossil fuel-fired EGUs (79 FR 1430, January 8, 2014)."

Therefore, U.S. EPA has established that applicability criteria of the proposed rule for existing sources, with the exception of the date of operation or construction commencement, would be the same as those of the proposed rule for new sources. U.S. EPA continues with [79 FR 34854]: [The proposed new source standards] "generally define an affected EGU as any boiler, IGCC, or combustion turbine (in either simple cycle or combined cycle configuration) that"

1. Is capable of consuming at least 250 MMBtu per hour.
2. Gets more than 10% of its heat input from fossil fuels.
3. Sells the greater of 219,000 MW-h and 1/3 of its potential output to a distribution system.
4. Was not in operation/under construction as of January 8, 2014.

In the proposed rule for new units, the relevant applicability criteria are summarized as follows [79 FR 1511]:

1. Steam or IGCC with heat input greater than 250 MMBtu of fossil fuel, and
2. Was constructed for the purpose of supplying and supplies 1/3 or more of its potential output and more than 219,000 MW-h net-electric to a distribution system.

Examination of the relevant subpart of the proposed rule for existing sources [79 FR 34954], however, reveals an inconsistency in the applicability criteria. For steam and IGCC units, the applicability criteria are as follows:

1. Heat input greater than 250 MMBtu of fossil fuel, and
2. Was constructed for the purposes of supplying 1/3 or more its potential output and more than 219,000 MW-h net-electric to a distribution system.

Clearly, the "sells" or "and supplies" criteria are not present in the subpart language for existing sources, yet are present in the preamble language for existing sources [79 FR 34854] and the proposed rule for new sources [79 FR 1511]. This inconsistency is even more apparent when the language regarding combustion turbines [79 FR 34954] clearly includes the sales criteria. This discrepancy does impact units in Ohio and likely in other states, as well. For example, Hamilton Unit 9, ORIS 2917, a 50.6 MW unit, would be excluded from the proposed rule if using the sales criteria, but included if the "constructed for the purposes of supplying" criteria is considered. Ohio EPA strongly urges U.S. EPA to correct this inconsistency within this proposal and to correct these inconsistencies across the three Section 111 proposals (refer to our modified/reconstructed comments). Furthermore, Ohio EPA would like to call U.S. EPA's attention to the inclusion of 25 MW units in the proposed rule and goal setting calculations. Clearly, if these units were intended to supply 219,000 MW-h to the grid, they would need to run 8,760 hours each year. This is not feasible from a technical or physical standpoint, and Ohio EPA urges U.S. EPA to examine the applicability criteria in light of this. Lastly, Ohio EPA does not concur with U.S. EPA's contention that the 25 MW net sales and 219,000 MW-h sales criteria are functionally the same. The examples above adequately demonstrate the difference.

Biomass Inclusion

Ohio EPA has several concerns we our raising in these comments with respect to treatment of biomass-fired units in the proposed rule. With respect to applicability, in the preamble of the proposed rule, it is stated that the rule "in all other respects would meet the applicability criteria for coverage under the proposed GHG standards for new fossil fuel-fired EGUS". [79 FR 34854] However, the proposed rule fails to include language or a provision that would exempt any steam generating unit combusting fossil fuel for less than 10% of its heat input for any three consecutive years. Ohio EPA understands that combustion units not primarily firing fossil fuels

would be limited primarily to wood, agricultural waste, and similar fuels. Thus, failure to include this language would not provide an exemption to certain units using carbon-neutral or near-carbon-neutral biomass fuels. This exemption is clearly defined in the proposed rule for new sources [79 FR 1446]. Ohio EPA believes that none of this would be necessary if U.S. EPA would follow the CAA language. Nevertheless, if U.S. EPA chooses to move forward it would be appropriate to add this type of language, as it would exempt biomass and other renewable resource generation, regardless of classification as either a steam boiler or combustion turbine, that clearly only use fossil fuel for startup and maintenance activities. Ohio EPA urges U.S. EPA to reconsider these criteria, and to maintain consistency in applicability criteria across the various unit types and amongst all three proposed rules.

Modified and Reconstructed Issues

U.S. EPA is proposing that an existing source that becomes subject to Section 111(d) will continue to be subject to those requirements even after it undertakes a modification or reconstruction. [79 FR 34903] U.S. EPA is proposing this "once-in-always-in" policy for modified and reconstructed sources recognizing that the type of integrated system wide regulatory proposal that has been proposed would face serious implementation issues if affected sources were no longer subject to these plans. As discussed in the legal section of our comments, Ohio EPA does not agree with this "interpretation" nor its extension to any existing source subject to any Section 111(d) plan.

However, Ohio EPA is concerned, due to the integrated nature of this proposal, implications if an affected EGU has a change that alters their applicability under this proposal (specific threshold criteria is identified under 40 CFR 60.5790). What if a source that is subject to the rule later falls below the applicability criteria and is no longer considered an affected unit? Surely U.S. EPA cannot also require these units are "once-in-always-in." How will goals and plans be affected if a unit has changes that create a situation where affected units fall in or out of this rule based on the applicability criteria? There must a mechanism in place for adjustments to the state-specific goal and state plans to account for this possibility.

Under the modified and reconstructed proposal, U.S. EPA solicited comment on a multitude of additional changes to the applicability under the applicable subpart regulations. For example; eliminating the additional 219,000 MW-h sales criteria for stationary combustion turbines; revisions to the definition of ''potential electric output'', ''net electric output'', and "steam generating unit"; whether a multiplication factor, such as 1.1, should be applied to the design net efficiency to determine the percent sales applicability criteria; multiple alternatives for low capacity factor stationary combustion turbines and/or simple cycle combustion turbines (establish a separate numerical limit for each; exempt all such units; set a higher capacity factor threshold applicable to all simple cycle turbines; establish a variable capacity factor establishing an annual tonnage cap CO2 emission limitation for less efficient units).

In combination with the proposed changes to applicability under the proposed new source rules and under this proposal, Ohio EPA is finding it difficult to determine exactly what U.S. EPA is proposing. In many cases it is difficult to determine if U.S. EPA is proposing these changes apply to a combination of, or only to, modified/reconstructed sources, new sources, existing sources, only with respect to GHG emissions, with respect to other emissions, or with respect to other Section 111 categories. Most importantly, it is difficult to grasp what the full impact of the changes will be within all of this confusion. Undoubtedly, this will only lead to interpretation and consistency issues as these rules begin to be implemented. It is imperative that U.S. EPA determine a clear, consistent, rational, and defensible set of applicability criteria across the three proposed Section 111 rules.

Another proposed change introduced in the modified and reconstructed proposal is to amend the definition of "steam generating unit" to include ''plus any integrated equipment that provides electricity or useful thermal output to either the affected facility or auxiliary equipment'' in place of the existing language ''plus any integrated combustion turbines and fuel cells.'' Further the new definition would include "….plus any integrated equipment that provides electricity or useful thermal output to either the affected facility or auxiliary equipment.'' [79 FR 34979] U.S. EPA states this is in order to avoid circumvention of the intent of the emission standards (e.g., by having auxiliary equipment provide steam to the EGU to increase the output of the EGU and not including the CO2 emissions in determining the emission rate). We fear U.S. EPA may be implying emergency generators could also become subject to these rules. Also proposed was to clarify that net-electric sales, for applicability purposes, includes electricity supplied to other facilities that produce electricity to offset auxiliary loads. [79 FR 34972] Ohio EPA believes these concerns are not appropriate and overly complicated. There is the potential that the proposed rule for modified and reconstructed units would include units that function as startup boilers but are not used for generating electricity; units that may not be designed for efficiency but for relatively quick startup since they are used infrequently. These are the types of circumstances where Ohio EPA believes issues will arise simply due to the complexity of these proposed changes. Ohio EPA has significant concerns that upon finalization, such language may also be included for existing units under this proposal. Again, Ohio EPA urges U.S. EPA to propose clear, consistent, rational, and defensible applicability criteria across the three proposed Section 111 rules.

Ohio EPA further advises U.S. EPA to review Ohio's comments submitted to U.S. EPA on October 16, 2014 regarding the Section 111(b) proposal for modified and reconstructed sources.

Codifying

U.S. EPA is proposing to combine the two existing categories, steam-generating boilers and combustion turbines, into a single category for purposes of facilitating emission trading among sources in both categories. U.S. EPA is also proposing codifying all of the proposed requirements for the affected EGUs in a new subpart

UUUU of 40 CFR Part 60 because the emission guidelines the EPA is establishing do not vary by type of source. [79 FR 34855] This same approach was proposed originally in the withdrawn April 13, 2012 proposal for new units. Ohio EPA will reiterate the same comments submitted previously concerning this aspect of the proposal. This reclassification would represent a significant departure from precedent in establishing NSPS, which has in the past been based on what has been achieved in practice, in that several different types of equipment are combined under a single standard based on their common industry. This is U.S. EPA clearly picking a "winning fuel", natural gas over a "losing fuel", coal. This type of approach goes beyond U.S. EPA historical precedent and regulatory authority. Section 111(b)(5) forbids U.S. EPA from restricting owners and operators to a particular technology to meet a standard of performance.

Building Blocks

U.S. EPA states they have "estimated *reasonable* rather than maximum possible implementation levels for each building block in order to establish overall state goals that are achievable." [79 FR 34858 (emphasis added)] Ohio EPA disagrees. In many cases, U.S. EPA may have proposed un-achievable goals.

Ohio EPA understands the building blocks utilized by U.S. EPA are not prescriptive nor are states required to implement these measures exactly in the individual state plans. However, by using such a broad scope of emission reduction measures and basing EE and RE targets on existing state portfolios, Ohio EPA believes that most states will have no option but to have state plans very similar to the building blocks approach. This broad-scope approach by U.S. EPA has not increased the promised flexibility available to the states, but has left states with little room to select compliance paths consistent with what is realistic and achievable in their state. Therefore, it is necessary for Ohio EPA to examine each building block in turn and assess those individual targets as if each would be incorporated, with some minor variation, into a state plan.

Building Block 1: Heat Rate and Efficiency Improvements

U.S. EPA is proposing BSER for Building Block 1 as a 6% HRI, 4% through adoption of "best practices" and 2% through adoption of "equipment upgrades." U.S. EPA states they recognize potential improvements at individual EGUs could be higher or lower. U.S. EPA estimates the potential for average CO2 reductions, applicable to the fleet of coal-fired steam EGUs as a whole, of 1.3 to 6.7 % through adopting "best practices" and an additional average of up to 4% through "equipment upgrades". U.S. EPA estimates "that CO2 reductions of between 4 and 6 % from overall heat rate improvements could be achieved *on average across the nation's fleet.*" [79 FR 34856 (emphasis added)] Ohio EPA has serious concerns with these assumptions, as outlined below.

The 6% HRI proposal is based on two main drivers [79 FR 34859-34860]. First, U.S. EPA noted several studies examined opportunities to improve heat rate. The lone

study U.S. EPA chose to use as part of the basis is a 2009 Sargent & Lundy bottom-up engineering approach study that analyzed HRIs possible from both best practices and equipment upgrades. Based on this study, U.S. EPA determined "implementation of *all* identified best practices and equipment upgrades at a facility could provide total heat rate improvements in a range of approximately 4 to 12%." Second, U.S. EPA analyzed historic heat rate data identifying "several "data apparent" instances where an EGU's heat rate experienced a substantial improvement in a short time… *presumably* because of equipment upgrades installed…. that was then sustained." [79 FR 34860 (emphasis added)] U.S. EPA noted these HRIs ranged from 3 to 8%.

Sargent & Lundy

With respect to the first basis, U.S. EPA used one single study, the Sargent & Lundy Study (S&L Study), to determine the type and degree of HRIs that are possible to be achieved nationwide. This is not sound science. After reviewing the aforementioned study, Ohio EPA has determined that the purpose was to examine potential HRI opportunities and potential heat rate reductions over a wide range of sources. Ohio EPA finds that the methodology and results of the study very general and cannot be applied to every EGU. What the study does not do is present an analysis of the application of the recommended improvement opportunities, nor does the study present measured heat rate reductions after the application of suggested/proposed improvement methods. There is no empirical data demonstrating the real-world application of such measures; such an undertaking was simply not the purpose of the study. Use of the S&L Study as a foundation for demonstrated HRIs is an over-simplification of the complexities and variability in coal plant design and function. In many cases, the potential projects referenced for HRIs are not functionally applicable to specific units. For example, replacing economizers for better performance could cause additional problems such as: fouling issues can arise in finned tube designs depending on type of coal used; corrosion, ash deposition and increased use of preheaters are needed for reduced exit temperatures which increase heat-rate; and lower temperatures sent to SCRs can sacrifice SCR efficiency. Numerous examples of these complexities under real-world conditions is identified in Appendix B.

Ohio EPA therefore believes that the use of such a study to propose uniform application of heat rate reductions nationwide is not an appropriate approach. This is particularly true when the totality of the individual building blocks represent, according to U.S. EPA, the BSER. Ohio EPA believes that the BSER can only be a demonstrated methodology based on measured data and analyzed on a unit-by-unit basis. Ohio EPA understands that many, if not most, of the measures proposed in the S&L Study could be classified as maintenance activities with no long-term impact on heat rates. Ohio EPA understands that the majority of utilities operating coal-fired EGUs in the State of Ohio conduct regular maintenance activities similar to those proposed in the S&L Study, and maintain strict best-practice policies. In addition, after MATS triggered shutdowns of older units, Ohio's fleet will consist of upgraded and efficient units for which most potential upgrades have already been made. Furthermore, U.S. EPA does not recognize that HRIs are likely to not be cumulative,

and certainly not correlated on a one-to-one basis with the CO2 rate intensity, as is presented in the Goal Setting TSD. Finally, the cost estimates are presented in the S&L Study with the following caveat, "The costs should not be used as a basis for project budgeting or financing purposes" rather S&L recommends "site-specific evaluations and cost analyses based on actual market conditions for any and all required equipment, material and labor at the time of the project" should be performed. However, U.S. EPA used these costs as part of their basis of cost compliance noting that the "most detailed estimates of the average costs required to achieve the full range of heat rate improvements come from the 2009 Sargent & Lundy study." [79 FR 34861]

Costs were based on 2008 equipment purchases when under this proposed rule many sources would be implementing these improvements during the 2020 to 2030 compliance period. Ohio EPA believes that this represents a further misuse of the S&L Study and the data contained therein.

The S&L Study alone was used to inform the ability for sources to achieve HRIs through equipment upgrades. U.S. EPA used the *estimated* ranges of potential HRI achievable through a variety of equipment upgrades identified in the S&L Study. They were screened into a subset to identify what U.S. EPA considers to be a reasonable subset of equipment upgrades that would generally be beyond the scope of investments they would expect to be made for purposes of achieving the best-practices HRIs. Based on the average of the study's ranges of potential HRIs from implementation of this full subset of HRIs, it is expected any single EGU could achieve an aggregate HRI of 4% from equipment upgrades alone. However, U.S. EPA recognizes that this may overstate the opportunity across all EGUs because some EGUs may have already implemented some of these upgrades. U.S. EPA is therefore proposing on average across the fleet of affected EGUs, the "technical potential" for a 2% HRI improvement opportunity due to equipment upgrades. U.S. EPA is also considering increasing this figure up to four percent.

Ohio EPA disagrees. U.S. EPA did not perform any analysis to determine if there is a true "technical potential" of 2% HRI from equipment upgrades that is cost-effective for each individual EGU. U.S. EPA is assuming "technical potential" at each individual unit based on using an assumed average from one inappropriately applied study. Even U.S. EPA acknowledges in the proposal for modified and reconstructed sources that "upgrades could provide a 4% HRI "if *all* were applied on an EGU that has *not already made those upgrades*." [79 FR 34987 (emphasis added)] Further, under the modified and reconstructed proposal U.S. EPA contemplates if there are circumstances where inclusion of the 2% reduction is not appropriate, for example if it's unnecessary or not reasonable due to recent upgrades. [79 FR 34987] Under the modified and reconstructed proposal U.S. EPA contemplates recent upgrades may make a 2% reduction from HRIs unreasonable yet that same consideration is not afforded under this proposal. Under the modified and reconstructed proposal U.S. EPA contemplates whether a case-by-case basis evaluation to determine the rate should apply. [79 FR 34974] Ohio EPA whole heartedly believes if U.S. EPA intends to implement the Section 111(d) proposal in a manner in which it has been proposed

that the state should be evaluating units on a case-by-case basis. The only way to determine true "technical potential" for HRIs is a unit-by-unit analysis based upon consideration of historical upgrades.

Sargent & Lundy, in a letter dated October 15, 2014 [Appendix C], clarified the conclusions in their study with respect to U.S. EPA assumptions under this proposal. The Sargent &Lundy letter reiterates and reinforces many of the conclusions drawn by Ohio EPA in our comments above and below. Specifically, Sargent & Lundy clarified the report "does not conclude that any individual coal-fired EGU or an aggregation of coal-fired EGUs can achieve 6% HRI or any broad target, as estimate by EPA." They acknowledge the report is mostly based on publicly available data, their experience, and that the case studies showed "not all of the examined alternatives were feasible….due to a number of factors, including plant design, previous equipment upgrades, and each plant's operational restrictions." Sargent & Lundy clarify there are limitations for HRIs and they depend on "site-specific conditions" such as fuel type and unit type and "must be evaluated on a case-by-case basis."

Sargent & Lundy also make the point in their October 15, 2014 letter that the improvement ranges described in the report "were estimated at a conceptual level", "were not based on detailed site-specific analysis," and "verification of actual heat rate improvements was not made to determine whether any of the strategies were implemented and what actual heat rate improvements were realized."

Furthermore, Sargent & Lundy emphasized that "combinations of strategies to achieve heat rate improvements do not always provide heat rate improvement reductions equal to the sum of each individual strategy's heat rate improvement because many of the technologies affect, or are depend upon, plan operating variables that are inter-related. Therefore, case-by-case analyses should be conducted to determine whether the incremental heat rate improvement through the application of multiple strategies is economically justified."

The very fact that the authors of the study U.S. EPA based the majority of its HRI goal-setting methodology upon refute U.S. EPA's assumptions and reliance on said study is powerful and irrefutable evidence that U.S. EPA's methodology is flawed and unsuitable for proposal as part of a BSER.

Historic Heat Rate Data

With respect to the second basis, U.S. EPA worked with the hourly data (converted to hourly gross heat rate) reported by approximately 900 individual coal-fired steam EGUs over the period from 2002 to 2012 to determine the degree of HRI that can be achieved by best practices. Specifically, this data analyzed variability in order to evaluate the consistency with which individual EGUs maintained their hourly heat rates over time. U.S. EPA said they expected, and confirmed, that a certain degree of short-term heat rate variability was caused by factors beyond operators' control,

notably variation in hourly ambient temperature and hourly load. Therefore, U.S. EPA attempted to control for variation in those factors by grouping the data for each EGU into subsets corresponding to ranges of hourly ambient temperatures and hourly load levels. U.S. EPA assumed that between 10% and 50% of the deviation from top decile performance in each subset of hourly heat rate observations within defined ranges of temperature and load could be eliminated through adoption of best practices, the result is a corresponding estimated range of 1.3% to 6.7% *technical potential* for improvement in the average heat rate of the *entire* fleet of coal-fired EGUs. Based on this analysis, U.S. EPA believes "a reasonable estimate for purposes of developing *state-specific* goals is that affected coal-fired steam EGUs on average could achieve a four percent improvement in heat rate through adoption of best practices to reduce hourly heat rate variability". This corresponds to the elimination, on average across the fleet of affected EGUs, of 30% of the deviation from top-decile performance. In addition, U.S. EPA is also considering the use of estimates up to 6%, reflecting elimination on average of 50% of the deviation from top-decile performance. [79 FR 34860 (emphasis added)]

Ohio EPA acknowledges that U.S. EPA conducted an extensive analysis of heat rates across a large majority of the nationwide coal-fired fleet. However, there is a significant disconnect between that study and the proposed nationwide HRI. This is acknowledged by U.S.EPA:

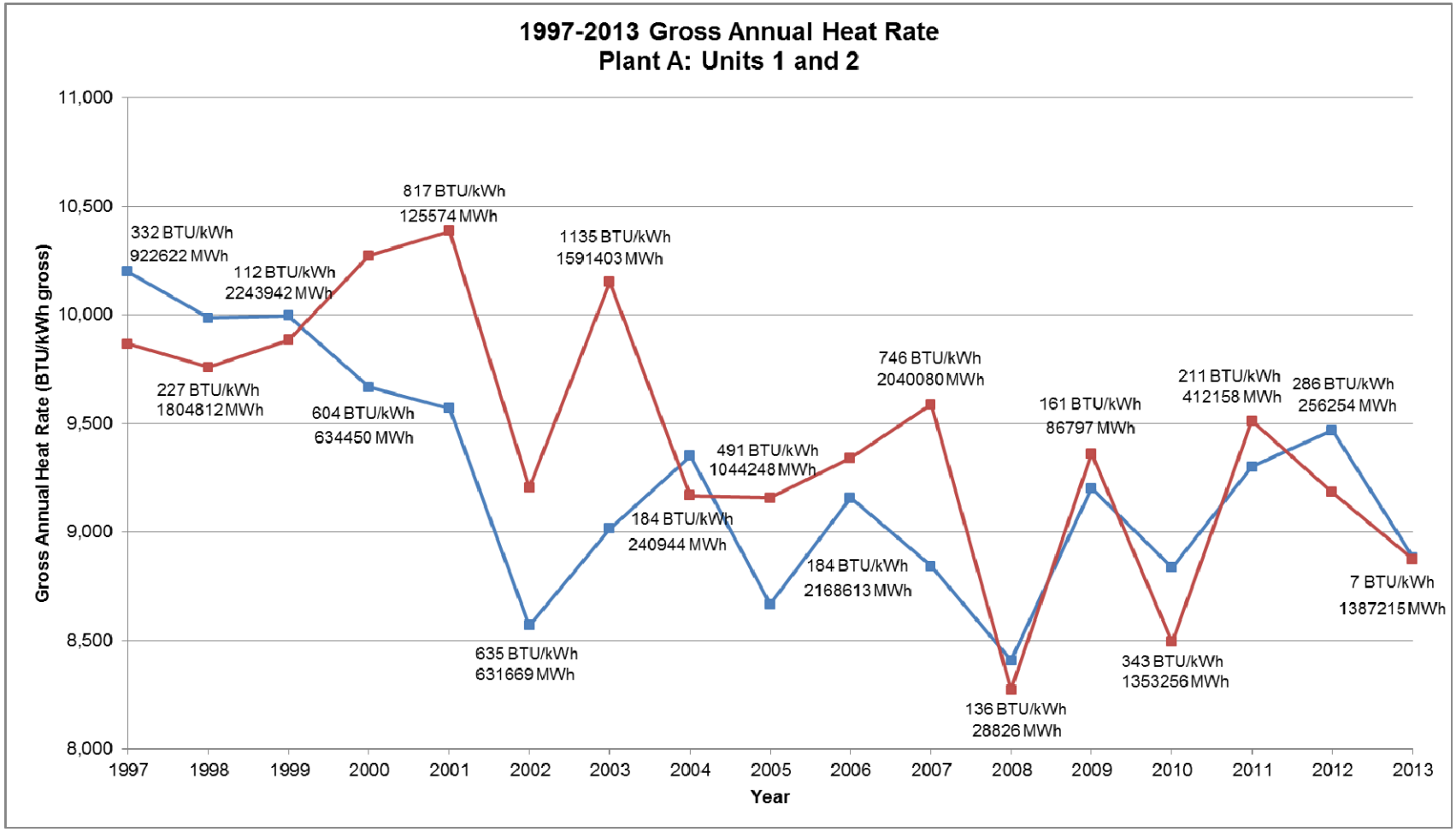
> The proviso is important to this analysis because the EPA expects that a significant fraction of the coal fleet has already applied some or many of the available HRI methods. The EPA does not have sufficient site specific information to accurately estimate what percentage of the fleet has adopted various HRI methods, nor how effectively, and is not aware of any other investigator having sufficient information. HRI potential can therefore not be estimated at this time through analysis of the current equipment configurations of the coal steam-EGU fleet. The EPA therefore analyzed 11 years of historical heat rate data and the literature on HRI methods, as discussed earlier in this TSD, to estimate that the U.S. coal-steam EGU fleet might reasonably be expected to reduce its annual average gross heat rate by about 6%. [GHG Abatement Measures TSD, pages 2-36 to 2-37]

Ohio EPA understands that the analysis conducted by U.S. EPA was extensive and comprehensive, and adequately demonstrated that there is a great deal of variability in heat rates across the coal-fired fleet, and indeed at individual units. This does not adequately demonstrate that a 6% HRI is feasible and cost effective at the unit-level, nor that the variability not associated with ambient temperature and load is under the control of the operator. Indeed, the study assumed that any variability in heat rate not associated with load and ambient temperature could be mitigated through capital investments and best practice operational methods without further justification. It also ignores that variability, or quick sustained jumps, in heat rates can be caused by other factors. U.S. EPA "presumption" that the "data apparent" instances where an EGU's heat rate experienced a substantial improvement in a short time was due to

equipment upgrades is without any technical basis and actual knowledge of the cause of those HRIs. Ohio EPA understands that some quick, sustained HRIs could result from improved monitoring equipment, optimization of control equipment, enhanced air-flow awareness programs, and a variety of other factors not directly attributable to equipment upgrades.

Ohio's Analysis

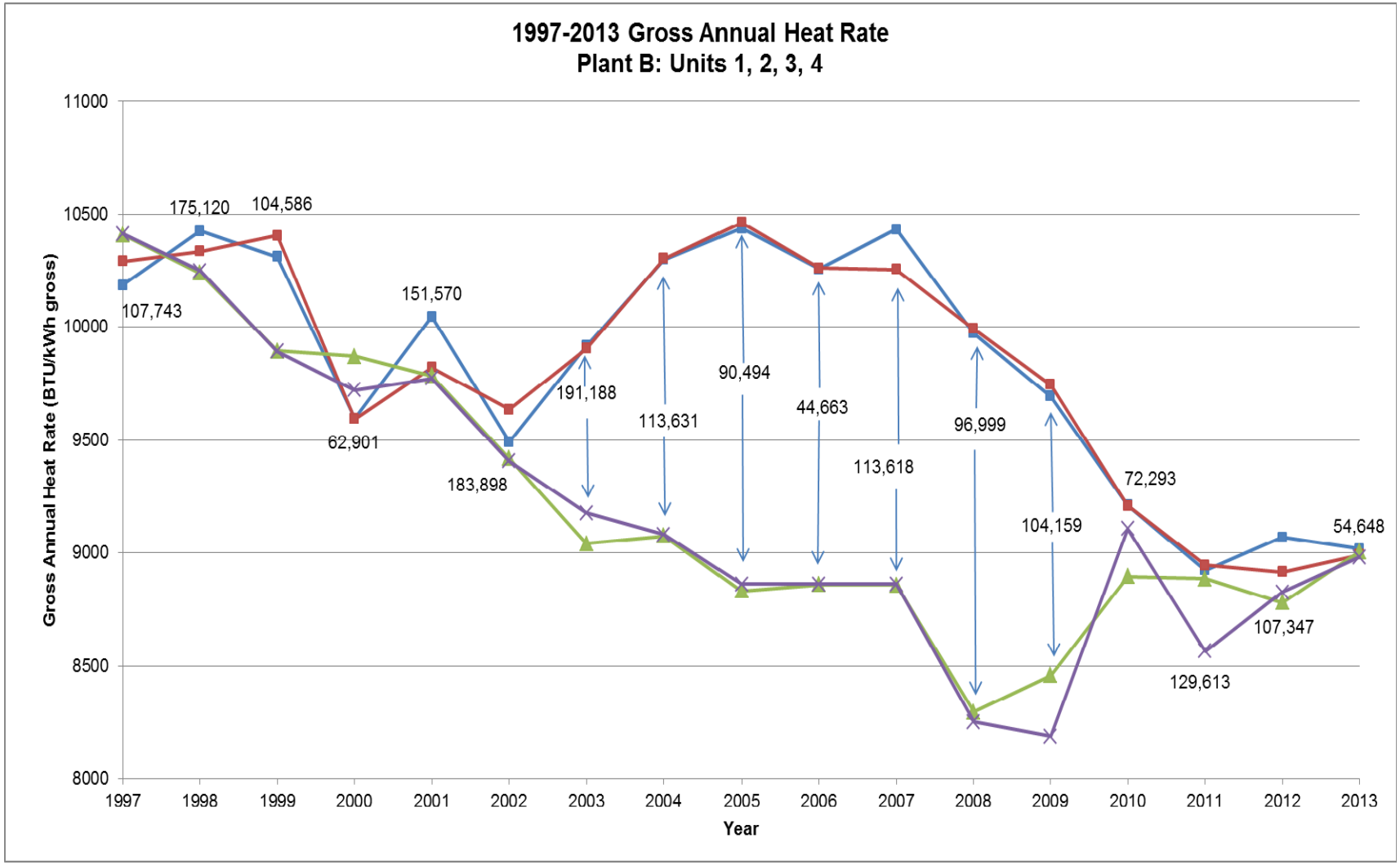
To examine U.S. EPA's assumptions concerning the influence of ambient temperature, load, and operator practices on heat rate, Ohio EPA compiled gross generation, heat input, and operating time data for coal-fired units in Ohio, years 1997 to 2013. [Appendix D] From this dataset, Ohio EPA selected several "sister" units. That is, units of the same design and capacity with identical cooling systems and control measures, operating at the same facility. Ohio EPA, via outreach to the operators of these units, has confirmed that these units also burn the same fuels and are subject to the same maintenance practices. In selecting "sister" units of this nature, Ohio EPA believes that the influence of ambient temperature can largely be ignored when comparing these units side-by-side. Furthermore, Ohio EPA understands the units selected are maintained using best-practice methodologies, have identical operators, and utilize the same fuel. These data for Plant A, Units 1 and 2, are shown below. It should be noted that Ohio EPA recognizes that ambient temperature and capacity factor are significant controlling factors in the heat rate of a coal-fired EGU, and is not attempting to present arguments to the contrary. Ohio EPA does attest that other variables, including those well beyond the control of best-practices and maintenance, have influence, as well. Thus, when establishing HRIs as part of a BSERs, U.S. EPA should consider additional variables beyond those two, and recognize fully that much of the variation in heat rate is not under the control of the operator.


1997-2013 Gross Annual Heat Rate
Plant A: Units 1 and 2
Gross Annual Heat Rate (BTU/kWh gross)
11,000
10,500
10,000
9,500
9,000
8,500
8,000
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Year
332 BTU/kWh
922622 MWh
112 BTU/kWh
2243942 MWh
817 BTU/kWh
125574 MWh
1135 BTU/kWh
1591403 MWh
227 BTU/kWh
1804812 MWh
604 BTU/kWh
634450 MWh
635 BTU/kWh
631669 MWh
184 BTU/kWh
240944 MWh
491 BTU/kWh
1044248 MWh
184 BTU/kWh
2168613 MWh
746 BTU/kWh
2040080 MWh
136 BTU/kWh
28826 MWh
161 BTU/kWh
86797 MWh
343 BTU/kWh
1353256 MWh
211 BTU/kWh
412158 MWh
286 BTU/kWh
256254 MWh
7 BTU/kWh
1387215 MWh

Plotted in the graph above are the annual heat rates for each of the two units. Each label indicates the difference in heat rates and the difference in gross generation between the units at each data point. Ohio EPA would direct U.S. EPA's attention to several points in these data. Firstly, in 1999, there is a 112 BTU/kW-h difference in heat rate and a 2,243,942 MW-h difference in gross generation. Despite the large difference in generation (load), there is very little difference in heat rates. In contrast, 2007 data shows a similar difference in generation, 2,040,080 MW-h, with a substantially greater difference in heat rate, 746 BTU/kW-h. Discounting the effects of ambient temperature, and considering that both units are subject to the same best practices and identically engineered, it is difficult to ascribe these differences to the operator alone. Indeed, it is very much possible that the difference in heat rates despite similar generation cannot be attributed to a known variable or set of variables at all.

Examination of years 2003 and 2001, which show the two largest heat rate differences during the data period, 1135 BTU/kW-h and 817 BTU/kW-h, respectively, is also revealing. In 2003, the year with the largest heat rate difference between these units, the difference in generation is 1,591,403 MW-h, or 1.6 times the average difference in annual generation. In 2001, the difference in heat rates is 817 BTU/kW-h, but the difference in generation is approximately 8 times less (125,574 MW-h) than the average (998,404 MW-h). If the years with the two smallest differences in heat rate are considered, 2013 and 1999, a similar phenomenon is observed. In 2013, in which the difference in heat rate was 7 BTU/kW-h, the difference in generation was 1,387,215 MW-h, approximately 1.4 times the average. In 1999, the difference heat rate was 112 BTU/kW-h, with a 2,243,942 MW-h difference in generation, more than twice the average generation difference. Again, discounting the effects of ambient temperature due to the units being in the same location, considering the similar operational methods and practices followed, and the wide variation in generation, it is difficult to rationalize that these observations can be ascribed to variables directly controllable by the operator.

The second dataset analyzed by Ohio EPA comprises four "sister" units, for the period 1997-2013. As with the first dataset, annual heat rates are plotted for each of the four units. The labels, in this case, represent the standard deviation of the generation for each year instead of the absolute difference. The standard deviation, in this case, was deemed adequate to express the variability amongst the four units.


1997-2013 Gross Annual Heat Rate
Plant B: Units 1, 2, 3, 4
Gross Annual Heat Rate (BTU/kWh gross)
Year
11000
10500
10000
9500
9000
8500
8000
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
175,120
104,586
107,743
151,570
62,901
183,898
191,188
113,631
90,494
44,663
113,618
96,999
104,159
72,293
129,613
107,347
54,648

Ohio EPA would direct U.S. EPA's attention to years 2003 through 2009. During this period, there were significant heat rate differences. This period also encompasses both the largest (2004) and smallest (2006) variability in annual heat rates, 191,181 MW-h and 44,663 MW-h, respectively. Examination of 2002 and 1998 data, those years closest in their magnitude of generation variability to 2003, demonstrates that the heat rates differences are relatively small. If it is considered that these units are subject to the same operational and best-practices measures and discounting ambient temperature effects due to the colocation of the units, it is difficult to explain the variation in heat rates observed from generation alone. A similar phenomenon is observed when comparing 2004 data to years 2013 and 2000. In 2013 and 2000, heat rates are very similar at all four units, yet 2004 data shows the lowest variability in generation with a relatively large spread in heat rate amongst the four units.

In addition, Ohio EPA strongly believes that the statistical analysis conducted by U.S. EPA should not have included those units which will be shutting down prior to the beginning of the interim compliance period and that the inclusion of these likely inefficient units introduced a strong conservative bias to the analysis.

Ohio EPA believes that the results of this statistical analysis of gross heat rate were inappropriately applied to derive net heat rate outcomes. This neglects the fact that much of the coal-fired fleet, in particular those remaining operational 2016 and beyond, will be well controlled and that these controls impose an auxiliary load that degrades the net heat rate of a unit.

Ohio EPA believes that U.S. EPA failed to account for other variables in both the available database and the subsequent analysis that further call into question the results of U.S. EPA's analysis. Firstly, examination of the dataset reveals errors that should have been filtered out prior to the analysis, including gross efficiencies at or near 42%, which Ohio EPA understands is not physically possible for even the most efficient coal-fired boilers. U.S. EPA binned the data based on a 10% capacity factor band. While such an approach does serve to eliminate some variability, the 10% band in capacity factor can represent up to a 4% difference in heat rate. To Ohio EPA's knowledge, U.S. EPA did not attempt to filter or eliminate data during periods in which controls were being installed, periods when fuel switching had occurred, and periods of testing, for example, new environmental controls. These variables can significantly and temporarily degrade the heat rate of a particular unit well outside of its normal operating conditions.

Finally, and most importantly, U.S. EPA made no attempt to identify and correct for in its statistical analysis those HRI measures that have already been implemented or installed. Although stated in the GHG Abatement Measures TSD that U.S. EPA recognizes that some of these measures have already taken place, the statistical analysis performed ignores this. Ohio EPA believes that this is a major oversight, and that to understand what is possible beyond HRIs already made at the existing coal-fired fleet U.S. EPA must conduct a thorough engineering study of the coal-fired fleet and rely on measured HRI data.

Based on these results, it is clear that if a statistical analysis is to serve as the basis for setting national HRI goals, U.S. EPA must consider more than ambient temperature and capacity factor, account for past HRI measures, limit heat rate variability within the capacity factor bins, and recognize that some variability cannot be attributed to any known variable. To that end, Ohio EPA believes that a statistical analysis is not the appropriate approach to the setting of HRI goals. Instead, unit-specific engineering studies of past HRI projects with resultant measured HRIs is the only way to determine potentially feasible improvements. This should be informed by what HRI projects have already been completed at each individual unit and the status of best-practices at each individual unit. It is difficult for Ohio EPA to reconcile that U.S. EPA has proposed HRI goals for a mature coal fleet without considering what projects and best-practice measures have already taken place with the "demonstrated technology" aspect of setting BSER.

Region 7 Heat Rate Improvement Study

U.S. EPA also cites the results of a HRI study provided by U.S. EPA Region 7 for seven coal-fired units with details on capital upgrades and maintenance activities and measured HRIs. [GHG Abatement Measure TSD, Page 2-32] U.S. EPA states these activities led to anywhere from a 0.25 to 3.5% HRI at the seven plants. Examination of this data reveals that the majority of demonstrated, measured HRIs at the seven coal-fired power plants are characterized directly by Region 7 as "returning unit performance to original design performance." Thus, these measures are maintenance activities and cannot be adequately characterized as permanent HRIs. The effects of these activities degrade over time. Sargent & Lundy acknowledge in their October 15, 2014 letter that "the performance of some of the evaluated heat rate improvement strategies degrade over time, even with the best maintenance practices. Therefore, depending on the strategy employed or the technology installed to reduce heat rate at an existing coal-fired EGU the unit heat rate initially obtained may increase over time." [Appendix C]

Ohio EPA understands via stakeholder outreach that the regular maintenance during a planned boiler/generator outage is done to restore, as much as possible, the unit to its original design performance. The assumption that these activities are not already occurring universally across the existing coal-fired fleet is simply not appropriate. Furthermore, the Region 7 study reveals that capital improvements were limited to turbine efficiency upgrades and variable frequency drives. The largest HRI resulting from these capital expenditures was 1.83%. Ohio EPA understands that the effects of variable frequency drives are realized primarily when the unit is cycled, and have very little impact on heat rate for base-load serving units. Ohio EPA concludes that U.S. EPA is not giving the results of the available measured HRI studies enough weight when setting a nationwide goal, nor does Ohio EPA believe that U.S. EPA considered whether such measures and practices have already been undertaken or are a part of routine maintenance activities at individual units.

In reviewing the available heat rate materials provided by U.S. EPA in support of the proposed rule, Ohio EPA could not find an instance of HRI projects demonstrating measured net HRIs of 6% or better. Indeed, the results are considerably less so when those activities considered maintenance or best practice are eliminated due to their temporary nature and the likelihood that these activities and practices are already being conducted. Even Sargent & Lundy acknowledge based on their case studies "it appears that most of the utilities are employing best operational and maintenance practices" and "it appears that significant further reduction in heat rate, such as that assumed by the EPA, may not be feasible." [Appendix C]

Gross Generation

Ohio EPA is concerned with several aspects of the analysis method implemented by U.S. EPA when setting HRI goals. Of major concern is the use of gross generation in the analysis. This indicates to Ohio EPA that the costs and pirate loads associated with environmental control equipment were not considered in the heat rate efficiency analysis. This is a major oversight. Ohio EPA understands that environmental controls require a substantial amount of load to operate, significantly worsening the heat rate and efficiencies of well-controlled coal-fired power plants relative to uncontrolled units. Ohio EPA understands also that, after announced and planned retirements, there will be very few, if any, uncontrolled coal-fired units operating in Ohio after 2016. As with other building blocks, blanket goal setting based on national averages does not work for Ohio's coal-fired fleet, which is both efficient and well controlled. Ohio EPA strongly urges U.S. EPA to examine net generation and heat rates, with consideration given to the environmentally favorable outcomes of well-controlled coal-fired generation.

Ohio's Analysis

Ohio EPA conducted an analysis of heat rates across its coal-fired fleet for years 1997-2013. [Appendix D] To enable a direct comparison of heat rate values put forth by U.S. EPA, Ohio EPA considered gross generation and heat input from the Clean Air Markets Database. Note that Ohio EPA disagrees with the blanket application of HRI targets based on gross generation, with no consideration for environmental controls. This evaluation was done for purely demonstrative reasons. Firstly, examination of Ohio's coal fleet reveals that annual heat rates across the fleet are highly variable. Given the number of variables which may influence heat rates, among them load, short and long term demand, fuel prices, and others, it is difficult to pinpoint which variables contribute most significantly to this variability. What is apparent is that heat rates improved markedly from 1997 to 2012. The most significant improvements are seen in the early years of deregulation in Ohio, between 1999 and 2002. Heat rates during this time improved 4.4%, from 10,104 BTU/kW-h to 9661 BTU/kW-h. Secondly, year-to-year variation in heat rates range from less than 1 BTU/kW-h to 630 BTU/kW-h. This clearly indicates to Ohio EPA that heat rates are strongly influenced by a great

number of variables and should not be considered a fixed value. Ohio EPA strongly encourages U.S. EPA to reevaluate this variability, examine potential HRIs in light of past improvements, and consider the differences in heat rates and profit motives between regulated and deregulated power markets.

Ohio EPA's analysis reveals that, while not linear, coal-fired heat rates have decreased approximately 21 BTU/kW-h per year since 1997 and continue to drop. Ohio EPA believes that much of this improvement is the result of increasing deregulation and competition in Ohio's power market, which provides strong profit motives to utilities to operate as efficiently as possible. In 2013, Ohio coal-fired utilities had an average heat rate of 9,464 BTU/kW-h. This heat rate demonstrates clearly that Ohio's fleet is highly efficient, largely due to effects of deregulation, which began in 2001 and are continuing to expand. Furthermore, Ohio EPA estimates that after the retirement of approximately 30 coal-fired units in the state by 2016 due to the MATS, the average heat rate (gross) of Ohio's fleet will be approximately 9,287 BTU/kW-h. Ohio's coal-fired fleet will represent a fleet of highly controlled and efficient units. It is concerning to Ohio EPA that the proposed rule will not enable states to take credit for significant HRIs due to the shutdown of older, less efficient units. For Ohio, this would represent a HRI of approximately 5.4%, based on 17 years of heat rate data. These shutdowns also represent substantial reductions in CO2 emissions. Ohio EPA strongly urges U.S. EPA to consider how states can take credit for early adoption and shutdown measures taken after 2005, the year U.S. EPA is using as a baseline for 30% in CO2 emission reductions.

Pre-2012 HRIs and Retirements

Ohio EPA is equally concerned that HRI measures made at the coal-fired utilities prior to 2012 cannot be considered and are not taken into account by U.S.EPA. Ohio EPA would again stress that the coal fleet in Ohio is highly efficient when compared to the nationwide coal fleet. Ohio EPA examination of gross heat rate data for the nation-wide coal-fired units, using data available from the Clean Air Markets Database showed of the top 10% of units in terms of efficiency (88 units), Ohio utilities represented 13 of these, or 15%. [Appendix D] Similar representation was observed in 2013 data. Nationwide in 2012, gross heat rate was 10,352 BTU/kW-h. Although Ohio utilities had 19 units with heat rates greater than this average, 11 of those units are to retire in 2015. Ohio EPA urges U.S. EPA to develop options that would allow states to take credit for these retirements.

In U.S. EPA's GHG Abatement Measures TSD [Page 2-18], it is stated that the gross heat rate of the nationwide study group is 9,754 BTU/kW-h. Following U.S. EPA's goal setting procedure, a 6% reduction in this value would yield a reduced nationwide gross heat rate of 9,169 BTU/kW-h. Ohio EPA's analysis demonstrated that the 2001 to 2012 average gross heat rate of Ohio's coal-fired fleet is 9,788 BTU/kW-h. Accounting for shutdowns due to the MATS rule, Ohio's remaining coal-fired fleet would have a gross heat rate of 9,287 BTU/kW-h. This calls into question whether

Ohio's coal-fired EGU fleet could achieve a further 6% reduction, when U.S. EPA's analysis yields a similar value of 9,169 BTU/kW-h. Furthermore, given the variability of heat rates, it is likely that in some future years, Ohio's coal-fired fleet could potentially meet or exceed U.S. EPA's goal. Ohio EPA recognizes that some units may be able to take some steps to increase heat rates marginally; we do not believe that Ohio's post-MATS-compliance fleet, which will continue to operate in a competitive market, will be able to realize a further 6% reduction as envisioned by U.S. EPA. Ohio EPA also wishes to emphasize, as Sargent & Lundy also emphasizes, that "installation of additional pollution controls such as that required by regulations including BART, MATS, etc. will decrease the heat rate efficiency of any unit as compared to its heat rate efficiency before the installation." [Appendix C]

Again, a blanket, nationwide approach to setting the BSER is not appropriate for all units, and the results of Ohio EPA's analysis further reinforces the position that any HRI goals should be based on a unit-by-unit analysis of past and potential future HRI projects.

Dispatch Challenges

Another technical challenge not accounted for under U.S. EPA's approach, yet specifically requested for comment, is "the quantitative impacts on the net heat rates of coal-fired steam EGUs of operation at loads less than the rated maximum unit loads". [79 FR 34862] Ohio EPA understands that implementation of the proposed rule would likely change the historical dispatch of coal-fired units, which have historically been designed to operate most efficiently at peak or near peak load conditions. This raises significant concerns that even if a 6% HRI could be achieved, changing fluid dispatch conditions could counteract such measures. When it is considered that Building Block 2 calls for the re-dispatch of natural gas units to 70% on a very short timetable, considerable changes to the historic dispatch patterns of coal would need to occur on a very compressed time table, as well. This will certainly impact the heat rates of coal-fired units. An analysis of eGRID and EIA data demonstrate that coal-fired units operate at an average capacity of 52%, with many of the larger units operating between 70 and 80%.

Under the modified and reconstructed proposal, U.S. EPA even acknowledges the possible need for a separate standard for load-following natural gas combined cycle (NGCC) EGUs where the more stringent standard would apply only during periods of high annual capacity factors and a less stringent standard would apply during intermediate load periods (e.g., when electric sales are between 33 to 60 % of potential electric output). [70 FR 34980] U.S. EPA states this would address the fact that certain NGCC are designed to be highly efficient when operated as load-following units, but due to the design characteristics efficiency is reduced at base load (and vice-versa). Additionally, NGCC units operating as load-following are inherently less efficient than base load units. As stated in our comments on the modified/reconstructed proposal, Ohio EPA understands these concepts to be true

for most fossil-fuel-fired generators, not just NGCC units. Thus, Ohio EPA finds it difficult to rationalize why such considerations would potentially be given to natural gas units and not coal-fired boilers. This is particularly perplexing when Ohio EPA understands that some coal-fired units may choose to modify or reconstruct to achieve compliance with the Section 111(d) requirements. Furthermore, coal-fired generators were largely engineered to operate at high capacity factors. These proposed rules will force many coal-fired units to operate as load following units, outside of their design parameters and at the expense of efficiency. Ohio EPA urges U.S. EPA to extend those considerations offered to NGCC units to coal-fired units. Otherwise, it is clear that U.S. EPA is choosing a winning fuel, natural gas over a losing fuel, coal.

To this end, Ohio EPA urges U.S. EPA to review the 2011 EPRI study entitled Cycling and Load Following Effects on Heat Rate, 2011. This study measured heat rate as function of load for three years, during the transition of a 700 MW subcritical coal-fired EGU from a base load unit to a cycling unit. Ohio EPA finds this study very relevant to the assumptions of the proposed rule, in particular the impact that priority dispatch to natural gas units will have on the heat rates of coal-fired units. Briefly, this unit was primarily a base load serving unit through August of 2008, and then began serving the grid as a cycling unit. The study demonstrates that this change in operation lead to a measured heat rate increase of 2.3%. Furthermore, the study presented heat rates of the unit during June of 2008 versus June of 2010. During June 2008, while the unit was operating at near peak capacity, variations of approximately 1,000 BTU/kW-h were measured. In June 2010, when the unit was serving as a cycling unit, variations of approximately 3,500 BTU/kW-h were measured. Thus, Ohio EPA finds it critical that U.S. EPA examine and account for the impact of increased cycling at the coal-fired units on heat rate as a direct result of priority dispatch to natural gas. Ohio EPA believes U.S. EPA should consider how the increased dispatch in natural gas units will impact the operation of coal-fired power plants and how the 6% HRI goal can be part of system or emission reductions that is directly counteracted by the increased dispatch of natural gas units. The study also examined, via designed cycling tests, the impact of load following on heat rate. The study clearly demonstrates that operation at lower loads significantly degrades the heat rate performance of a coal-fired EGU. Sargent & Lundy also agree stating “heat rate is increased when plants operate at lower loads, and the benefit of heat rate improvement strategy is reduced at lower loads” and “if an existing EGU is currently base-loaded and shifts to a load-cycling….that unit’s annual average heat rate will increase.” Furthermore, they identify that HRI improvements from options similar to those in their study “could, in some cases, be negated by HRI losses associated with load-cycling.” [Appendix C]

The EPRI report also details the incorporation of “heat rate initiatives” at the unit examined in the study, including increased training of operators, enhanced coal sampling and analysis techniques, and excess air management measures. Through these initiatives, the unit was able to manage and improve the initial heat rate

degradation of 2.3% to less than 1%. However, these measures could not overcome the full impacts of cycling on the unit's heat rate.

Ohio EPA understands the increased use of natural gas will force more coal units to operate more cyclically, thus degrading their heat rates. Again, Ohio EPA urges U.S. EPA to consider how Building Blocks 1 and 2 of the goal setting will work together, or rather, against each other.

Alternative of 4% HRI

U.S. EPA is proposing an alternative to the 6% HRI proposal. Specifically, U.S. EPA is alternatively proposing a 4% HRI as a "reasonable minimum estimate of the technical potential" for HRI on average across affected coal-fired steam EGUs. Ohio EPA does not believe U.S. EPA's approach of setting a nationwide average of *potential* HRIs at either 6% or 4% is appropriate or within U.S. EPA's role under the CAA. Ohio EPA wishes to emphasize, just as the S&L Study indicated, the best method for determining the ability for HRIs at individual facilities is through site-specific evaluations. The analysis presented by U.S. EPA applied proposed methodologies and proposed HRIs from the S&L Study. Heat rate improvement projections should be based on what has been done and what could be done at individual coal-fired units as well as empirical data on HRIs that can be adequately demonstrated to be the direct result of a specific project or best-practices methodologies. U.S. EPA's assumption that each individual coal-fired EGU can obtain a 4% HRI from best practices based upon an examination of historical heat rates of the entire fleet and an additional 2% for equipment upgrades based upon an ill-applied study does not indicate technical feasibility is possible at the individual units. The inaccuracies and challenges identified above demonstrate that only heat rate studies performed on a unit-by-unit basis conducted in direct consultation with on-site operators with knowledge of individual unit operations will be productive.

Modified and Reconstructed Consideration

U.S. EPA took a different approach under the modified and reconstructed proposal to at least acknowledge unit specifics should be considered. Specifically, U.S. EPA proposed two options, both considering unit specifics. First, U.S. EPA proposed to use a unit-specific rate, either the single best annual emission rate or the best three consecutive year average emission rate, based on unit-specific data from the 2002 to the point of modification. [79 FR 34987, 34974] U.S. EPA then proposed a 2% HRI be added to that rate. While Ohio EPA did not agree with this approach it is a step in the right direction of considering unit-specifics that U.S. EPA has not taken under this proposal. Second, U.S. EPA proposed the emission limit for modified sources would be determined by the Section 111(d) implementing authority based on the sources expected performance after implementing unit-specific EE improvements taking into account what is technically feasible. [79 FR 34965, 34988] Ohio EPA asserts this is the exact provision that should be occurring under this Section 111(d) plan. Ohio

EPA believes this type of flexibility is what is necessary in order to address issues that will arise as states develop and implement Section 111(d) plans. The only method that should be used for determining emission limits under Section 111(d) is through the states determination (such as an energy audit) of what is technically and economically feasible at a particular unit given the history of what efficiency improvements have already been completed. Approaches under the modified and reconstructed proposal, of setting a limit and requiring an additional 2%, or approaches under this Section 111(d) proposal of assuming 6% can be achieved on average, based upon inappropriate application of studies and averaging historical rates without any consideration for unit-specific feasibility is wrong, unworkable and can lead to individual facilities in some cases being imposed with requirements that are beyond the BSERs.

EPRI

The extensive stakeholder outreach conducted by Ohio EPA has confirmed Ohio EPA's analysis and conclusions with regards to the technical infeasibility and impracticality of U.S. EPA's nationwide application of a 6% HRI goal. External to Ohio EPA's stakeholder outreach, Ohio EPA would encourage U.S. EPA to carefully consider those comments submitted to the docket by EPRI on October 20, 2014 and the references contained therein. [Appendix E] EPRI has substantial technical expertise in power generation and distribution research, and many of their comments mirror those concerns and conclusions expressed by Ohio EPA. Briefly, EPRI concludes that while there may be potential HRI available, these will be unit specific and should take into account recent U.S. EPA environmental control regulations. Those HRI available may not be additive, and again will be highly dependent on unit characteristics, such as age, design, and environmental controls. EPRI also notes that many potential HRI projects are not conducted based on the financial risks associated with new source review (NSR), and that such an impediment to HRI projects should be considered by U.S. EPA in its calculations. Ohio EPA will emphasize this in our comments later in this document. Lastly, EPRI recognizes that increased penetration of renewables and increased use of NGCC units may cause some coal-fired plants to operate as load-following units, potentially degrading any potential for HRI. Ohio EPA reiterates that through its own analysis, extensive stakeholder outreach, external research such as the EPRI comments referenced above, and the clear statement issued by Sargent and Lundy [Appendix C] concerning the misapplication of their 2009 HRI study by U.S. EPA in the development of this proposal. The assumption of a nationwide 6% HRI across the coal-fired fleet is technically infeasible and impractical and should not be used without further research and validation to form state CO2 intensity goals.

In no way does Ohio endorse U.S. EPA's nationwide averaging and reliance on a single non-empirical study as a basis to subject EGUs to arbitrary and possibly crippling requirements. To make assumptions regarding HRI availability at each individual unit

based upon nationwide averaging is counter to U.S. EPA's traditional science-based justification for control requirements. U.S. EPA must be able to show that each individual building block is achievable at the unit level and at the state level and U.S. EPA has not done that in this case. When BSER is not achievable at the unit-level due to an unreasonable cost of control resulting from plant age, location, or basic process design, or because of physical impossibility of installing specified control systems, states are permitted to establish less stringent emission standards on a case-by-case basis. [40 CFR 60.24(f)] U.S. EPA is offering no mechanism under this proposal for states to do so.

Building Block 2: Re-dispatch

As recognized by U.S. EPA, EGU owners and grid operators are subject to various reliability and operational constraints, and dispatch decisions are based on electricity demand at a given point, the variable costs, and system constraints. It is this "security-constrained economic dispatch [that] assures reliable and affordable electricity." [79 FR 34862] State agencies responsible for environmental protection are not charged with, nor should they be, dispatch of electricity within their own state much less outside of state borders. Yet U.S. EPA proposes re-dispatch as a BSER for which states would be responsible to develop plans to implement increased utilization of NGCC. Nowhere does the CAA give states the authority to regulate the dispatch of power plants on the interstate grid. This is a fatal flaw in this building block.

U.S. EPA cannot cite any law or rule that permits states to override the FERC to meet air pollution goals. Any market changes require FERC approval and they must be permissible under the Federal Power Act (FPA). They must ensure that rates are "just and reasonable" and "not unduly discriminatory or preferential".

U.S. EPA cites the ability for states to control dispatch by example of the Title IV program: "costs of emission allowances have been factored directly into those EGUs' variable costs, like the variable costs of operating pollution control devices, and have thereby been accounted for in least-cost economic dispatch decisions" [79 FR 34862]. Ohio EPA finds this comparison unpersuasive. Most importantly, Title IV was approved by Congress under the CAA and this proposal has not been. Under programs such as Title IV, it is the individual source that is regulated, not the entire power system. Individual EGU owners decide how best to comply with their allocations, whether it is through reduced operation or the installation of a control device. In fact, under Title IV, an individual EGU that installs an environmental control device can actually operate more frequently than one that does not. The decision is made based on what is necessary to reduce emissions inside-the-fence based on allocations received. U.S. EPA is not comparing apples to apples in comparing Title IV and the intricacies of this system-wide proposal.

In Ohio, it is the EGU owners, whom decide in what manner to bid into the electricity market and for how much time. It is PJM, under the authority of FERC, who determines dispatch order based on utilizing the least expensive resource first to meet energy

demand. It is not within Ohio EPA's authority to require NGCC sources increase dispatch to a certain percentage under a Section 111(d) plan. States do not have the ability to force an operator to run a NGCC unit at over 70% utilization. This creates legitimate unanswered questions. For example, what happens if natural gas prices significantly increase and the natural gas unit will not be able to operate profitably? What if a unit suffers a major equipment breakdown? Will the units be in violation if 70% utilization is not achieved? This proposal could lead to the situation where a NGCC unit must operate to achieve the 70% utilization value even if the electricity is not even needed. This element of the proposal must be dropped from further consideration.

U.S. EPA even suggests states could implement increased re-dispatch of NGCC by limiting the operation of coal-fired EGUs through permits. [79 FR 34862] In order to restrict operation in a Title V permit, such limitations would need to be included in a federally approvable plan but still could not override other federal laws outside of the CAA. Placing a specific limit on the number of hours a base-load coal-fired EGU could operate reflects U.S. EPA's total lack of knowledge on the federal mandates of large utility plants to operate for reliability purposes.

RGGI

Throughout the preamble to this proposal, U.S. EPA cites RGGI as an example of a model program. The RGGI states voluntarily adopted a multi-state program that taxes emissions of CO2. Congress has not provided the authority to U.S. EPA to tax CO2 emissions, nor can U.S. EPA force states to tax CO2 emissions. U.S. EPA should not use the RGGI approach as an example program since the RGGI approach relies on voluntary carbon taxes that cannot be legally forced upon a state.

In addition, in the transcript from a recent House of Representatives Subcommittee on Energy and Power meeting where FERC was able to provide perspectives concerning U.S. EPA's proposal, RGGI was addressed in a statement from Mr. Clark from FERC. [Appendix F, Page 32-34]

> …it is probably too early to know with specificity exactly what those impacts will be and the primary driver for is that we simply don't know what the potential State implementation plans, compliance plans might look like, and we also don't have a sense for what a Federal implementation plan or a Federal compliance plan would look like.
>
> It is quite clear, although the EPA has said that they will offer flexibility to states, a pathway that they have offered up as a potential one that might be compliance, relies in some part on a combination of perhaps cap and trade, like a regional gas house initiative like they have in the northeast, some sort of reliance on energy efficiency and demand response resources, a shuttering of coal plants and, at the same time, pivoting towards heavier reliance on natural gas, perhaps some sort of renewable portfolio standard in the State.

> So you put all these things together, and it actually looks very much like what one of the regions has already been going through, which is the one that Commissioner Moeller mentioned, which is New England.
>
> So should the EPA rule come to pass? I would think that FERC would need to ensure that as it moves forward, we would want to make sure that some of the concerns that we have seen already happen in New England with the pipeline constraints and the rapid conversion to gas and the very tight reliability system and sometimes very high cost for electricity aren't exported to other regions of the country, and overcoming that could be, indeed, a challenge.

Clearly the national experts charged with reliability, FERC, recognize the RGGI program has experienced growing pains as it was implemented. Ohio EPA does not believe it should be touted as a model program for the entire country when FERC has described reliability and cost concerns.

70% Utilization Rate

U.S. EPA identifies the 2012 average U.S. utilization rate of NGCC was 46%, 10% of which operated 70% or more and 19% operated at least 70% in the summer months. [79 FR 34857] U.S. EPA views 19% of NGCC operating at least 70% during peak summer months as "strong evidence that increasing the utilization….to 70 percent, *not in every individual instance but on average*….would be technically feasible." [79 FR 34863 (emphasis added)] U.S. EPA cannot assume a 70% rate is <u>technically feasible</u> based upon an analysis that showed <u>only</u> 10% of the NGCC fleet operated at 70% historically. Further, U.S. EPA fails to acknowledge that some of these units may have permit restrictions that limit the emissions, amount of fuel, or hours of operation, making 70% utilization a legal impossibility. Limits that were likely imposed in order to address permitting concerns and compliance with other regulatory requirements. U.S. EPA cannot base BSER on the false assumption that all units are capable of 70% utilization.

Ohio EPA believes that U.S. EPA's expectation of 70% re-dispatch of natural gas capacity for the purposes of determining state goals is unreasonable. It is critical that U.S. EPA understands that the dispatch of power as controlled by various RTOs is done with the express purpose of maintaining grid reliability in the most economical manner possible, and that artificial and inflexible dispatch goals are not a reasonable variable to introduce to these systems. Ohio EPA believes it would be informative and instructive for U.S. EPA to review the dispatched generation in 2012, as this year represents a year in which natural gas prices were at near-historic lows. Thus, in a deregulated market, it was highly profitable and desirable for natural gas units to operate as much as possible. For example, in the PJM report entitled "2012 State of the Market Report for PJM. Monitoring Analytics, LLC[14]," it is very clearly

[14] http://www.monitoringanalytics.com/reports/pjm_state_of_the_market/2012.shtml

demonstrated that even with historically low natural gas prices, natural gas dispatch did not approach 70% utilization. Indeed, capacity factors for NGCC units were 60.4% in the PJM reliability region. When this is considered in light of the historic natural gas prices in 2012, it is clear that the expectation of 70% re-dispatch is far beyond historical precedence, has not been demonstrated in Ohio, and indicative that U.S. EPA did not fully consider the nature of the dispatch/capacity market when developing the proposed Clean Power Plan (CPP). Furthermore, it is assumed that the price of natural gas will remain at low-levels, ensuring that natural gas can be dispatched economically (at savings to the rate-payer). Ohio EPA urges U.S. EPA to examine the volatility of the natural gas market when considering how natural gas generation may play a role in reducing CO2 emissions. Ohio EPA does not believe U.S. EPA has adequately accounted for how market rules in a market based system may complicate re-dispatch. U.S. EPA cannot assume that limiting operation of coal-fired EGUs will force re-dispatch considering the complicated economics that will inevitably develop when the four building blocks are combined.

Furthermore, U.S. EPA identifies that although historically NGCC units are mostly operated in intermediate-duty roles for economic reasons, they are technically capable of operating in base-load roles where the average annual availability exceeds 85% and can exceed 90% for some units. [79 FR 34862] One of the two studies U.S. EPA cited for this basis was based on a newer specific type of NGCC unit and cited the increased availability could only be achieved after various improvements and equipment upgrades occurred[15]. Ohio EPA does not believe that what is true for some NGCC units can be applied to all NGCC units, and that some NGCC units have been constructed for the purposes of serving intermediate loads.

U.S. EPA states they also recognize NGCC utilization rates "may also be affected by infrastructure and system considerations…..limits on…ability of the natural gas industry to produce and deliver the increased quantities,…ability of steam EGUs to reduce generation while remaining ready to supply electricity, …and the ability of the electric transmission system to accommodate the changed geographic pattern of generation." However, U.S. EPA asserts that "these considerations have not limited past rapid increases in NGCC generation levels, as indicated by a 20% increase in natural gas consumption….from 2011 to 2012." [79 FR 34857] Further, U.S. EPA acknowledges "re-dispatch does contemplate an associated increase in natural gas production." [79 FR 34864] Ohio EPA also recognizes these limitations; however, we believe them to be more significant than considered under this proposal; a proposal premised on the ability to increase natural gas production nationally in order to meet the goal. At this point, Ohio EPA wishes to point out the unreasonable assumption that because natural gas consumption increased by 20% in 2012, a record low market price period, that the system is now capable of maintaining 100% of the NGCC units operating at 70% when in the same year (as the 20% increase in natural

[15] http://www.power-eng.com/articles/print/volume-115/issue-2/features/higher-availability-of-gas-turbine-combined-cycle.html

gas usage occurred) only 10% of the NGCCs operated at 70%. [79 FR 34863] U.S. EPA also contends the infrastructure and system considerations support 70% utilization because the pipeline system already supports rates of 60% or higher during peak hours, noting that fleet-wide average monthly rates of 65% have occurred. [79 FR 34863] However, U.S. EPA is basing this assumption on national averages and not state-specific analysis demonstrating the ability to accommodate 70% utilization. Ohio EPA contends that this pipeline system support assumption is not based on what each state can achieve or regional disparities. U.S. EPA did no such analysis of what individual pipeline systems are prepared to support in order for each state to meet a 70% utilization goal.

U.S. EPA states 70% utilization is supported by their IPM analysis. [79 FR 34864] Ohio EPA has additional comments regarding the use of IPM in the IPM section below. IPM was used to assess shifting generation from existing coal-fired EGUs to NGCC units on a 1:1 basis within defined areas. IPM arrived at a "solution" for "average" utilization rates of 65, 70 and 75% and U.S. EPA determined increasing to 70% would "*not in every individual instance but on average*…. be technically feasible." [79 FR 34864 (emphasis added)] Ohio EPA believes U.S. EPA is trying to force a regional approach upon states. Section 111(d) does not require regional approaches. U.S. EPA is not proposing a traditional Section 111(d) regulation, as it should, that would establish a technology requirement through the BSER applicable to specific types of affected units. When establishing a technology requirement through the BSER, U.S. EPA must assure it is technically and economically achievable. In turn, states are then afforded the ability to consider factors associated with remaining useful life, and when necessary, establish a standard of performance that is achievable but different than the BSER. It is concerning that U.S. EPA's results show "for only 29 states do the goals actually reflect reaching that target NGCC utilizations, with the result that the average NGCC utilization rate reflected in the computed state goals is only 64%". [79 FR 34865] U.S. EPA could only model 64% re-dispatch at the state level and achievability of U.S. EPA's selected BSER (70% re-dispatch) could only be accomplished under a regional approach. U.S. EPA is proposing *state* goals and those goals must be adequately demonstrated to be achievable *in each state*. But U.S. EPA also notes "at least some states may be able to achieve additional…reductions through other components of the BSER." [79 FR 34865 (emphasis added)] Ohio EPA speaks to this perceived flexibility in our comments and we firmly believe each individual building block, just as each individual technology requirement for specific types of affected units, must be technically and economically achievable. Ensuring each building block is feasible is especially important in light of the proposed severability issues Ohio EPA discusses elsewhere in our comments. In addition, states must be able to consider remaining useful life at the unit level as the CAA intended when applying any standard of performance. Further, it should be noted that U.S. EPA never provided any analysis to show it is adequately demonstrated that states can meet the goals for individual building blocks *in combination*.

Routine and Well-Establish Operating Practice

Ohio EPA disagrees with U.S. EPA's contention that the re-dispatch to natural gas is a "routine and well-established operating practice," [79 FR 34882] especially when the proposed rule is predicated on offsetting generation from coal sources to natural gas on a one-to-one basis. Examination of U.S. EPA's IPM results demonstrates this result (one-to-one generation offset) is predicted only when significant amounts of coal retirements occur (46-49 GW) by 2020 nationwide. Ohio EPA has strong concerns that shutdowns of this magnitude on a short time-table will have negative impacts on grid reliability and energy costs even though U.S. EPA emphatically states it "will not jeopardize system reliability." [79 FR 34882] While it is understood that natural gas is growing as a source of base load generation, it is as U.S. EPA states, a "long-term trend in the industry", [79 FR 34882] and not the rapid transition envisioned by the proposed rule. Recently, the U.S. Government Accountability Office (GAO) identified similar concerns in its August 2014 report on EPA Regulations and Electricity. [Appendix G] Specifically, the reports states:

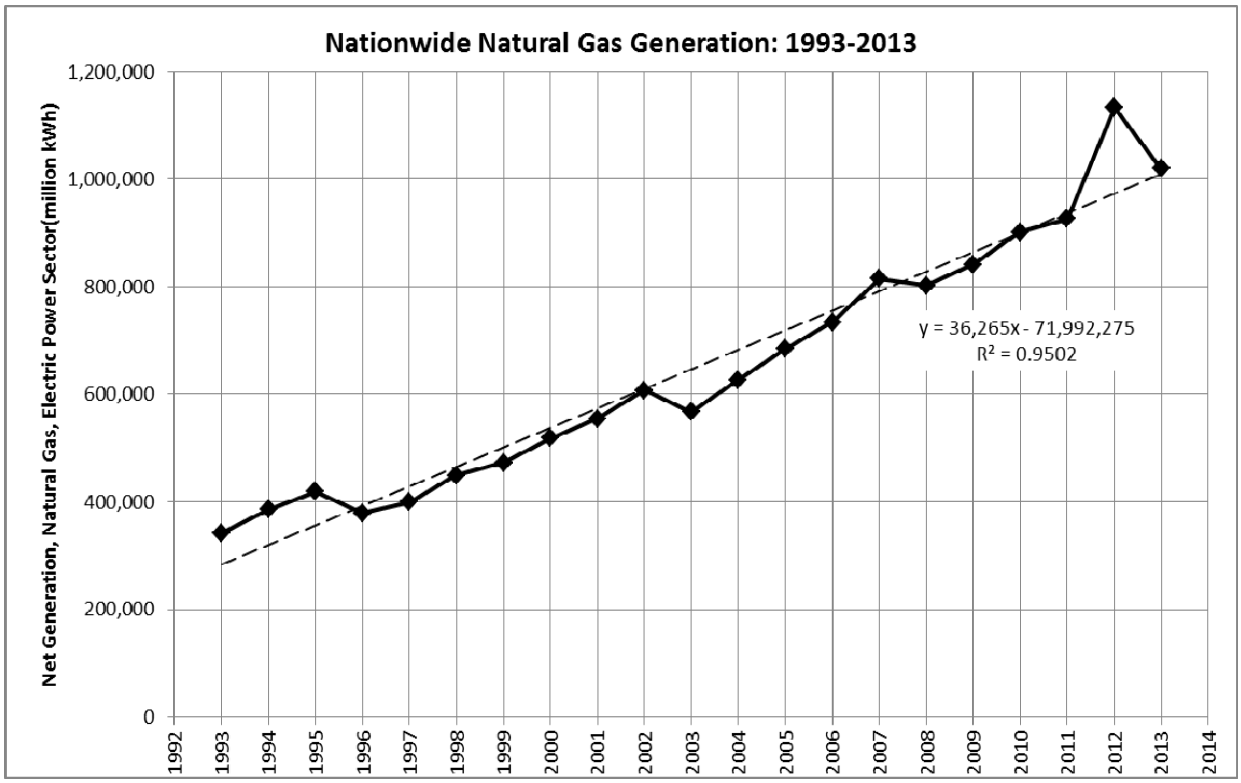
> Furthermore, in April 2014, a FERC Commissioner testified before Congress about concerns and uncertainty related to potential reliability and price impacts associated with environmental regulations. Specifically, the Commissioner expressed concerns about the reliability of data on which generating units are retiring and the resources to replace those retiring generating units and called for a more formal review process including FERC, EPA, and others to analyze the specific details of retiring units, as well as the new units and new transmission that will be needed to manage the transition and ensure reliability of the nation's electricity sector. [Page 13]

As discussed above under Building Block 1, EGUs that are intended to run at base load can experience significant efficiency losses while running at reduced loads, potentially offsetting any HRI's that would be made under Building Block 1.

While we appreciate U.S. EPA's belief they are taking the infrastructure and system considerations into account because the "compliance schedule provides flexibility and time for investment in additional natural gas and electric industry infrastructure if needed" [79 FR 34863] and because the flexibility of the emission guidelines does not require any particular unit to realize the proposed level [79 FR 34864], we believe U.S. EPA is over-estimating these abilities without any technical basis and knowledge of individual state capabilities. And as discussed throughout our comments, we firmly believe the stringency of the goals and compliance methods for those goals eliminates any perceived flexibility. Ohio EPA is concerned with the increased reliance on natural gas which, to achieve the interim goals, would necessarily have to occur almost immediately in the compliance process detailed in the proposed CPP. Increasing the homogeneity of the generation mix following the proposed timetable could potentially leave the grid and consumers vulnerable to unforeseen disruptions, constraints on supply, and other market issues. Ohio EPA

believes that reliability concerns are not sufficiently addressed in either the proposed rule or through the use of the IPM model.

U.S. EPA notes from 2005 to 2012, NGCC generation increased 80% and they believe it could increase ~50% from 2012 levels by 2020. [79 FR 34863] Ohio EPA disagrees. Ohio EPA collected nationwide natural gas generation data from the EIA's August 2014 Monthly Energy Report for years 1993-2013. It should be noted that Ohio EPA was unable to separate NGCC generation from other natural gas-fired generation for this analysis, but estimates from EIA data that combined cycle units provided approximately 81% of natural gas generation in 2012. Linear regression analysis of this data indicates that the annual growth of natural gas net generation is well described by a straight line, with an R^2 value of 0.9502. These data are shown in the graph below, with the results of the linear regression analysis co-plotted.



Using the results of the linear regression analysis, the net generation from all natural gas EGUs in 2020 was projected by Ohio EPA to be 1,263 TW-h. U.S. EPA indicates in its GHG Abatement Measures TSD [Page 3-11] that the re-dispatch of under-construction and existing NGCC units would result in the net generation of 1,444 TW-h beginning in 2020.

Ohio EPA has several concerns with U.S. EPA's estimate. Comparing Ohio EPA's projection to U.S. EPA's 2020 goal indicates a net generation shortfall of 181 TW-h. This is even more concerning when it is considered that Ohio EPA's projection

represents not just NGCC units, but all electricity producing units fired by natural gas. A cursory examination of the historical natural gas generation data presented in the graph above clearly demonstrates that 2012 generation data is atypical and well above historically observed trends. Indeed, elimination of 2012 data improves the R^2 value of the regression analysis to 0.9719. U.S. EPA effectively ignored dominant trends in the growth of natural gas generation over the past 21 years. Examined in this light, U.S. EPA's projection of 1,444 TW-h by 2020, from combined cycle units alone, would seem to represent a goal far beyond historical precedence and, therefore, is not adequately demonstrated.

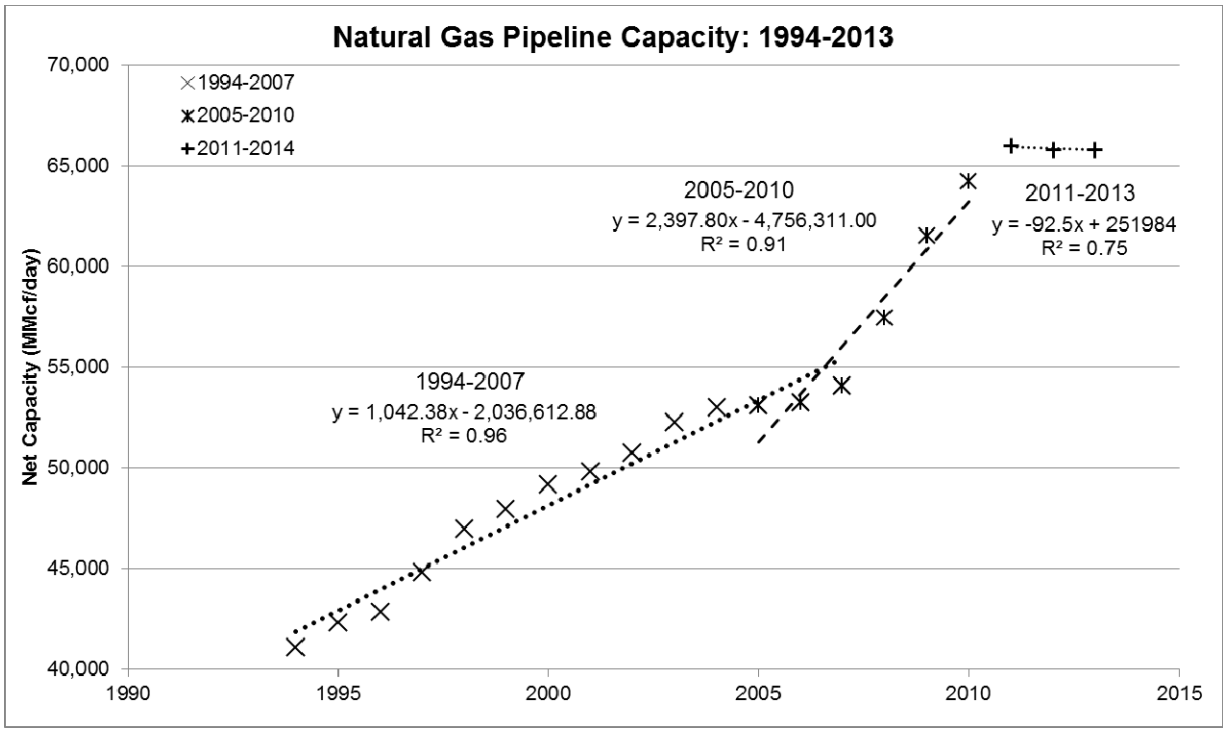
Furthermore, it is difficult to imagine that such a goal could be met by 2020 in a sustainable manner. Using the results of Ohio EPA's regression analysis, it is estimated that such generation from all natural gas-fired units combined would not be realized until 2025. If the 2012 contribution of NGCC generation to total natural gas generation (81%) and the results of the regression analysis are considered, Ohio EPA projects that U.S. EPA's desired 1,444 TW-h from combined cycle units would not be realized until 2034. Clearly, U.S. EPA's goal setting for NGCC units goes well beyond what Ohio EPA believes is technically feasible. Ohio EPA urges U.S. EPA to examine fully the historical growth of natural gas, understanding that such growth is reliant on adequate infrastructure development.

Pipeline Capacity

U.S. EPA presented in its GHG Abatement Measures TSD [Page 3-18, Table 3.5] an analysis of pipeline capacity for years 2005 to 2011. Based on the 21% growth observed in net pipeline capacity, U.S. EPA concluded:

> As a conservative assumption, the increase from the period 2005 to 2010 can be used as an estimator of the potential increase in pipeline capacity to accommodate compliance with the rule between 2015 and 2020. This is an extremely conservative assumption, since compliance is measured over a longer period and is not limited to re-dispatch approaches.

Ohio EPA applied several linear regression analyses on the same dataset available from the EIA. Ohio EPA also expanded upon U.S. EPA's analysis, and utilized the full dataset (1994-2013). The results of these analyses have led Ohio EPA to a much different conclusion concerning pipeline growth potential than that of U.S. EPA. This data is presented graphically, below.



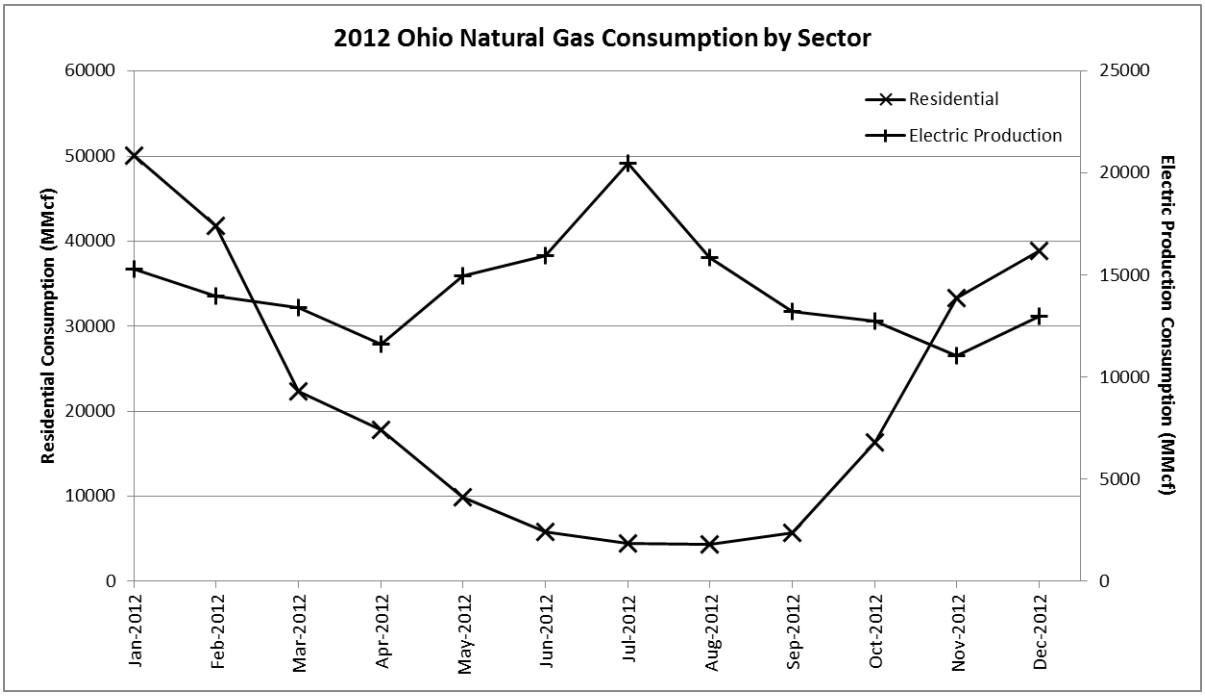
Ohio EPA is concerned that by selecting only a narrow range of available data, U.S. EPA's derived estimate of growth in the natural gas pipeline is not "extremely conservative", but rather overly ambitious. Again, U.S. EPA is picking select years to justify its conclusion. During the period 1994-2007, Ohio EPA determined overall pipeline capacity increased 1,042 MMcf/day each year. From 2005 to 2010, the period selected by U.S. EPA, this growth rate more than doubled, as can be seen in the graph presented above. Thus, the 21% growth in this period is not fully representative and is certainly not conservative. Furthermore, and most concerning, is the apparent decline in capacity observed for years 2011 to 2013. This calls into question whether the pipeline capacity can sustain the growth projected by U.S. EPA. Ohio EPA urges U.S. EPA to consider the full range of available pipeline capacity data, examine more closely the apparent slowdown in growth observed in recent years, and derive a more representative estimate of growth potential of the natural gas pipeline system.

Unintended Predicted Costs

It is not clear to Ohio EPA if the exact nature of the natural gas distribution and pipeline markets were considered. Indeed, understanding these markets is well beyond the expertise of Ohio EPA and we suspect U.S. EPA. However, based on stakeholder outreach and utility surveys, Ohio EPA has come to understand several aspects of the market and how the proposed rule may impact this market in negative or counteractive ways. Ohio EPA understands that many electric power sector units or entities compete for pipeline services with both local gas distribution companies as

well as industrial consumers. As an alternative to insulate from cost fluctuations, some power sector entities acquire firm contracts guaranteeing a sufficient supply of natural gas. However, in highly competitive markets, acquiring such a contract can render a unit uncompetitive. This raises several concerns. If NGCC units are required, under a federally enforceable plan, to operate at 70% capacity factor, the costs of natural gas to residential and industrial consumers could be impacted in a negative manner. It is also possible that the proposed rule could force natural gas units to secure firm contracts in markets where such action would be uneconomical.

Ohio EPA collected data on annual natural gas consumption in Ohio, as shown in Appendix H. In 2012, residential natural gas consumption was 250,871 MMcf. Industrial natural gas consumption was 264,405 MMcf in the same year. Together, these represent 61% of all natural gas consumed in the State of Ohio in 2012. Given these numbers, U.S. EPA must consider the complex dynamics of the natural gas delivery market, the role of natural gas as an economic source of residential heating, if realistic re-dispatch goals are to be set. Additionally, Ohio EPA understands that residential and electric power natural gas consumption patterns are typically counter-cyclical. This pattern is clearly observable in the graph below, which presents 2012 monthly data from the EIA on residential and electric producing consumption of natural gas.



Ohio EPA has concerns that disruptions to this cycle as a result of the 70% re-dispatch of NGCC units could introduce unforeseen costs to all consumers of natural gas. Even U.S. EPA acknowledges they "remain concerned… that higher NGCC utilization rates could be harder to sustain and could exert further upward pressure on prices." [79 FR 34864] U.S. EPA concluded 70% utilization can be achieved "without causing significant economic impacts—delivered natural gas prices were

projected to increase by an average of no more than ten percent over the 2020–2029 period, which is well within the range of historical natural gas price variability." Ohio EPA has significant concern with a projected 10% increase in delivered natural gas prices from this proposal alone. Again, Ohio EPA urges U.S. EPA to more closely examine the complex dynamics of the natural gas delivery system and the potential impacts of altering these dynamics on both natural gas and electricity costs to the consumer.

Under Construction NGCC in Goal Setting

Ohio EPA objects to the inclusion of "under construction" NGCC units in the goal setting calculations. Firstly, these units were not operational in 2012, contributed no CO2 emissions, and produced no electricity. Therefore, they are clearly not part of the "base year", nor does "under construction" guarantee or even suggest that these units will be operational. Ohio EPA finds it very difficult to rationalize why under-construction NGCC units were considered in the goal setting, yet coal-fired EGU's with firm shutdown dates were not credited in any manner. Ohio EPA furthermore suggests that the hand-picking of some future projects in favor of others is not a consistent approach, and that U.S. EPA should either consider no future project or all future projects, not just those whose inclusion results in a further lowering of state goals, as appears to be the case. Ohio EPA believes that if units that may or may not be completed can be considered in the goal setting computation, than U.S. EPA must consider past HRI projects, potential and known shutdowns of units (with a mechanism to credit the considerable reduction in CO2 these shutdowns will achieve with respect to the stated goal of achieving a 30% reduction in CO2 from 2005 levels), and potential uncertainty in renewable and EE markets.

Alternative 65% Utilization Rate

We also acknowledge U.S. EPA is proposing as part of the alternative set of goals a less stringent target of a 65% average utilization rate. [79 FR 34866] And then U.S. EPA goes even further to request comment on raising the rate to 75%. [79 FR 34866] We wish to point out again that in the state driven compliance IPM run, U.S. EPA could only show achievement of a 64% utilization rate. For all the reasons we have identified above Ohio EPA does not agree that 75%, 70% or 65% is technically or economically achievable given the analysis and method U.S. EPA has used to establish feasibility of these various levels.

Inconsistencies and Errors

Ohio EPA examined the underlying assumptions and data used by U.S. EPA to set state-wide goals and found several inconsistencies and errors associated with NGCC units as described below.

Nameplate vs. Summer Capacity

In projecting a 70% capacity factor for NGCC units, U.S. EPA used the nameplate capacity of those units. Ohio EPA understands that the nameplate capacity of a unit represents a gross-rating of the generator alone, and is not indicative of the net capability of a particular *unit as a whole*. Ohio EPA believes that the "summer capacity" of the units' should be used instead. Summer capacity represents the *net* rating or capability of the generating unit as a whole. When summer capacity is considered, which Ohio EPA believes to be the most representative and appropriate approach, Ohio's 2012 NGCC capacity is 3,895.3 MW and not the 4,342.5 MW of nameplate capacity utilized in the goal-setting calculation for Ohio. [Appendix I]

Correction of Dresden Plant Data

Ohio EPA noted several discrepancies with the treatment of the Dresden Plant, a 539 MW nameplate capacity NGCC facility in Ohio. Firstly, it appears that the unit was "double-counted" in the re-dispatch calculations. That is, the generation of the Dresden Plant was counted as an existing unit, but the 539 MW of nameplate capacity were dispatched as an "under-construction" unit. Ohio EPA understands that the Dresden Plant became operational on January 31, 2012, and is therefore not to be treated as an "under-construction" unit in the re-dispatch calculation. Additionally, the 2012 EIA-923 report incorrectly published the net generation data for only November and December 2012 for these units. Net generation for this facility in 2012 was 2,599,011 MW-h, and not the incorrectly published 470,486 MW-h used in the goal setting calculations. Via stakeholder outreach to American Electric Power, Ohio EPA was provided corrected generation data for the Dresden facility, as well as AEP's correspondence with EIA to correct the publication issue. [Appendix I]

Under-Construction Units

As stated above, the Dresden Plant was operational on January 31, 2012. Therefore, Ohio EPA believes that there were no under-construction NGCC units in 2012 and that the value in the goal setting calculation should be 0 MW.

Accounting for Partial Operation, 2012 NGCC Capacity Factors

Ohio EPA believes that U.S. EPA's methodology does not appropriately account for units that were not operational for the entirety of 2012 in determining state-wide capacity factors. In the case of Ohio, there were two facilities that were not operational until the end of January 2012. The Dresden Energy Plant did not

begin operation until January 20, 2012, and the Freemont Energy Center did not begin operation until January 31, 2012. Thus, the calculated capacity factors for those units, if based on 8,784 hours of operation, do not accurately reflect the operation of those units in 2012. When partial operation is taken into account and the corrected generation at the Dresden plant considered, the capacity factor of NGCC units in Ohio is calculated to be ~69%. Furthermore, Ohio EPA believes that the re-dispatch of NGCC units should be based on this historic capacity factor and not historical generation, as historical generation reflects bias concerning units that did not begin operation until after January 1, 2012. Ohio EPA concludes that when summer capacities, correct capacity factors, and re-dispatch based on historical capacity is considered, the anticipated re-dispatch is nearer to 444,000 MW-h and not the 5,793,981 MW-h proposed by U.S. EPA. If order-of-magnitude errors are present in other state goals, Ohio EPA would call into question much of U.S. EPA's methodology.

Ohio EPA has identified multiple areas of deficiency in U.S. EPA's goal setting calculations for Ohio. The methodology of using nameplate capacities and re-dispatch based on historical generation and not accurate historical capacity factors was utilized in setting the emission intensity goals for most states. This approach would call into question the intensity targets set forth for the majority of states and would likely vastly alter the final projected impacts of the rule. Additionally, these deficiencies would have carried over into the IPM projections and assumptions. Ohio EPA strongly urges U.S. EPA to reexamine the data and assumptions of the goal setting methodology.

Building Block 3: Renewable and Nuclear Energy

Renewable

U.S. EPA states RE in 2012 represented 12% electricity generation nationally (including hydropower) which is up from 9% in 2005. [79 FR 34866] In addition, U.S. EPA found more than half of the states have established state-level RE with an average of almost 20% of 2020 generation supplied by renewables. [79 FR 34858] However, in Ohio, 2012 RE represented only 2% of generation (including hydropower) and Ohio is expected to have 9% of 2020 generation from renewables.

Short Timeframe for Renewables

Ohio EPA is concerned with the levels of renewable generation projected by U.S. EPA both in Ohio and nationwide, in particular the amount of generation from renewable sources projected to come online in a relatively short timeframe. Under the proposed rule, 11 states are projected to have 20% or more of their net generation coming from RE by 2030. [GHG Abatement Measures TSD, Page 4-

24] This number seems overly optimistic, when it is considered that the growth of renewable and carbon neutral generation is a relatively recent phenomenon. Even Ohio's RPS did not take effect until 2008.

Non-Combustion Renewables

Ohio EPA does not believe that it has been adequately demonstrated that non-combustion renewable sources can serve as providers of base load power. Ohio EPA does not believe that the differences in generation dispatched to serve various demand levels were considered fully in either the RE goal setting calculations or the IPM model. Thus, there are significant grid reliability concerns that have not been adequately addressed. Ohio EPA strongly encourages U.S. EPA to take into account how those renewable sources, available to each individual state at reasonable cost, fit into the generation mix and how those units would serve on the grid, in both vertically integrated and deregulated power markets. A clear distinction between base load and non-base load capable renewable sources must be made in both the goal setting and IPM projections.

Intermittent Nature of Renewable Generation and Reliability

U.S. EPA acknowledges the intermittent nature of generation from renewable resources such as wind and solar units, which have grown quickly in recent years, "require special consideration from grid operators." [79 FR 34883] In the proposal for modified and reconstructed sources U.S. EPA acknowledges the potential increased use of simple cycle combustion turbines due to the expected increased percentage of generation from renewables in the future. [79 FR 34980] U.S. EPA notes the electric grid must be balanced by using some type of quick response backup generation or rapid reductions in load can occur. [Id.] Under this proposal, U.S. EPA offers that electricity storage technologies have the potential to enhance emission performance and provide generation during periods when intermittent wind and solar generation are unavailable due to natural conditions. [79 FR 34924] Ohio EPA believes U.S. EPA is overestimating the ability of electricity storage technologies and that it cannot be counted on to address reliability issues with RE sources. Electricity storage technology has not advanced to a degree that it can be reliably considered. The U.S. Department of Energy (DOE) reports that "at present, the U.S. has about 24.6GW (approx. 2.3% of total electric production capacity) of grid storage, 95% of which is pumped storage hydro. [U.S. Department of Energy, Grid Energy Storage Report, December 2013] DOE acknowledges "not every type of storage is suitable for every type of application, motivating the need for a portfolio strategy for energy storage technology" and that there are "four *challenges* related to the widespread deployment of energy storage: cost of competitive energy storage technologies (including manufacturing and grid integration), validated reliability & safety, equitable regulatory environment, and industry acceptance." [Id. (emphasis added)] Finally, DOE states:

> Industrial standards for grid storage are in their infancy. Industry acceptance could also gain ground when we reduce the uncertainty surrounding how storage technology is used, and monetized, at scale. Ultimately, it will be the experience and real-world use of storage that will provide the confidence and desire to expand installed storage. [Id.]

Requiring the degree of RE proposed for implementation in such a short time will undoubtedly create reliability issues. U.S. EPA cannot promote energy storage as a viable option or demonstrated technology that is technically or economically feasible to address the intermittent nature of RE. At this time, it is only technology such as simple cycle combustion turbines that can be counted on to reliably address the intermittent nature of RE and these source will increase CO2 emissions compared to renewable sources. This is a consideration that U.S. EPA has evidently not accounted for under this proposal.

Goal Setting and State RPS

U.S. EPA is proposing to set a "best practices" scenario based on RPS already established by a "majority" of states acknowledging "renewable resource development potential varies by regions." [79 FR 34866] U.S. EPA *attempts* to define BSER for this building block without using national averages and accounting for regional variation by comparing each state to a set of neighbors rather than to a single national standard. [79 FR 34867] Ohio EPA believes it not only varies by region, but by state, and the only appropriate analysis method would be to take into consideration what is technically feasible and cost-effective within individual states.

Ohio EPA believes that U.S. EPA did not adequately examine or characterize existing state RPS programs prior to regionalizing and averaging to determine state goals. Ohio EPA understands that RE goals are based on a percentage of total in-state generation. Thus, in 2012, Ohio's total net generation was 129,745,731 MW-h, and the 2020 RE target for Ohio is 0.025%, or 3,286,937 MW-h. These values are reflected in the GHG Abatement Measures TSD. However, Ohio's existing RPSs call for an incremental percentage of total retail sales occurring in the state, inclusive of out of state generation. This quantification varies amongst state RPSs, based on what each particular state felt was technically and economically feasible at the time with consideration given to the best quantification method. In combination with what Ohio EPA believes is an incorrect approach in setting renewable growth rates based on regional averages, differences in RE portfolios amongst the states call into question the validity, representativeness, and feasibility of the RE goals.

In a practical sense, it appears that U.S. EPA compiled RPS targets with little regard for the variations between individual state RPS language and calculations. These variations provide the flexibility necessary for respective states to design

RPS targets with the highest chance of success. Examples of unique elements of Ohio's RPS include: providing the Ohio PUC with authority to classify any new technology as a qualifying RE resource; allowable non-compliance with the benchmark if the reasonably expected cost of electricity exceeds 3%; approvable adjustments to benchmarks due to availability of qualifying RE resources both in-state and within the PJM interconnection; the Ohio PUC may amend the benchmarks if they are not reasonably achievable due to "regulatory, economic, or technological reasons" beyond reasonable control; banking of RE credits are allowed from year-to-year.

U.S. EPA has taken the targets and benchmarks from individual state RPS as a demonstration of RE potential, however, without consideration for state specific variables, the RE goal becomes more difficult to reach and more of a burden to Ohioans. To ignore these nuances embedded within state plans and force a one-size-fits-all approach is enacting arbitrary, capricious and inflexible mandates on states.

Ohio EPA has great concern regarding U.S. EPA's reliance on Ohio's RPS policy as a demonstrated technology for determining best practices. Ohio's RPS policy was not accurately represented in this proposal as discussed in the State RE and EE Programs Section of our comments below. The RPS policy used in this analysis has been replaced and Ohio's current RPS policy includes reductions in long term targets and freezes the annual benchmarks for RE and solar energy resource development for two years. The "Renewables Portfolio Standards in the United States: A Status Update, November 2013" [GHG Abatement Measures TSD, Page 4-3] document also acknowledges that legislation in roughly ten (of 29) states was introduced in 2011-2012 to repeal or roll-back RPS policies. How can U.S. EPA rely on such volatile programs to determine a demonstrated technology? As noted before if U.S. EPA is to rely on current RPS programs in the states as "best practices" then U.S. EPA must take them at face value and allow those programs, as implemented in each state, to fully qualify for implementation under this proposal. Likewise, there must be a method in place to re-evaluate the goals when a states RPS policy is reduced or eliminated.

DSIRE

In order for U.S. EPA to quantify RPS levels to develop target levels of performance, U.S. EPA relied on a N.C. State University Database for State Incentives for Renewables and Efficiency (DSIRE, www.dsireusa.org/). [GHG Abatement Measures TSD, Page 4-3] This website provides a disclaimer specifically stating it provides an "unofficial overview of financial incentives and other policies…and it should not be used as the only source of information … when executing other binding agreements." It also warns that "while the DSIRE staff strives to provide the best information possible [they] make no representations or warranties, either express or implied, concerning the accuracy, completeness, reliability or suitability of the information." Because of the extensive

amount of information to review under this proposal and the very limited time to complete comments, Ohio EPA did not have sufficient time to review all the data on DSIRE to determine its accuracy relative to Ohio's RPS policy. Ohio EPA questions why U.S. EPA would use as their only source of information, a database to develop BSER for RE that warns of the unsuitability of its information for that purpose. For such an important proposal and for the determination of what is technically feasible and cost-effective for BSER for RE, why would U.S. EPA not review the actual individual state RPS policies themselves? U.S. EPA's methodology is flawed and Ohio EPA does not believe U.S. EPA's use of DSIRE data for goal development is technical sound and must be reconsidered.

Determination of Goals

In determining the proposed and alternate RE generation level goals, U.S. EPA first quantified the amount of RE in 2012 in each state scenario, excluding hydropower. Ohio's 2012 RE performance level is identified as 1% by U.S. EPA. Then, as a starting level, U.S. EPA summed these amounts for all states in each of six regions (based on North American Electric Reliability Corporation (NERC) and RTOs with adjustments to align borders with state borders accounting for "similar power system characterizes as well as geographic similarities in RE potential." [79 FR 34867] Then U.S. EPA estimated the aggregate target level of RE generation in each of the six regions *assuming that all states within each region* can achieve the RE performance represented by an average of RPS requirements in states within that region. Specifically, U.S. EPA averaged the existing RPS percentage requirements *that will be applicable in 2020* and multiplied that average percentage by the total 2012 generation for the region. Ohio EPA is raising numerous concerns with the various aspects of this approach.

Based on DSIRE, U.S. EPA determined that Ohio's 2020 effective RE level is 9%. This is the second lowest in our region: PA, 8%; NJ, 22%; MD, 18%; DE 19% and DC 20%. Then U.S. EPA assumes RE generation will begin increasing in 2017 until in 2029 the regional RE generation target, which is the average of the 2020 effective RE levels, is reached in each state. For Ohio's region, East Central, our target is 16%. Then for each region they computed the regional growth factor necessary to increase regional RE generation from the 2012 level to the regional. This regional growth factor is the growth factor used for each state in that region to develop the best practices scenario. Ohio EPA wishes to note that although four of the six states in our region have effective RE levels predicted for 2020 of 18 to 22%, in 2012 the six states in our region had RE performance levels of 0 to 3%. And the state that performed at 3%, Virginia, is not even considered as part of our regional generation target because they do not have an RPS policy. The remaining five states in our region achieved anywhere from 0 to 2% in 2012. This acts to drive our annual growth factor starting in 2017 to be 17%. Finally, U.S. EPA developed the annual RE generation levels for each state by applying the regional growth factor to that state's initial RE generation level, starting in 2017, but stopping at the point when additional growth would cause total RE generation

for the state to exceed the state's maximum RE generation target (2012 generation multiplied by 2020 effective RE level, 16% for Ohio's region). The interim goal is then based on the average achieved between 2020 and 2029 and the final goal is the 2029 level. For Ohio, our interim goal is 6% and our final goal is 11%[16] of RE generation in the state. [79 FR 34867, Section 4 GHG Abatement Measures TSD]

Ohio is to grow RE within the state from 1% to 11% under this proposal. Because Ohio is a large generator of electricity, this represents 13,776 GW-hs. While states in our region that are small generators, such as Delaware, will only be required to achieve 1,038 GW-hs. Ohio EPA finds this expectation unreasonable. The only way to accurately determine RE potential that is technically and economically feasible is to determine it based upon the specific states ability.

Regionalizing the Goal Computation

Ohio EPA believes the rationale for "regionalizing" the computation is technically unsupportable. Ohio EPA understands that Ohio was, for the purposes of calculation, grouped with Delaware, District of Columbia, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia because "…"this structure accounts for similar power system characterizes as well as geographic similarities in RE potential." [79 FR 34866] U.S. EPA states that "regional similarities can be inferred from the state-level technical potential reported in an NREL GIS-based analysis." [GHG Abatement Measures TSD, Page 4-12] Ohio EPA is not disputing the quality of NREL study cited, but notes that there is significant variation in the various renewable technology potentials amongst the states grouped with Ohio. More importantly, the maps presented in the NREL use very large bins for the color maps of technical potential. Although unclear from the available information, it appears that the East-Central region was grouped based on the technical potential of rooftop solar. However, in no IPM modeling study did solar generation demonstrate significant growth in Ohio.

Ohio EPA urges U.S. EPA to clarify the methodology of grouping states together, with emphasis on those renewable potentials that are demonstrated to be similar amongst the various regions. It is clear that if U.S. EPA is to pursue setting of renewable goals based on regional potential, more reasonable groupings must be used. Ohio EPA believes that in setting BSER, U.S. EPA must examine what is demonstrably achievable, supported by technically sound projections, and cost effective. The rational for grouping states based on a wide range of technical potentials is unclear. If U.S. EPA insists on continuing with this approach U.S. EPA must consider what renewables are currently in use and being developed in

[16] Ohio EPA assumes U.S. EPA rounded the 10.6% final RE generation target for Ohio to 11% for simplicity purposes. We did confirm 10.6% was used as part of the final goal computation and assume that would be the practice if this rule is finalized as proposed.

each state. Undoubtedly, renewable potential can be very different from state-to-state, even those within certain presumed regions. Based on this assessment, U.S. EPA has derived unrealistic RE goals. Additionally, U.S. EPA ignored the fact that many state RE portfolios have a cost safety valve to protect rate-payers from exorbitantly high RE costs. However, U.S. EPA assumes when setting BSER that a state can achieve its entire RPS goal, thereby artificially inflating RE potential and ultimately assumed reductions. U.S. EPA must analyze each states RPS programs in more specificity to truly inform a cost-effective and technically feasible BSER for RE.

Ohio EPA notes instances in which U.S. EPA "regional" approach to determining a state's goal clearly indicate that this system of calculating RE goals is not appropriate and U.S. EPA should be determining this ability on a state-by-state basis. First, U.S. EPA notes that for some states interim and final targets never reach the level they actually achieved in 2012. [79 FR 34868] Clearly in these cases the "best practices" is not computed accurately if a state does not even have to achieve in 2030 what they were capable of achieving in 2012. Second, U.S. EPA notes Alaska and Hawaii are not grouped with other states given their unique locations. Rather, U.S. EPA developed RE generation targets for each of those states based on the lowest values for the six regions evaluated. [79 FR 34867] U.S. EPA is giving consideration to unique location but ignores with all other states uniqueness actually related to RE potential. Third, U.S. EPA acknowledges the approach to quantification of a state's RE generation target does not explicitly account for the amount of fossil fuel-fired generation in that state and therefore, the application of their approach could yield, for a given state, an *increase in RE generation that exceeds the state's reported 2012 fossil fuel-fired generation*. [79 FR 34868 (emphasis added)] Ohio EPA finds it curious that U.S. EPA would develop a "best practices" method for one state that requires less RE than generated in 2012 (first example above) but for another state, they would be required to displace all of their fossil fuel generation with RE, and still need to generate even more RE. What would that additional RE displace? Fundamentally, this approach, in some instances will either drive a state's final goals up or down, inequitably compared to other states. This cannot possibly be considered a best practices scenario. U.S. EPA must revisit any computation method for RE and apply it based on state-specific factors and abilities.

Inadequate Consideration of Generation

Ohio EPA believes that U.S. EPA did not adequately consider generation in its regional RPS calculations. The table below presents generation and renewable information for the East-Central region, of which Ohio is a part of, for 2012. These data were compiled from the EIA Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-923). [Appendix K]

East-Central States: 2012 Total and Renewable Generation						
State	**Total Generation (MW-h)**	**Percent of Regional Generation Total**	**RE Generation, Less Hydro (MW-h)**	**RE Generation: % of State**	**RE Generation: % of Region**	**RPS 2020 Target**
PA	223,419,715	36.68	4,459,118	2.00	0.73	8%
OH	129,745,731	21.30	1,738,622	1.34	0.29	9%
WV	73,413,405	12.05	1,296,563	1.77	0.21	0%
VA	70,739,235	11.61	2,358,444	3.33	0.39	0%
NJ	65,263,408	10.71	1,280,715	1.96	0.21	22%
MD	37,809,744	6.21	898,152	2.38	0.15	18%
DE	8,633,694	1.42	131,051	1.52	0.02	19%
Wash D.C.	71,787	0.01	0	0.00	0.00	20%
Region	**609,096,718 MW-h**					

Ohio EPA would like to direct U.S. EPA's attention to several elements of this data. Firstly, there is significant variation in the generation amongst the states, with three of the states, Ohio, Pennsylvania, and West Virginia producing 70% of the regional total. From a RE perspective, two of the states in this region, West Virginia and Virginia, have determined that establishment of RE portfolios are not an economically feasible action for their state, yet both have renewable generation above New Jersey, Maryland, Delaware, and Washington D.C., which have highly ambitious 2020 RE RPS goals. It is concerning that these non-RPS states were not somehow factored into U.S. EPA's averaging in setting RPS goals, thus giving great weight to states in the East-Central region with highly ambitious 2020 targets, but little or no real renewable generation.

More so, Ohio EPA believes it is inappropriate that the ambitious 2020 RPS targets of Maryland, Delaware, and Washington D.C were given equal weight in the averaging calculation, despite the fact that these states contributed far less than 1% of the region's RE and only 7.6% of the region's total generation. Indeed, Washington D.C. has a highly ambitious renewable target, yet contributed no renewable generation to the grid in 2012. Despite what U.S. EPA describes as similar RE potentials amongst the state in this region, it is clear that these states share little in common with the other states in the region in terms of electric generation capabilities. If U.S. EPA is to pursue regional averaging in setting renewable goals (which Ohio EPA does not agree with), a weighted average that takes into account the total generation contribution of each state, the renewable contribution of each state, and accounts for the fact that several states found the creation of a renewable portfolio to be uneconomical must be developed. Absent this, the current proposed methodology places great burden on those states which generate far more electricity, discounts those states with no renewable portfolios, and requires very little of those states with little generation capacity.

Ohio EPA finds fault with the setting of renewable goals as a percentage of total generation, inclusive of generation not subject to the proposed rule. Ohio EPA believes that if the CO2 emissions of the units to be regulated under the proposed rule are the only emission included in the numerator of the goal setting calculations, then generation from renewables and avoided generation resulting from EE measures should reflect only what is attributable to those regulated units, as well. Thus, rather than using 129,745,731 MW-h of net generation in Ohio as the basis for renewable goals, a more appropriate and representative 2012 generation value would be 110,505,950 MW-h, derived by subtraction of wind, biomass, nuclear, hydro, and solar generation. Note that Ohio EPA did not separate natural gas combustion from simple cycle turbines, which would decrease this value further. Ohio EPA strongly believes that using total generation from all sources, including those not to be regulated by the proposed rule and indeed considered desired and environmentally beneficial generation, unfairly impacts those states who were early adopters of renewable and zero carbon generation technologies, and who maintain a robust and multi-faceted generation mix that Ohio EPA believes is an essential component of grid stability.

Alternative State-by-State Methodology

U.S. EPA attempts to address concerns regarding a regional analysis by taking comment on an alternative methodology that relies on a state-by-state assessment of RE technical and market potential. [79 FR 34869] The alternative approach is based on two sources of information: A metric representing the degree to which the technical potential of states to develop RE generation has already been realized, and IPM modeling of RE deployment at the state level under a scenario that reflects a reduced cost of building new renewable generating capacity. Technical potential in a state is determined by comparing the state's existing RE by technology with the technical potential for that type as assessed by the National Renewable Energy Laboratory (NREL). This comparison yields an RE development rate by each technology type for the state. U.S. EPA then considers the range of RE development rates across states in order to define a benchmark RE development rate for each technology based on the top third (16) of states.

It is unclear to Ohio EPA why U.S. EPA would start with a state-specific approach that considers what may be technically feasible in each state and then applies a nationwide benchmark to it when renewable resource development potential varies greatly by state. Development potential based upon the top 16 states is skewed. It may very well be the top 16 states are in the top 16 because they have the greatest renewable potential for a certain resource and other states may never be able to technically achieve that level of potential. U.S. EPA attempts to address potential limitations in technical potential from calculation of this benchmark by using IPM to ensure it is achievable, and where it is not, provide an alternative IPM projected market potential for a specific technology type in that state (i.e., U.S. EPA takes the lesser of the NREL derived benchmark or the IPM

results). In the IPM analysis U.S. EPA discounts RE up to $30/MW-h in order to produce a favorable outcome.

Another concern is that the above approach assumes that every state RE program that results in RE generation is a "demonstrated technology" that meets "best practices." If U.S. EPA is relying on these programs for that purposes, they must take them at face value and allow those programs, as implemented in each state, to fully qualify for implementation under this proposal and satisfy all compliance and federal enforceability requirements. The use of one single GIS analysis should not be used to determine technical potential under this proposal.

Ohio EPA has examined several of the assumptions for the alternative methodology. While Ohio EPA agrees in principal with taking into account the technical potential of renewables, it does not agree with the growth rates established by U.S. EPA. Ohio EPA believes that U.S. EPA ignored individual state-by-state RE performance and, true technical potential, and costs of these measures. Furthermore, Ohio EPA believes that the alternative target generation for wind power in Ohio, 11,663,046.41 MW-h, is overly optimistic. This value is approximately half of the NGCC power generated in 2012 in Ohio, when natural gas prices were historically low.

Using the EIA capacity factor for onshore wind, 0.34, Ohio estimates that the target appears to call for 3,916 MW of wind power in the state. While Ohio EPA acknowledges that there is some additional potential for wind power in the state, this estimate is overly optimistic. Even if such a large amount of wind capacity could be built, such generation could not be relied upon for base load power, and would be available to only a limited portion of the grid when dispatched. Thus, the projected wind power could not realistically replace gas or coal-fired generation in a sustained base load capacity. Although Ohio may have additional wind generation potential, the development of such capacity relies upon federal subsidies for construction and utilization. Without the federal subsidy (and a federal commitment to provide this subsidy until 2030 and beyond) little new generation capacity will be built.

In-State vs. Out-of-State RE Generation

In addition, Ohio EPA understands that U.S. EPA did not distinguish between in-state and out-of-state renewable generation, when many of the actual renewable portfolios averaged in U.S. EPA's regional goals do so. This further calls into question the rationale behind the regions selected by U.S. EPA according to RE potential, when most states have already recognized these potentials and their limitations when designing their own renewable portfolios. U.S. EPA relied upon the document "Renewables Portfolio Standards in the United States: A Status Update, November 2013" [GHG Abatement Measures TSD, Page 4-3] to justify aspects of this proposal. However, even this document discusses how each state's current RPS requirements can very substantially; the eligibility of different

renewable technologies, whether existing projects qualify, the treatment of out-of-state generators, the use of credit multipliers, methods to enforce compliance, and waivers for compliance are just a few examples.

U.S. EPA appears to have ignored this variability. In addition, U.S. EPA's requirements for implementation, also discussed in our comments, will restrict states due to federal enforceability requirements. U.S. EPA's best practices and ultimately the state goals cannot be based on or computed from the assumption that certain RPS targets can be achieved when under the conditions of this proposal may not even be permitted to be used for compliance. Likewise, if U.S. EPA is to rely on current RPS programs in the states as "best practices" then U.S. EPA must take them at face value and allow those programs, as implemented in each state, to fully qualify for implementation under this proposal.

Ohio EPA is concerned that this lack of distinguishing between in-state and out-of-state renewable generation that U.S. EPA did not accurately account for could have led to double-counting in determining the state goals. A state with an RPS that allows for RE to be imported may be considered to have a higher level of RE potential than is actually generated in the state. Likewise, the state(s) it imports from has an RE potential that also considers this same level of RE generation. U.S. EPA cannot double count this RE potential in formulating goals. Further, this calls into question how credit can be taken in a state plan and then how compliance with a state plan is determined. U.S. EPA has proposed several alternatives to eliminate double-counting in state plans and for compliance purposes. (See our comments in the section titled Interstate Effects). However, U.S. EPA is giving no consideration to this issue with respect to goal setting. If a state's RE is exported to another state and counts towards the importing state's reductions, what happens to the exporting state's RE target? Should it not be adjusted? U.S. EPA must use consistent methodologies to eliminate double-counting in goal setting and in plan development and compliance determinations.

Hydropower Generation

Also of note is U.S. EPA rational for excluding hydropower generation from the existing 2012 generation for purposes of quantifying BSER. U.S. EPA believes it could distort regional targets that are later applied to states lacking that existing hydropower capacity. [79 FR 34867] Ohio EPA asserts that U.S. EPA is not considering all types of RE sources and analyzing state-by-state where there is a lack of capacity and/or potential. For example, did U.S. EPA consider states lacking wind or solar capacity? This is another attempt by U.S. EPA to attempt a faulty computation method that would otherwise provide skewed and irrational results. In turn, by excluding hydropower from the RE target computation there are several states that will actually meet, and well exceed, their interim and final goals for RE generation (GW-h) when allowed to use pre-existing hydropower for compliance purpose. This creates a very inequitable playing field for RE goals.

The only rational method for setting a state RE target is to take into consideration existing capacity of all RE sources within the state and RE potential specifically in each state for each resource.

Nuclear

New

Five nuclear EGUs at three plants are currently under construction. U.S. EPA believes that since the decisions to construct these units were made prior to this proposal, it is reasonable to view the incremental cost associated with the CO2 emission reductions available from completion of these units as zero for purposes of setting states' CO_2 reduction goals (although they acknowledges that nuclear is very expensive and the planning for those units likely included consideration of the possibility of future regulation of CO_2 emissions from EGUs). Because U.S. EPA considers completion of these units at zero cost, they have determined addition of these units into the state goals can be done at a very reasonable cost. Obviously a new nuclear plant would be quite expensive and it surely benefits U.S. EPA in the cost analysis of this rule to consider these units at zero cost. Ohio EPA believes, at a minimum, U.S. EPA should consider the real costs of these units because absent this rule, these units would not be required to be preserved and operate at U.S. EPA specified levels indefinitely.

U.S. EPA also realizes that reflecting completion of these units in the goals has a significant impact on the calculated goals for the affected states and if one or more of the units were not completed as projected, the affected state could struggle to meet the goal. Therefore, U.S. EPA is requesting comment on whether it is appropriate to reflect completion of these units in the state goals. [79 FR 34870] Ohio EPA believes this is another example as to why there MUST be flexibility to adjust goals in the future when there are legitimate circumstances that warrant an adjustment.

Existing

As part of this proposal, U.S. EPA intends to force states to preserve nuclear capacity that is "at risk" even though U.S. EPA recognizes factors such as "increasing fixed operation and maintenance costs, relatively low wholesale electricity prices, and additional capital investments associated with ensuring plant security and emergency preparedness" have altered nuclear outlook. [79 FR 34871] U.S. EPA acknowledges increasing costs are associated with nuclear capacity and undoubtedly this is one of the reasons six nuclear EGUs at five plants have retired or been announced for retirement since 2012. A nuclear life-span is considered to be 40 years and they are licensed as such. Recognizing a

nuclear plant's design can allow for operation beyond the 40 years, the Nuclear Regulatory Commission will grant renewal licenses for 20-year periods. U.S. EPA is assuming the re-licensing of all existing nuclear units up to a final life span of 60 years. U.S. EPA acknowledges "according to a recent report, nuclear units may be experiencing up to a $6/MW-h shortfall in covering their operating costs with electricity sales." [79 FR 34871] Erroneously, U.S. EPA has determined it is cost-effective and appropriate to require their estimated 6% "at risk" nuclear capacity to be maintained, indefinitely. Ohio EPA disagrees and has several concerns with the inclusion of nuclear capacity, "at risk" or otherwise, as part of a BSER.

U.S. EPA cannot assume Ohio's, or any other states nuclear capacity can be maintained at any percentage level, indefinitely. Ohio has two nuclear facilities that would be affected by this provision, Davis-Besse and Perry. Davis-Besse is currently attempting to obtain a license renewal while Perry's operating license expires in March of 2026[17], prior to when the final goals would have to be achieved. The process of re-licensing by the Nuclear Regulatory Commission is a multi-year highly detailed process. If these facilities are unable to maintain operational status, Ohio EPA will not be able to preserve 6% of their generation and would have to make up for that shortfall with other zero emitting generation. Ohio would need to replace 993,077 MW-h's of generation. This is equivalent to doubling our wind generation (985,485 MW-h), notwithstanding the fact other renewable sources could never fully replace nuclear capacity due to their intermittent nature. U.S. EPA is over stepping the bounds of Section 111(d) and this element of the proposal should be removed.

Deficiencies, Inconsistencies and Errors in Goal Calculation

In setting the individual state goals, U.S. EPA included the generation of the 6% of nuclear capacity to be "at risk", dispatched at a 90% capacity factor in the denominator of the goal calculation. Ohio EPA has identified several deficiencies, inconsistencies, and errors in U.S. EPA's methodology which we believe must be addressed.

Nameplate Capacity

As with the re-dispatch of natural gas component of the goal setting, U.S. EPA relied on nameplate capacities in their calculations. Ohio EPA understands that the nameplate capacity of a unit represents a gross-rating of the generator alone, and is not indicative of the net capability of a particular *unit as a whole*. Ohio EPA believes that the "summer capacity" of the units is more representative. Summer capacity represents the *net* rating or capability of a generating unit as a whole. Ohio has 2,236.8 MW of nameplate nuclear

[17] http://www.nrc.gov/info-finder/reactor/perr1.html

capacity. Using the more appropriate summer capacities for these units taken from EIA-860 reporting, this capacity is 2,134 MW. Furthermore, Ohio EPA has identified that U.S. EPA, in the GHG Abatement Measures TSD, used 2,150 MW of capacity for Ohio's nuclear fleet, and has been unable to resolve this value with available nameplate and summer capacity information.

At Risk Capacity

Ohio EPA understands that U.S. EPA identified 6% of nuclear capacity as "at risk" based on projections of potential retirements presented in the 2014 EIA Annual Energy Outlook as well as the announced retirement of six nuclear EGUs. Ohio EPA is not aware of any supporting documentation presented by EIA or U.S. EPA to support these projected retirements, and only a single reference is cited in the TSD. This reference, "Implications of accelerated power plant retirements, J. Jones and M. Leff, 2014" presents only vague and ambiguous "economic challenges". Furthermore, the EIA study itself indicates that these unspecified retirements would occur in unidentified "vulnerable regions", yet U.S. EPA applied their methodology to all states with nuclear generation. Ohio EPA understands that a BSER is based on adequately demonstrated, economically feasible measures. In this instance, Ohio EPA believes that the designation of 6% of nuclear capacity as "at risk" based on a single study presented with little to no supporting documentation is insufficient to include "at risk" nuclear capacity as part of a BSER.

Displacement of Higher Intensity Generation

It is not clear how existing nuclear power generation can reduce CO2 emissions, when these units have been operating at near-constant capacity factors for many years. Any displacement of more carbon intensive generation would have already taken place. The approach taken by U.S. EPA in including even a fraction of existing nuclear generation is inappropriate, as these existing units cannot and will not displace generation from more carbon intensive sources. It is clear that the inclusion of the 6% "at risk" nuclear generation in the goal setting calculations is an artificial and overwrought attempt to drive target rates lower than necessary or practical. Ohio EPA urges U.S. EPA to reconsider the inclusion of existing nuclear generation in all CO2 intensity calculations.

Role of Renewables and Energy Efficiency

It is U.S. EPA's intention that the increased use of renewable fuels and the ambitious EE targets set forth in the proposed rule would serve to decrease

demand. Ohio EPA believes this will create a situation in which the continued operation of marginal or "at risk" nuclear units become economically unfeasible. If these units close, the generation of these units is likely to be replaced with additional generation from more carbon intensive sources, such as coal and natural gas. Ohio EPA urges U.S. EPA to examine more fully the interplay and potential counteractive results of greenhouse gas abatement measures when considered in totality as a BSER.

Existing Nuclear Capacity

Ohio EPA cannot resolve differences between the stated nuclear capacities for Ohio in the GHG Abatement Measures TSD with EIA reports. U.S. EPA states in that document that 2,150 MW of nuclear capacity were operational in Ohio in 2012. The 2012 EIA-860 report for the same year lists 2,236.8 MW of nameplate nuclear capacity. More appropriately, the 2012 EIA-860 report gives a summer capacity of 2,134 MW.

Building Block 4: Energy Efficiency

Numerous agencies, organizations and entities in Ohio have contributed to successful EE programs within our state. Ohio supports and encourages EE development throughout Ohio. Ohio recognizes the benefits of EE measures towards both reducing CO2 emissions regardless of the generation source and reducing the energy bills of Ohio consumers. However, states must continue to have the freedom and flexibility to use their full-range of energy resources in the most cost-effective manner and reduce demand in a cost-effective manner.

Ohio EPA does not, nor has the authority, to implement federally enforceable state mandated EE programs. While many stakeholders urged U.S. EPA to allow demand-side EE policies be a part of compliance options under the proposal for new sources, it was never the intent that it would be a component of BSER, resulting in a standard of performance for EE further lowering state goals.

Regardless, U.S. EPA has proposed a "best practices" demand-side EE they believe represents a "feasible policy scenario", requiring "accelerated use of EE policies in all states *consistent with a level of performance that has already been achieved or required by policies…of the leading states.*" [79 FR 34872 (emphasis added)] Ohio EPA wishes to point out that rushing states to develop and implement a demand-side EE program that meets U.S. EPA requirements to be quantifiable, non-duplicative, permanent, verifiable, and enforceable injects the federal government into an area that is under state purview. Yes, states have had the ability for a number of years to incorporate demand-side EE reductions into SIPs under Section 110 but very few states have ever taken advantage of this opportunity due to requirements that make it incredibly

challenging. (Ohio expresses additional concerns regarding this implementation issue under the Compliance Plan comments below).

U.S. EPA acknowledges this component of BSER is "based upon the experience and success of states in developing and implementing energy efficiency *policies* that they undertake *primarily for the purpose of providing economic benefits to electricity consumers in their state."* [79 FR 24874 (emphasis added)] Yet U.S. EPA is requiring all states to obtain additional reductions in CO2 emissions equivalent to those achieved by "the leading states" policies intended to aide consumers. Leading states with demand-side EE programs that Ohio EPA is sure would not meet U.S. EPA's rigorous requirements to be quantifiable, non-duplicative, permanent, verifiable, and enforceable. Ohio EPA anticipates typical EM&V (evaluation, measurement and validation) protocols often used for these programs would not be sufficient for U.S. EPA. Ohio EPA believes the target that has been set cannot be attained under these constraints.

Establishing EE Targets

U.S. EPA has set a target based on 12 leading states that have either achieved or established requirements for annual incremental savings rate of at least 1.5% of the electricity demand that would otherwise have occurred. Ohio EPA notes only three states have actually achieved an annual incremental savings rate of at least 1.5%. The remaining states have only committed to that level. Yet U.S. EPA is proposing a 1.5% annual incremental savings with a pace at which incremental savings levels are increased from their historical levels at 0.2% per year. [79 FR 34872] U.S. EPA is also taking comment on a less stringent alternative that has, *or will be*, achieved by 20 states; using 1.0% annual incremental savings with a pace at which incremental savings levels are increased from their historical levels at 0.15% per year. The 1.0% rate of savings is a level of performance that has been achieved—or that established state requirements will cause to be achieved—by 20 states. [79 FR 34873] And lastly, U.S. EPA is taking comment on a more stringent approach of increasing the annual incremental savings rate to 2.0% and the pace of improvement to 0.25% per year "to reflect an estimate of the additional electricity savings achievable from state policies ….such as building energy codes and state appliance standards." [79 FR 34875]

U.S. EPA's targets are based on what leading states have achieved *or established requirements for achievement*. U.S. EPA should not be using yet-to-be determined achievable requirements that have not been adequately demonstrated. Even more discouraging is the fact U.S. EPA's analysis shows that in 2012, only 3 states actually achieved a level of 1.5%. U.S. EPA's basis for "demonstrated" relies heavily on targets set by 11 states to achieve by 2020, targets that have yet-to-be demonstrated. [GHG Abatement Measures TSD, Page 5-33]

On a technical note, Ohio EPA believes that the percent of Ohio's in-state generation for EE should be 85.1%, and not the 85.97% used by U.S. EPA in the Goal Setting

TSD example. The 85.97% number cannot be replicated using the EIA data cited by U.S. EPA. Ohio's 2012 total retail sales were 152,456,864 MW-h, from EIA annual retail sales data. [Appendix L] Ohio's in-state net generation in 2012 was 129,745,731 MW-h, from EIA annual generation data. [Appendix K] Thus, Ohio's percent generation is 85.1%.

State RE and EE Programs

The state of Ohio is one of many across the nation to have RPS developed. U.S. EPA has used this fact on multiple occasions as justification for including RE targets. It is, however, it appears that U.S. EPA has failed to actually analyze the Ohio program. Recognizing the challenges of Ohio entities, our state legislation included provisions in our RPS that tailor the requirements such that it is feasible, economical and workable in Ohio. For example, Ohio's RPS includes provisions which "electric utility or electric services company may seek a force majeure determination from the commission for all or part of a minimum renewable-or solar energy benchmark" (OAC rule 4901:1-40-06). [Appendix M] This chapter sets up detailed criteria a source would need to submit to demonstrate a dire need to end their legal requirement to meet compliance obligations. The conditions to qualify for force majeure are not effortlessly met nor are they readily given; but the state of Ohio determined them necessary for cases of extreme need when developing Ohio's RPS. Furthermore under OAC rule 4901:1-40-07 electric utilities or service companies "may file an application requesting a determination from the commission that its reasonably expected cost of compliance with an advance energy resource benchmark would exceed its reasonably expected cost of generation to customers by three percent or more." [Appendix M]

Provisions such as force majeure and cost cap have not been accounted for in U.S. EPA's rule. Federally enforceable RE would not allow states the flexibility to apply such measures in cases when it is needed. States would be locked into goals that do not account for real world changes and do not allow state agencies to fully utilize their knowledge regarding these measures and what is the most beneficial for the state. This further strengthens Ohio EPA's desire to keep measures like RE and EE as state-only programs. States should have control over what programs are used to achieve state RE and EE goals and if a program becomes no longer economically beneficial or technically feasible, the state can freely chose to take appropriate action without a lengthy SIP revision or enforcement by U.S. EPA or a citizen's suit.

In regards to implementing EE programs in the state, Ohio has the following language in ORC 4928.66 (2)(b) [Appendix N]: "The commission may amend the benchmarks set forth in division (A)(1)(a) or (b) of this section if, after application by the electric distribution utility, the commission determines that the amendment is necessary because the utility cannot reasonably achieve the benchmarks due to regulatory, economic, or technological reasons beyond its reasonable control." U.S. EPA has afforded no similar opportunity for states to make adjustments that are warranted, yet used these very state programs to develop the goals. U.S. EPA must re-evaluate the RE and EE goals, base them on all provisions provided in the individual state RPS

programs and provide needed flexibility for goals and state plans to be adjusted when warranted, without the need for anti-backsliding provisions.

Ohio's RPS Changes

In developing goals, U.S. EPA incorrectly applied outdated Ohio law to develop Ohio RE and East Central regional goals. Specifically, U.S. EPA appears to have used Ohio Senate Bill (SB) 221 as a baseline for Ohio's state plan. On September 12, 2014, SB 221 was replaced by SB 310. The revised RPS outlined in SB 310 reduces long term targets and freezes the annual benchmarks for RE and solar energy resource development for two years. By using outdated and incorrect benchmarks, U.S. EPA has inflated Ohio goals and the goals of states within the East Central region. This must be corrected.

In addition, SB 310 created an Energy Mandates Study Committee in an effort to: ensure Ohio customers have access to affordable energy; incorporate as many forms of inexpensive, reliable energy sources as achievable; better understand how energy mandates impact jobs and the economy of Ohio; minimize government mandates; and ensure Ohio's current law is not unrealistic or unattainable. SB 310 acknowledges "because the energy mandates in current law may be unrealistic and unattainable, it is the intent of the General Assembly to enact legislation in the future, after taking into account the recommendations of the Energy mandates Study Committee." This Committee will study Ohio's RE, EE, and peak demand reduction mandates and finalize a recommendation report by September 30, 2015. [Appendix O] The potentially revised RPS and EE goals for Ohio, if enacted, will be in effect after U.S. EPA projects finalization of CPP rule. As a result, the targets established by CPP will be based upon incorrect potential EE/RE assumptions for Ohio. U.S. EPA must revise the analysis for Ohio and the East Central region to reflect SB 310 and not SB 221.

As an additional example of state specific challenges that U.S. EPA omitted from consideration when developing the proposed CPP rule, proposed Ohio House Bill 506 presents specific challenges to development of a state plan to comply with Section 111(d). While not passed by the full Ohio Legislature at the time of these comments, it excludes specific potential compliance measures assumed under this proposal. Ohio encourages U.S. EPA to provide maximum flexibility to states in how to meet goals, as well as in the establishment of targets and benchmarks that apply to states. Goals must be revisable under circumstances such as this.

Inappropriate Reliance on IPM and EIA

For a number of years, numerous states and organizations have expressed concerns regarding U.S. EPA's IPM modeling and concerns of its accuracy and appropriateness for developing important policy and regulatory programs. The concerns identified below clearly identify inherent problems with U.S. EPA's over reliance on IPM and EIA which

provides a false sense of security. Ohio EPA strongly advocates that U.S. EPA should do its due diligence by consulting appropriate federal agencies and using established modeling and analysis mechanisms.

Ohio EPA, working jointly with other states through the Lake Michigan Air Directors Consortium (LADCO) have expressed these concerns in the past. On June 30th 2014, LADCO submitted comments regarding U.S. EPA's 2018 Modeling Platform and use of IPM. [Appendix P] The same concerns seem to resurface. Concerns regarding the economic optimization of the IPM model specifically with respect to the power system, which is not completely governed by economics. Reliability, emissions credit trading, and corporate/organizational inertia can all influence where companies select to generate power. The juxtaposition of these two ideas are best manifested and illustrated in the handling of a single large oil burning unit in Virginia called Possum Point. On peak days Possum Point has significant generation, also the unit runs during the spring maintenance periods of the nuclear plants in Virginia. This example illustrates the inherent problem with using a national model such as IPM that cannot take into account the potential state and local reliability issues that arise.

Ohio EPA has serious reservations concerning the ability of the IPM to accurately predict and demonstrate grid reliability under the proposed rule. Ohio EPA understands that the IPM model is a deterministic linear programming model, which, for specified periods of time, determines the least-cost method of meeting energy and peak demand requirements. IPM is categorically not a dispatch model, and is limited in multiple ways in its reliability assessment capabilities. Among these limitations are seasonal only dispatch, lack of the necessary finely-detailed transmission and distribution information required to accurately model intra-regional dispatch, and the treatment of generating units as aggregates (as opposed to individual, geographically located entities within the transmission grid), which fails to represent congestion at the local geographic level.

Furthermore, IPM inadequately represents solar, wind, and other forms of intermittent renewable generation which are reliant on favorable meteorological conditions; IPM does not account for meteorology through either past observed weather data or random meteorological data generation. Accurate and reliable transmission modeling of the type conducted routinely by RTOs and other entities concerned with grid reliability can only be accomplished with sophisticated dispatch models. Models of this type are non-linear, rely on historical operating data to achieve optimal dispatch, correctly treat generating units as specific, geographically located entities, and are capable of identifying congestion at the proper level of detail. Ohio EPA contends that absent independent, transparent and open dispatch modeling, implementing the proper dispatch modeling tools, reliability under the proposed rule has not been adequately demonstrated by U.S. EPA via IPM modeling results. Given the far-reaching impacts of the proposed rule and the grave consequences of grid reliability issues, if U.S. EPA insists on moving forward with this proposal, Ohio EPA urges U.S. EPA to engage in outreach with the various RTOs, FERC, NERC, and other entities capable of adequately modeling dispatch scenarios under the proposed rule. We believe that a fully optimized economics based projection tool is an inappropriate mechanism for building future policy frameworks or setting policy budgets.

U.S. EPA relied on results generated by IPM in the development of the proposal and the assessment of the economic, reliability, and technical feasibility. Ohio EPA has serious concerns with this approach, based on a number of assumptions and results that do not seem technically sound, feasible, or reasonable. Ohio EPA conducted an analysis of the limited parsed IPM results made available on the docket as well as those IPM scenarios for which parsed files were not made available, analyzing specifically Option 1, State-specific compliance policy case, the Regional Plan scenario, State Plan Blocks 1 and 2 only, and the base case scenario.

Ohio EPA's primary concern is that a decrease of between 4 and 7 million tons of CO2 (dependent upon which scenario is in question) was predicted between the base and policy cases in 2025. Overall, IPM projects a ~26% decrease in CO2 tonnage from 2005 levels in Ohio. This will be extremely challenging and practically impossible for several reasons. As a deregulated state, implementation of the proposal would likely involve an extensive reconstruction of the power grid and electric distribution both within Ohio and across the entire PJM reliability region. Ohio EPA understands that the creation of a plan in accordance with the proposal would be an intensive, complex, and costly process for many states. Ohio EPA finds it difficult to reconcile the considerable expenditure of resources and effort that would be necessary under the proposal to realize a net benefit of 4 to 7 million tons of CO2, relative to the base case scenario by 2025, especially because we expect to already achieve significant reductions absent this proposal.

Ohio EPA understands that, by the middle of 2016, closures of coal-fired power plants in the state will result in a loss of 6836 MW, or 30%, of Ohio's generating capacity. These closures represent the loss of 13.9 million MW-h from 2012 levels, when natural gas prices were at or near historic lows. This loss of generation will be compensated for by increased generation at the remaining coal-fired power plants and combined and single cycle natural gas plants to maintain grid reliability. Ohio EPA also anticipates that electricity demand will increase from 2012 levels by 2025. IPM projects no new significant NGCC generation in Ohio which is concerning given the above realities and U.S. EPA's assumptions of the increasing availability of natural gas in the state. It should be noted that new NGCC units appear in the IPM projections in Ohio, but those units have negligible generation. This makes no sense and is incompatible with Building Block 2.

IPM projects, under the state-only policy case, 3,001 MW of new wind capacity in Ohio by 2025. [Appendix Q] Under the regional compliance plan, this is increased to 4,955 MW of new wind power in 2025. While Ohio EPA recognizes the potential for wind power in the state given recent rapid growth in the wind sector, wind power does not, and cannot, supplement or replace the base-load power supplied by coal and natural gas fired power plants. Furthermore, Ohio EPA strongly urges U.S. EPA to consider the highly-localized nature of wind-power and its ability to serve a small portion of the overall grid. These results clearly indicate that location and base-load reliability concerns were not considered fully in the IPM projections.

Ohio EPA examined wind capacity projections from EIA's 2014 Annual Energy Outlook. Between years 2012 and 2030, the largest annual change in wind capacity for the RFCW region, of which Ohio is a part, was 37 MW. U.S. EPA's projection of 3001 MW of new wind capacity in Ohio by 2025 under the state-only scenario represents the addition of 195 MW each year starting in 2012 and concluding in 2025. Thus, U.S. EPA is projecting a growth rate in wind capacity 5.3 times greater than that projected by EIA. Ohio finds this difficult to comprehend. U.S. EPA's reliance on an inaccurate model leads to a large overestimate of the amount of RE that can be achieved in Ohio and only reinforces the level of inaccuracies in this proposal.

IPM projects substantial HRIs at those coal-fired power plants remaining operational in 2025. These HRIs represent a fleet-wide improvement of 7.7% from 2012 levels in Ohio, as indicated by the CO2 emission intensity. This HRI will be unattainable by those units remaining in operation beyond 2016. As indicated in the comments related to Building Block 1, Ohio EPA does not believe the 6% HRIs proposed by U.S. EPA are achievable let alone 7.7% HRIs predicted by this model. It is understood that these remaining coal-fired power plants will already be well-controlled and efficient, having operated in a deregulated, competitive power market for 24 years by 2025.

Ohio EPA compiled available capacity factor data from eGRID for years 2000, 2004, 2005, 2007, 2009, 2010, and 2012. Comparison of historical capacity factors to those projected by IPM under the policy case raises significant concerns. Firstly, Ohio EPA notes that significant increases in coal-fired capacity factors are projected under all IPM scenarios examined. Most concerning are the substantial increases projected for smaller and municipal EGUs. As an example, Painesville Municipal Power, Unit 3, has historically operated at an approximately 10% capacity factor, yet is projected in IPM to operate at 84% capacity. Larger plants are projected to operate at capacity factors approximately two times greater than those observed historically. For example, units at the W.H. Sammis plant are projected to operate at capacities between 31 and 67% greater than those observed historically. Capacity factors at all coal-fired units in the State of Ohio are projected by IPM to be between 80 to 85% by 2025. This is in direct conflict with Building Block 2 which calls for the re-dispatch of coal-fired power plants to NGCC. This example further illustrates why U.S. EPA cannot accurately predict what electric generation will look like in the future. U.S. EPA's own model predicts internal conflicts with the proposed rule.

Ohio EPA has significant concerns on the projected capacities at new and existing renewable resources. Comparing IPM projections for hydro to historical eGRID data, Ohio EPA has identified that the capacity factors projected by IPM for O'Shaughnessy and Hamilton Hydro plants are approximately 5 times their historical values under the 2025 state compliance plan. Such heavy utilization at these units is unlikely given historical precedence and no announced plans for expansion. As noted previously, IPM projects 3,001 MW of new wind capacity in 2025 under the state compliance option, and 4,955 MW under the regional compliance plan. This is not realistic and in addition, these new units are projected to operate between 30 and 36% capacity, significantly greater than existing wind turbines in the state, which typically operate at approximately 20 to 25% capacity. These projected capacity factors also reveal that very little

emphasis was placed on the difference between technologies capable of supplying base-load power and those units which supply electricity only when available to do so.

NGCC units are projected to operate at levels very similar to those observed in 2012 under both the regional and state compliance options. Ohio EPA believes that this is unlikely, given the historically low price of natural gas in 2012. Furthermore, IPM projects 6 of Ohio's 26 existing NGCC units operating at above 70% capacity. As an example, all 3 units at the Dresden Energy Facility are projected at 86% capacity in 2025. Whether these units can receive the natural gas to operate at this level is not a factor that is considered by the IPM model.

Although IPM accurately projected shutdowns of coal-fired power plants consistent with Ohio EPA's current understanding, it is unlikely that the Conesville Power Plant will cease operation. This facility recently received a one-year extension of the MATS compliance deadline to install mercury controls.

Heat Rate Improvements and Associated Costs

Ohio EPA notes that IPM projects, under the base case, CO2 emissions from coal-fired EGUs of 98,363,280 tons, and total generation of 94,404,769 MW-h. Under the state compliance plan policy case, these emissions are 92,687,274 tons, with total generation of 94,553,848 MW-h. The projected increase in generation from coal under the policy case coupled with a significant reduction is CO2 emissions would seem to indicate that HRIs are strongly discounted in the IPM projections and represent within the model a cost-effective means for reducing the overall state emission rate. Although Ohio EPA believes U.S. EPA's proposed HRIs are not achievable in Ohio, using the example provided in the S&L Study for a 250 MW unit, Ohio EPA very conservatively estimates the capital costs to achieve the state-wide 7.7% HRI projected under the policy case would be approximately 751 million dollars. Ohio EPA would reiterate here two specific points. Firstly, the 751 million dollar estimate derived from this analysis is presented here only to illustrate Ohio EPA's contention that the true capital costs of HRIs were inadequately accounted for by U.S. EPA. Ohio EPA believes this illustrative cost is drastically underestimated. Second, Ohio EPA contends that the 6% HRI envisioned by U.S. EPA, let alone the 7.7% HRI modeled by IPM for Ohio, is unobtainable. Ohio EPA's contention that said HRI is not realistic is supported not only by Ohio EPA's analysis, but by, among others, Sargent & Lundy in their October 15, 2014 letter and NERC's November 2014 Initial Reliability Review.

Ohio EPA affirms that the cost estimate example provided in the S&L Study is not fully representative of individual coal-fired units in Ohio and underestimates true costs, but enables some scrutiny of IPM results. Ohio EPA believes that capital costs necessary to realize a 7.7% HRI in Ohio's coal-fired fleet would be significantly greater than the 751 million dollar estimate. This number is simply a convenient reference point. These same HRIs were projected by IPM to be approximately 150 million dollars in terms of capital costs. U.S. EPA must consider more appropriate

and realistic HRI costs in the IPM projections. Additionally, these costs estimates should be derived from real-world HRI projects at coal-fired power plants, with consideration given to the feasibility of such projects in both vertically integrated and deregulated, competitive power markets. U.S. EPA is relying on flawed studies or the misapplication of studies and modeling to produce a totally inaccurate result.

Ohio EPA believes that the unrealistic price of HRIs implemented by U.S. EPA in the IPM projections produced very unrealistic HRIs both state-wide and at individual units. Ohio EPA has selected several of these as examples. Firstly, Kyger Creek Unit 2 was projected to experience a 30% HRI over 2012 levels by 2025. Other units at the Kyger Creek plant are projected to realize 15% HRIs. Unit 1 at the General James M. Gavin plant is projected to realize an 11% HRI and Unit 2 at the same facility to realize a 9% improvement. Ohio EPA understands that as a state with a deregulated power market, it is highly beneficial and profitable for EGUs to operate at the most efficient levels possible. Thus, if it were technically feasible for units at Kyger Creek to improve their efficiencies by 15 to 30%, those units would have already done so due to market forces alone, independent of any rulemaking. If HRIs are to be considered part of a BSERs, U.S. EPA must consider realistic, attainable, and available HRIs in all aspects of the rulemaking process, including IPM projections. Additionally, U.S. EPA must recognize the fundamental differences between vertically integrated and deregulated power markets in all aspects of any rulemaking, including IPM projections and cost assumptions.

Ohio EPA understands that a “shadow price” was applied to CO2 to drive NGCC generation and the increased use of renewable resources in the IPM. This “shadow price” is understood to be $11.30 per ton in Ohio under the state compliance case, and approximately $30 per ton nationwide. It is difficult to understand how these additional projected costs on CO2 would not lead to increased electricity costs for the consumer and how these costs are directly offset by projected health benefits not associated with CO2.

Co-Firing of Biomass

Ohio EPA analyzed the available IPM RPE results files for years 2025 and 2030 for the following scenarios: Base Case, State Only Compliance, Regional Compliance, and State Plan Blocks 1 and 2. This analysis revealed significant amounts of co-firing of biomass at the coal-fired utilities in Ohio.

Co-firing of biomass was observed between 1.6 and 2.9% of coal-fired generation (by Unit ID) in all IPM projections analyzed, including the base case. While Ohio EPA agrees that co-firing of biomass is certainly a developing and growing methodology for reducing CO2 emissions, the technology and its long-term impacts for the electric generation sector in Ohio is immature. There is concern that biomass co-firing could have negative impacts on existing controls, impacting both their efficiency and potentially increasing the amount of maintenance necessary to maintain adequate levels of controls. Biomass co-firing is a promising technology, but U.S. EPA errors

in allowing for unrealistic biomass usage in the IPM model and until the technology has matured and sufficient engineering data and experience are gathered, U.S. EPA should refrain from this unrealistic assumption.

Electrical Demand Projections

EIA's Annual Energy Outlook 2014 identified electricity demand "declined in four of the five year between 2008 and 2012." Further, EIA deduced "one contributing factor was the steep economic downturn from late 2007 through 2009…" and "other factors, such as efficiency improvements associated with the new appliance standards in the buildings sectors and overall improvement in the efficiency of technologies powered by electricity, have slowed electricity demand growth and may contribute to slower growth in the future, even as the U.S. economy continues its recovery." [Appendix R, Page IF-46] U.S. EPA made the assumption that there will be no electricity demand growth in the future in contrast to EIA's Annual Energy Outlook 2014 with projections to 2040 released April 2014. The report considered two cases, a "reference case, which assumes no new efficiency standards beyond those already in place or announced as final for future implementation as of 2012…" and a low electricity demand case, both cases projected electricity demand growth. Generation was projected to increase by 29% for the reference case and 7% for the low demand case from 2012 to 2040.

Electricity demand in the future will play a large role in determining the impacts and outcomes under this proposal. While EIA should be considered an expert in this arena, in comparison to U.S. EPA, Ohio EPA is equally concerned with the track record EIA has had in regards to predicting various elements of the energy sector. This example again illustrates the lack of U.S. EPA expertise in the area of energy forecasting.

Ohio EPA has significant concerns about the long-term projections of CO2 emissions and generation that will be required in formulating a state plan. Primarily, Ohio EPA has strong doubts about the accuracy of such projections and the negative impacts this lack of accuracy will have on grid stability, consumer costs, and accountability. Under the proposed rule, states would be tasked with projecting CO2 emissions and electric demand, as well as the growth of RE and EE ten years into the future. While U.S. EPA describes the many tools available to this end, it is the accuracy of these tools and assessments that concern Ohio EPA. Ohio EPA examined the results of the 2013 EIA Annual Energy Outlook Retrospective Review, in particular Table 15 and Table 21, which detail the accuracy of EIA projections of total energy sales and total energy related CO2 emissions. Ohio EPA tabulated the reported accuracy of EIA's projections for years 1994 to 2007 out to five and ten years. These data are presented in the tables below.

AEO Historic Predicted vs. Actual Energy Related CO2 Percent Difference		
	5 Year Projection	**10 Year Projection**
AEO 1994	-5.43	-5.30
AEO 1995	-8.08	-5.33
AEO 1996	-4.09	-0.68
AEO 1997	-0.40	2.66
AEO 1998	2.92	*10.67*
AEO 1999	1.83	*19.70*
AEO 2000	2.89	*16.50*
AEO 2001	6.10	*22.03*
AEO 2002	6.88	*31.15*
AEO 2003	8.88	-
AEO 2004	*18.96*	-
AEO 2005	*17.85*	-
AEO 2006	*17.13*	-
AEO 2007	*20.40*	-

U.S. EPA is proposing to require corrective measures be implemented as expeditiously as practical if a state is not within 10% of the performance projected (which our objection to is discussed later in these comments). Ohio EPA would call attention to the above graph, which demonstrates that 4 of the 14 five-year projections are above U.S. EPA's 10% margin of error (*italics*). Of the 9 ten-year projections, 5 are above U.S. EPA's proposed 10% margin of error (*italics*).

AEO Historic Predicted vs. Actual Total Electricity Sales Percent Difference		
	5 Year Projection	**10 Year Projection**
AEO 1994	-7.28	-8.02
AEO 1995	-9.16	-10.27
AEO 1996	-6.52	-7.11
AEO 1997	-2.50	-3.07
AEO 1998	-0.17	1.11
AEO 1999	-0.38	5.45
AEO 2000	-0.38	4.13
AEO 2001	4.58	12.32
AEO 2002	4.86	17.50
AEO 2003	5.56	-
AEO 2004	10.57	-
AEO 2005	8.40	-
AEO 2006	7.92	-
AEO 2007	10.71	-

The table above shows the differences in projected versus actual sales from the above referenced AEO Retrospective. Again, Ohio EPA would direct U.S. EPA's attention to the accuracy levels achieved by EIA. In no way should this be construed as a disparagement of the work or technical expertise of the EIA; indeed, Ohio EPA fully recognizes the excellent work, technical expertise, and vast experience of the EIA in such matters. To that end, Ohio EPA's concern is that, despite the EIA's substantial expertise, the accuracy of their projections is in many cases limited. In the proposed rule, states, whom have far less, or in some cases no, expertise in the projection of CO2 emissions or electricity demand or sales, would be tasked with developing a similar projection. This projection would then become federally enforceable, and the states held accountable for any errors or mis-projections. Furthermore, once federally enforceable, the projections and required measures taken in the state to meet them become relatively inflexible, which raises great concerns should such measures impact grid reliability or introduce unforeseen or substantial costs to the states. Ohio EPA also understands that to develop such projections would require significant expenditures of manpower, monetary resources, and time. U.S. EPA does not have the expertise or authority to require states to develop plans that essentially micromanage the electric grid. If the best experts in the federal government "get it wrong," there is no foundation for U.S. EPA to be any better with the flawed tools being utilized and misapplied.

Non-BSER Options and Feasibility

Ohio supports maintaining the flexibility to develop its own standard of performance for individual EGUs based on state specific information, cost and technical feasibility. U.S. EPA relies on "non-BSER" options for "state flexibility," but these are also flawed and will not be feasible.

CCS

As reflected in Ohio's comments on the Proposed Carbon Pollution Standards for New Power Plants, submitted May 9, 2014, [Appendix S], CCS has not been adequately demonstrated and its implementation costs are unreasonable. In fact, this technology, on a commercially viable scale, has not yet been demonstrated on any operational coal-fired unit. U.S. EPA is rightfully so not proposing or taking comment on CCS or partial CCS as a component of BSER for existing sources. U.S. EPA acknowledges in their proposal the "cost of integrating a retrofit CCS system in an existing facility would be expected to be substantial….space limitations…expected to affect the cost and potentially the supply of electricity on a national basis." [79 FR 34856] U.S. EPA also acknowledges partial CCS "costs would be substantial and would affect the nationwide cost and supply of electricity on a national basis." [79 FR 34876] Yet U.S. EPA identified CCS and partial CCS as options for compliance.

Ohio EPA finds it illogical that CCS, partial or not, would even be identified by U.S. EPA as a viable approach as it is far to cost prohibitive and technically infeasible.

In many cases, limitations due to the physical location (including geological substrata) and layout and available space at a given location prevent CCS from being economically viable option. Without substantial technological advances, inclusion of CCS as an option is a short sighted unreasonable endeavor. An Ohio utility explored CCS on a partial scale, and a second and far more extensive study was conducted by American Electric Power (AEP), at the Mountaineer Power Plant. The results of these endeavors raise significant concerns for the prospects of CCS in areas reliant on electricity generated by coal-fired boilers.

Ohio's experience with CCS is based on a DOE-NETL funded research project through the Midwest Regional Carbon Sequestration Project. This project was extensive in scope and involved the cooperation of the DOE-NETL, the Battelle Memorial Research Institute, First Energy Corporation, Ohio Department of Natural Resources, Pennsylvania Geological Survey, West Virginia Geological Survey, EPRI, and others. The objective of the study was to explore geologic storage of CO2 in the strata of the Appalachian Basin, which covers or partially covers areas of Ohio, West Virginia, Pennsylvania, Kentucky, Maryland, and New York. The test site, the R.E. Burger Power Plant in Shadyside, Ohio (Belmont County) was chosen due to its centralized location in the Appalachian Basin along the Upper Ohio River Valley Power Corridor, which has approximately 20,000 MW of coal-fired capacity. Thus, the results of this test would demonstrate the feasibility of CO2 capture and storage for large amount of coal-fired generation. A full description of the study is beyond the scope of these comments; the full report is provided in Appendix T. To summarize, despite numerous efforts to inject CO2 into various stratigraphic layers of the Appalachian Basin formation, injection pressures and flow rates were deemed insufficient for adequate CO2 storage.

The second study referenced above was conducted by AEP and Battelle at the Mountaineer Power Plant (Mountaineer) from 2009 to 2011. As with the R.E. Burger project, the full results of the research study are far beyond the scope of these comments. As such, the report has been provided in Appendix U. Mountaineer, a 1300 MW facility, is located near New Haven, West Virginia along the Ohio River, approximately 1.5 miles west from Racine, Ohio. As the geological structure along the Ohio River Valley is consistent, Ohio EPA considers the results of this study to be representative of CCS potential for a large portion of Ohio. The Mountaineer project involved the testing of chilled ammonia carbon capture methodologies on a 1.5% slipstream of Mountaineer emissions, with the subsequent injection of the captured CO2 into underground saline reservoirs. The project report indicates that this portion of the research was successful in demonstrating the technical feasibility of CCS on a *validation-scale*. AEP considered expanding the scope of the project to capture approximately 20% of emitted CO2. During this process, multiple major technical obstacles, insufficient cost-recovery avenues, and substantial financial barriers were identified and the expansion project cancelled. Briefly, engineering estimates for the expansion exceeded 1 billion dollars, and cost recovery avenues were very limited.

The expansion projected would also have required a large amount of physical space, approximately twice the size of the actual generating facility. Lastly, AEP encountered significant uncertainty, difficulty, and costs in procuring the necessary underground injection permits. The study concluded that although technically feasible on a small validation-scale, full commercial-scale CCS was not feasible.

At present, and barring new technology, Ohio EPA believes that these results demonstrate that for power plants not specifically constructed, sited, and permitted with CO2 capture and sequestration as the ultimate goal, CO2 capture and sequestration is not a cost effective and reasonable approach to CO2 reduction. Ohio EPA understands that the potential for CO2 capture has been demonstrated on very small scales, but that the technology is in its infancy and has not yet been demonstrated or made available on a commercial scale. Furthermore, the costs of CO2 capture at even a limited scale are far beyond what Ohio EPA considers reasonable within the context of BSER. The technology is at present not suited for consideration as a BSER and cannot be considered for "state flexibility."

New NGCC

With respect to new NGCC, U.S. EPA states their "compliance modeling for this proposal suggests that the construction and operation of new NGCC capacity will be undertaken as method of responding to the proposal's requirements." [79 FR 34876] However, U.S.EPA's analysis showed higher costs would be associated with new NGCC noting it could even necessitate pipeline expansion for the delivery of natural gas that could be highly variable form state to state. Nonetheless, U.S. EPA is taking comment on the use of new NGCC capacity as part of the basis supporting the BSER. Ohio EPA does not believe new NGCC should be a component of BSER. Ohio EPA raises concerns throughout our comments regarding U.S. EPA's unfounded predictions that pipeline capacity, natural gas supply, the transmission system, etc. are all either sufficient, or can be in the time provided, to meet the proposal requirements in a cost-effective manner. Ohio EPA disagrees as U.S. EPA has performed no specific analysis to indicate all states can achieve this rapid increase in natural gas generation. More importantly, how can U.S. EPA even consider *new* NGCC as a component of BSER when new NGCC would be regulated under the Section 111(b) proposal for new sources? U.S. EPA has no authority to regulate new NGCC under the existing Section 111(d) regulations just as U.S. EPA has no authority to require existing sources continue to be subject to this proposal after a modification or reconstruction.

Additional Non-BSER Options

U.S. EPA also identified available compliance options than those above, such as HRIs at non-coal EGUs, fuel switching, gas conversion or co-firing. [79 FR 34857, 34875, 34877] U.S. EPA did not propose these measures as a component of the BSER because there were either more cost effective opportunities, CO2 reduction

potential was relatively small, or there may be some negative impact to the net efficiencies of the boiler and overall generation processes. None of these should be considered BSER under Section 111(d).

BSER

U.S. EPA has proposed BSER as the measures discussed above under each of the building blocks and states they "have been "amply" demonstrated via their current widespread use." [79 FR 34835] Ohio EPA has pointed out several flaws in U.S. EPA's belief that many of these measures have been "amply demonstrated." U.S. EPA set a BSER on a broad basis by averaging across multiple units, then applied said average to individual units. This ignores the purpose of BSER. This analysis is unwieldy, unfair and inaccurate when applying broad averaging to individual units within a state. As an example, as a deregulated state, the analysis of HRI performed at individual coal-fired power plants units is performed radically different than in a regulated state. In Ohio many of the coal-fired power plants have already made notable improvements that are ignored in U.S. EPA's nationwide BSER determination. By abandoning U.S. EPA's traditional method for requiring controls on individual units, U.S. EPA is forcing states to expand the regulation to entities that do not even have emissions like RE or EE. In addition, this method ignores cost assessments and technical feasibility in the rule-making process and, instead, forces states to make BSER determinations with a ultimate goal already predetermined.

Having the ultimate goal already predetermined is not the intent or correct method for a BSER analysis. U.S. EPA is required to consider technical feasibility, costs, size of emission reductions and technology promotion as part of BSER. [79 FR 34835] It is Ohio EPA's belief that U.S. EPA has ignored this requirement by applying a BSER that does not take into account HRIs that have already occurred but yet are assumed to be able to be achieved again, by requiring an increase in emissions from NGCC with the assumption it will reduce emissions from coal-fired units, and establishing a BSER based on outside-the-fence requirements to further reduce coal-fired units generation (EE/RE).

U.S. EPA is proposing two alternative "formulations" for the BSER, each based "in different ways" on the four building blocks. First, emission rate improvements and mass emission reductions at affected EGUs facilitated through the four building blocks themselves; and second, Building Block 1 coupled with reduced utilization in specified amounts from, in general, higher emitting affected EGUs. With respect to the latter, U.S. EPA cites the measures in Building Blocks 2, 3, and 4 serve to justify those amounts and the "adequate demonstration" because they are proven measures that are already being pursued by states and the industry. [79 FR 34878] U.S. EPA provides an extensive discussion of the justification and strained legal analysis for both alternative formulations. As discussed in the Legal Concerns Section of these comments, Ohio EPA does not support BSER as a combination of the four building blocks under either of the alternative formulations.

Furthermore, U.S. EPA states the "reduced utilization in specified amounts" from specified EGUs can be achieved because a "reduction of, or limitation on, the amount of generation is already a well-established means of reducing emissions of pollutants in the electric sector." [79 FR 34889] U.S. EPA provides examples such as Title IV, NOx SIP call, and CAIR as systems of emission reductions that have been "adequately demonstrated." U.S. EPA is suggesting states establish synthetic minor limitations or operational restrictions on coal-fired EGUs in order to force re-dispatch, presumably either through the authority of Title IV or Title V permits. This suggestion is flawed on several different levels. First and foremost, U.S. EPA cites the Title IV market-based program for the reduction of sulfur dioxide and nitrogen oxide emissions as an example of reducing emissions from a permit based program. The Title IV provision was approved by Congress and did not include CO2. U.S. EPA cannot assume that either states or U.S. EPA have similar authorities to regulate CO2 emissions from power plants under Title IV, when none exist. The Title V program cannot be used to "create" new emission limitations or force generating restrictions on a plant. The only requirements that are to be included in the Title V permit are those that are included in the federally approved SIP. Besides the fact that this suggestion lacks any legal foundation, it is also technically flawed. States cannot force NGCC to operate at 70% or greater capacity. U.S. EPA's suggestion could lead to this absurd result: A state requires an NGCC to operate at 70% capacity but finds itself below the annual capacity factor and must run even if there is no demand for the electricity thereby wasting natural gas and producing excess CO2 emissions.

While U.S. EPA is proposing BSER as all four building blocks, they are also inviting comment on BSER as a combination of Building Blocks 1 and 2 citing "it involves only affected EGUs and generation from affected EGUs". [79 FR 34878] Ohio EPA believes BSER should be based on only inside-the-fence application. Ohio EPA also believes BSER should apply directly to the affected EGU and not be a system comprised of multiple affected EGUs and "entities." It is unlawful for U.S. EPA to develop a BSER that requires emission increases from existing NGCC units.

U.S. EPA continues to cite concern that HRIs at coal-fired EGUs might make them more competitive and they will therefore increase their generation making them less effective at reducing CO2 emissions; the "rebound effect." U.S. EPA uses this to further justify increased utilization of NGCC, which Ohio EPA notes increases their CO2 emissions. Ohio EPA is having difficulty with U.S. EPA's concern regarding a potential "rebound effect." Unfortunately, due to the nature of this proposal, U.S. EPA has found themselves in a position where such a ludicrous concern is worthy of consideration. Ohio EPA can think of no other federal or state regulatory requirement that requires significant monetary investment in a control strategy that reduces emissions (such as HRIs) coupled with an expectation that the investment should result in reduced operation. In general, the principle behind investment in control is that more efficient and well controlled facilities will operate more than less efficient and controlled facilities. Under Building Block 1, U.S. EPA is requiring investment of potentially millions of dollars to make coal-fired EGUS more efficient. However, coupled with Building Block 2, these same EGU owners are instructed to operate less, or in a cycling manner, which

in turn reduces the efficiency of these units. This is counter to basic engineering principles and common sense. This is not the manner in which Section 111(d) is intended to be implemented. "Rebound effect" should not be a consideration under this proposal and Ohio EPA believes this is another reason why this proposal needs to be completely reconsidered.

U.S. EPA also acknowledges it is less cost-effective to implement Building Blocks 1 and 2 together than to implement Building Block 1 alone.

> …. by reducing overall generation from coal-fired EGUs the combination of Building Blocks 1 and 2 also has the potential to raise the cost of the portion of the overall emission reductions achievable through heat rate improvements relative to the cost of those reductions if Building Block 1 were implemented in isolation… [79 FR 34878]

Ohio EPA believes this is an additional reason why increased utilization of NGCC is not appropriate as the BSER.

In determining BSER for modified and reconstructed sources, U.S. EPA evaluated several different control technology configurations including reductions in generation associated with dispatch changes, renewable generation, and demand-side EE. However, U.S. EPA ultimately decided not to establish BSER as these components and opted for a less stringent BSER. Ohio EPA finds this counterintuitive to how BSER typically is defined for new, modified and reconstructed, and existing sources. U.S. EPA is attempting to finalize a BSER for existing sources that is more stringent than the BSER for modified and reconstructed sources.

For modified sources, U.S. EPA proposes BSER as efficiency improvements achieved through a combination of best operating practices and equipment upgrades. [79 FR 34982] As part of one of the options, U.S. EPA is providing a low end cap to ensure the final rate for these units will not be more stringent than the emission limit for reconstructed sources. [79 FR 34987] In our comments on the modified and reconstructed proposal Ohio EPA raised serious concerns regarding a unit encroaching upon a rate that would be achievable by reconstructed units applying BSER. Likewise, Ohio EPA has significant concerns regarding the potential for existing sources to ultimately have a more stringent emissions limit than modified or reconstructed sources under this proposal.

State Goals

U.S. EPA identifies what they call "state-specific goals… based on consistent application of a single goal-setting methodology across all states, the goals account for these key differences…because EPA used data specific to each state's EGUs and certain other attributes of its electricity system (e.g., current mix of generation resources)." [79 FR 34836] U.S. EPA further states they are using a output-weighted-

average emission rates for all affected EGUs in a state rather than nationally uniform emission rates for all affected EGUs of a particular type which is consistent with the varying types of EGU's and varying magnitude of shifting that can occur among individual states, thereby giving consideration to CAA Section 111(d) which "calls for standards of performance to be established in state plans rather than on a nationwide basis." [79 FR 34894] Ohio disagrees and believes U.S. EPA is searching for a justification for this proposal. U.S. EPA's use of the four building blocks to effectively reduce Ohio's state goal does not take into account state specifics at all as discussed in our comments.

This is undoubtedly a national plan and a forcing of a regional approach. U.S. EPA has clearly set BSER in every building block based on some method of averaging whether at a regional or national level. In no way is U.S. EPA proposing a goal or standard that is state-specific or allows for the states to apply the standard in a state plan based on what has been and can be achieved in the state itself. Justifying this averaging for all affected EGUs rather than a national uniform rate is in consideration of Section 111(d)'s requirement for standards of performance to be on a state rather than national basis is actually counterintuitive to what actually is intended. States are charged with developing a standard of performance, taking into account remaining useful life, for their individual units based on U.S. EPA's determination of a cost-effective and technically feasible BSER for those unit types. States have the ability to a make adjustments based on remaining useful life and apply a standard of performance to each unit rather than an average across units. U.S. EPA has failed to give consideration to this very specific element of the CAA.

U.S. EPA is proposing two options for goals. First, is the preferred option which is an interim goal applied on a cumulative or average basis during the 2020 to 2029 with the final goal achieved in 2030. For Ohio, the interim goal is 1452 (adjusted output-weighted-average pounds of CO2 per net MW-h) with a final 2030 goal of 1338. As an alternative option, U.S. EPA is proposing a less stringent goal, therefore, less time is provided. Interim goals are applied from 2020 to 2024 with a final goal in 2025. For Ohio, the interim goal is 1588 (adjusted output-weighted-average pounds of CO2 per net MW-h) with a final 2025 goal of 1545. Ultimately in 2025, the alternative goal would lead to a 23% reduction in CO2 over 2005 levels, compared to the 29% reduction anticipated for the 2030 preferred goal.

As part of this less stringent alternative, U.S. EPA is proposing the following adjustments to the individual building blocks:

- Building Block 1 – 4% HRI compared to 6% under the preferred option
- Building Block 2 – 65% re-dispatch to NGCC compared to 70%
- Building Block 3 – no change in RE or nuclear
- Building Block 4 – 1% for EE compared to 1.5% under the preferred option

Although we recognize that this alternative is a less stringent target, nevertheless, it also cannot be achieved in Ohio. U.S. EPA believes evidence that one or more of the individual building blocks is not achievable is not sufficient to cause re-evaluation of the

goal unless the state demonstrates that increased control of another building block is not feasible. We have presented in our comments numerous technical and cost-related issues that U.S. EPA has obviously not taken into consideration at the state-specific level. Ohio EPA has serious concerns with the achievability of each individual goal, or the combination of, in the State of Ohio.

In conjunction with the implementation issues related to enforceability, U.S. EPA has set a goal that is not practically achievable by our state. Until a state-specific analysis is conducted to determine the feasibility of these goals, with the added understanding of U.S. EPA expectations related to how they must be quantifiable, non-duplicative, permanent, verifiable, and enforceable, Ohio EPA cannot support adoption of either of the proposed options.

U.S. EPA is also requesting comment on whether they should establish BSER-based state emission performance goals for affected EGUs that extend further into the future. Under this alternative, U.S. EPA would apply its goal-setting methodology to 2030 and some specified date beyond. Yet, U.S. EPA notes that Section 111(b)(1)(B) calls for U.S. EPA to review standards of performance for new sources every eight years and if updating is necessary. [79 FR 34908] Ohio EPA does not support this alternative. U.S. EPA is already proposing a plan requiring staged reductions over a 15 year period. U.S. EPA has failed to show that the current 2030 projections have any resemblance to reality and additional projections beyond 2030 would only compound the current errors inherent in U.S. EPA's analysis. U.S. EPA further states because they are determining emission performance based on BSER it "raises the question of whether affected EGU emission performance should only be maintained-or instead should be further improved –once the final goal is met in 2030." [79 FR 34908] Ohio EPA does not see how U.S. EPA can even justify the question. The review process contemplated by the CAA is the process set in place to review the appropriateness of BSER at a single point in time. U.S. EPA cannot deviate from this process.

U.S. EPA believes the final goal for Ohio, comprised from the individual goals from the four building blocks, is set at a "reasonable level….rather than the maximum possible level" and states will be able to reasonably implement measures, but if a state falls short for one building block it is assumed they could implement another building block more stringently. [79 FR 34893] U.S. EPA repeatedly refers to the "flexibility" afforded to states to implement some or all of the assumed portions of the four building blocks or to implement other measures not included in the building blocks. U.S. EPA notes several "distinct" types of flexibilities being afforded to the states: choices as to measures employed, including the timing; the "core flexibility" provided under Section 111(d) that while a state is required to establish standards of performance that reflect the degree of emission limitation from the control measures used to establish BSER, they need not mandate the particular control measures U.S. EPA identifies as the basis for its BSER; "targeted reasonably achievable rather than maximum performance" goals; and flexibility in timing that can help states address concerns about stranded assets and enabling states to defer imposition of requirements on EGUs that may be scheduled to retire after 2020 but before 2029; the ability to translate rate to mass; and the opportunity to do multi-state plans. [79 FR 39897]

Ohio EPA firmly believes this "flexibility" is strained under this proposal. As outlined in our comments, we believe U.S. EPA has established the goals based on fundamental errors and flawed assumptions in each of the building blocks. It may be possible for a particular state to find all of the building blocks feasible, some building blocks feasible, or no building blocks feasible. That can only be understood by each individual state based on an analysis of technical feasibility, cost-effectiveness, legal authority, life of the unit, and numerous other factors. U.S. EPA's analysis does not evaluate feasibility and reasonableness at the state level as Section 111(d) affords states the ability to do when setting their standards of performance based upon U.S. EPA emission guidelines. With respect to Ohio, we do not believe these individual goals are feasible or reasonable at the levels U.S. EPA has identified as outlined in our comments above.

There is no flexibility if a state, like Ohio, cannot achieve any of the individual goals and finds, as U.S. EPA did, that other non-BSER options are infeasible and/or provide little reduction at a given cost. Additionally, If U.S. EPA erred in one building block and the individual goal for that building block is not feasible, it does not warrant an increase to what was determined the "best system of emission reduction" from another building block.

Severability

Another concern with respect to the perceived flexibility and state goals set in the manner with which U.S. EPA proposes relates to severability. U.S. EPA is proposing that if a court invalidates one building block the others may move forward, meaning each building block is severable. [79 FR 34892] Yet U.S. EPA also states that "*together* the building blocks establish a reasonable overall level of reductions" noting this amount is "significant and will require effort to achieve that goals based on a combination of all four building blocks at the levels specified." [79 FR 34893 (emphasis added)] U.S. EPA states that if one of the building blocks is severed the goals would be adjusted accordingly. [79 FR 34894] But U.S. EPA notes elsewhere that some states may have difficulty with one or more of the building blocks, not being able to meet the goal in its entirety or requiring more time to meet some goals than others. But because of the flexibility, if a state falls short in one goal, it is assumed they could implement another building block more stringently. [79 FR 34893] Ohio EPA does not believe the building blocks can be severable as discussed in the Legal Concerns Section of these comments.

U.S. EPA is attempting to set a state goal based on individual aggressive goals for four building blocks and justifying it as an achievable "system" of emission reductions. Further, U.S. EPA is setting these goals based on what is achievable from a national perspective and not looking at individual state characteristics such as sufficiency of the natural gas pipeline or what HRIs have already occurred at specific units. If any single building block is invalidated, the perceived "flexibility" being afforded to states under this approach becomes more strained. If any piece of this proposal is invalidated because U.S. EPA has set the goals to be unachievable, then the entire plan must be revised.

Binding Goals

U.S. EPA states these “goals are binding”, a state “may not make them less stringent” and that U.S. EPA believes they “expect that states will have an adequate opportunity to comment on the state goals during the comment period.” [79 FR 34898] Ohio EPA has serious concerns with these statements. First and foremost, the 40 CFR 60.24(f) gives states the ability to, “on a case-by-case basis for particular designated facilities or classes of facilities”, “ provide for the application of less stringent emissions standards or longer compliance schedules than those otherwise required”, “unless otherwise specified in the applicable subpart.” U.S. EPA is proposing to specify in the subpart to not allow states this flexibility when there may be legitimate reasons to apply a less stringent standard given the states specific circumstances. U.S. EPA must remember they are setting a goal based upon national averages. Some states may be able to meet this goal while others may have obstacles that cannot be overcome and will prevent them from meeting the goal. This flexibility must be maintained.

U.S. EPA should not be making the goals permanently binding without the ability to make warranted adjustments. As proposed, this is a 15-year plan. Even U.S. EPA acknowledges that a final goal could vary from what is predicted because “actual economic conditions vary from economic assumptions used when projecting emission performance.” [79 FR 34908] Likewise, the goal could necessitate adjustment because actual conditions varied from what U.S. EPA projected in setting the goal. There must be a mechanism in place to make adjustments to the goals over this period, and beyond.

Goal Computation Methodology

Ohio EPA is raising the following concerns with respect to certain steps in U.S. EPA’s methodology used to compute each state’s proposed goal. [79 FR 34896]

For step 1 (compilation of baseline data), on a state-by-state basis, U.S. EPA obtained total annual quantities of CO2 emissions, net generation (MW-h), and capacity (MW) from reported 2012 data for all affected EGUs. For each state, U.S. EPA aggregated the 2012 data for all coal-fired steam EGUs as one group, all oil- and gas-fired steam EGUs as a second group, and all NGCC units as a third group. U.S. EPA aggregated the 2012 data for all remaining affected EGUs (i.e., IGCC units and any simple-cycle combustion turbines satisfying relevant thresholds for qualification as affected EGUs) as a fourth, ‘‘other’’ group. To these totals for affected EGUs operating in 2012, U.S. EPA added estimates for other EGUs not yet in operation in 2012 that are affected EGUs for purposes of this emission guideline. Capacity and emission rate data inputs for the post- 2012 affected EGUs were obtained from the NEEDS database. Generation data inputs for the post-2012 affected EGUs were estimated based on the average 2012 utilization rates for recently constructed EGUs of the same types; for example, U.S. EPA estimated in

this step that the post-2012 NGCC units would operate at a 55 percent utilization rate on average.

As discussed in more detail elsewhere, Ohio EPA has identified several errors in Ohio's goal computation, including the double-counting of an existing NGCC unit as a new NGCC unit and several discrepancies between CO2 emissions reported to EIA and the Clean Air Markets Database. Most concerning is U.S. EPA's use of nameplate capacity, rather than the more appropriate summer capacity, in the re-dispatch calculations and the inclusion of 6% "at risk" nuclear capacity.

The incorrect use of nameplate capacity is more fully detailed in the Technical Concerns portion of our comments, but to reiterate; Ohio EPA understands that the nameplate capacity of a unit represents a gross-rating of the generator alone, and is not indicative of the net capability of a particular *unit as a whole*.

Ohio EPA believes that the "summer capacity" of the units' should be used instead. Summer capacity represents the *net* rating or capability of generating unit as a whole. Given the far reaching impacts of the proposed rule, the presence of any errors in the database or assumptions used in the goal setting procedure is highly concerning; U.S. EPA should pursue an extensive analysis of the database(s) used in the goal setting calculations, identify errors, and enable states and other entities an opportunity to review the database prior to any goal-setting calculations. Furthermore, U.S. EPA should thoroughly review and justify the use of nameplate capacities as opposed to summer capacities in projecting re-dispatch goals based on what is realistic and common practice, as well as consistent with U.S. EPA's documentation for the NEEDS database.

Ohio EPA also objects to the inclusion of "under construction" NGCC units in the goal setting calculations. Firstly, these units were not operational in 2012, contributed no CO2 emissions, and produced no electricity. Therefore, they are clearly not part of the "base year", nor does "under construction" guarantee or even suggest that these units will be operational. Ohio EPA finds it very difficult to rationalize why under-construction NGCC units were considered in the goal setting, yet coal-fired EGU's with firm shutdown dates were not credited in any manner. The structure of the intensity target itself appears to be a means to discount the effects of unit retirements, with no clear guidance provided to account for the significant mass-reductions already realized. If reduction of atmospheric CO2 is the aim of this proposal, then actions to that end should be fully and fairly credited, even if this credit does not conform to the CO2 intensity targets proposed by U.S. EPA.

Ohio EPA furthermore suggests that the hand-picking of some future projects in favor of others is not a consistent approach, and that U.S. EPA should either consider no future project or all future projects, not just those whose inclusion results in a further lowering of state goals, as appears to be the case. If units that may or may not be completed can be considered in the goal setting computation, than U.S. EPA must consider past HRI projects, potential and known shutdowns of units (with a

mechanism to credit the considerable reduction in CO2 these shutdowns will achieve with respect to the stated goal of achieving a 30% reduction in CO2 tonnage from 2005 levels), and potential uncertainty in renewable and EE markets.

For step 2 (application of Building Block 1), U.S. EPA took the total CO2 emissions amount for the coal-fired steam EGU group in each state from Step 1 and reduced it by 6%, reflecting HRIs.

Ohio EPA contends that there is no direct, one-to-one relationship between HRI projections and CO2 intensity. This represents a gross oversimplification of the true complexity of fossil-fuel-fired generating units.

For step 3 (application of Building Block 2), if the generation data for the NGCC group in a state developed in Step 1 showed average annual utilization below 70% of those units' maximum possible output, and the generation data developed in Step 1 also included generation from the coal-fired steam or oil/gas-fired steam EGU groups in that state, the generation and emissions figures for the NGCC group were increased. In addition, the generation and emissions figures for the coal-fired and oil/gas-fired steam EGU groups from Step 2 were proportionately decreased to reflect an estimated potential increase in utilization of the NGCC group to a maximum of 70%. In this step, the total (across all four groups) of the state's fossil fuel- fired generation was maintained at the amount computed in Step 1. But a portion of the total fossil generation was shifted from the coal-fired and oil/gas-fired steam EGU groups, which have higher CO_2 emission rates, to the NGCC group, which has a lower CO_2 emission rate, the total (across all four groups) of the state's CO_2 emissions was reduced. U.S. EPA is also requesting comment on an alternative computation procedure. [79 FR 34897] To the extent that generation from a state's NGCC group was increased consistent with the NGCC utilization rate target, in order to maximize the resulting emission reductions, U.S. EPA would decrease generation from the state's coal-fired steam group first, and then decrease generation from the state's oil/gas-fired steam group (instead of decreasing generation from the coal-fired steam and oil/gas-fired steam groups proportionately).

Ohio EPA has identified multiple errors and false assumptions in the development <u>and application</u> of Building Block 2, including but not limited to the incorrect use of nameplate capacities, incomplete and overly optimistic analysis of the natural gas infrastructure necessary to maintain these levels of generation, inadequate consideration of the geographic location of existing and under-construction within the power grid, and an incomplete accounting of the true costs of increased natural gas usage with respect to manufacturing and residential heating needs. These shortcomings, as well as others, are detailed thoroughly in the relevant technical sections of our comments. Furthermore, Ohio EPA wishes to reiterate that increased use of NGCC units was driven in the IPM model by the addition of a "shadow cost" to each ton of CO2, absent a detailed explanation of how U.S. EPA envisions such a cost being applied in an state plan.

> For step 4 (application of Building Block 3), U.S. EPA estimated the total quantities of generation from renewable generating capacity and from under-construction or preserved nuclear capacity for each state. Separate estimates of renewable generation were computed for each year of the plan period for each state based on the state's 2012 renewable generation and a regional growth factor. Nuclear generation was estimated as the amount of under-construction and preserved nuclear capacity for each state operated at a utilization rate of 90%, consistent with recent industry-wide average utilization rates for nuclear units.
>
> Ohio EPA has several concerns with the inclusion of "at risk" nuclear, as well as the technical approach used by U.S. EPA. Firstly, as detailed in the Technical Concerns portion of this document, U.S. EPA utilized the nameplate capacity of the nationwide nuclear fleet instead of the more appropriate summer capacity. The incorrect use of nameplate capacity is more fully detailed in Ohio EPA's comments (Technical Concerns), but to reiterate; Ohio EPA understands that the nameplate capacity of a unit represents a gross-rating of the generator alone, and is not indicative of the net capability of a particular *unit as a whole*.
>
> Ohio EPA believes that the "summer capacity" of the units' should be used instead. Summer capacity represents the *net* rating or capability of generating unit as a whole. Examination of EIA's most recent existing generation data (2011), use of nameplate capacity instead of summer capacity would over-represent nationwide nuclear capacity by 5,582 MW. [Appendix V] The magnitude of this error is simply too great to ignore.
>
> Furthermore, Ohio EPA analyzed EIA forms 923 and 860 data for years 2008-2012. These data demonstrate that improper use of nameplate capacity in calculating capacity factors would result in a 2008-2012 nationwide nuclear capacity factor of 85%. Using the more realistic and appropriate summer capacity, the five-year nationwide average capacity factor is 89%. Thus, U.S. EPA's assumption of a 90% capacity factor for the nuclear fleet is only valid if summer capacity is used. Note that Ohio EPA did not attempt to exclude those nuclear units committed to shutdown, as was the case with U.S. EPA's goal setting calculations.

U.S. EPA adjusts the goals by estimating annual net generation from RE and avoided generation for EE and adding it to the output from affected units (MW-h). [79 FR 34895] Ohio EPA objects to the inclusion of generation from non-affected units in the denominator, and to the inclusion of all avoided generation and RE beyond those of the affected units. Generation values should come only from the affected units, and the renewable and EE portions, if included, should represent only what can be directly attributed to an affected entity or entities.

U.S. EPA also uses, in setting goals, the CO2 emissions from regulated entities (numerator). However, in the goal setting, they used generation (denominator) from all electric generation in the state, not just from the regulated entities. So, in setting

renewable goals, they took percentages of total generation (including renewables, nuclear, etc.) rather than taking percentages of generation from the regulated entities alone. This artificially lowers the goal placed on the affected units in an arbitrary manner. CO2 and generation should be measured and expressed only if they are produced by an affected unit. Secondly, by calculating renewable goals from this all-inclusive generation value, U.S. EPA is unfairly "double-counting" renewable generation.

U.S. EPA also notes they used emission rates expressed in terms of net rather than gross energy output in setting the state goals. They acknowledged the difference between net and gross generation in the electricity used at a plant to operate auxiliary equipment such as fans, pumps, motors, and pollution control devices. [79 FR 34860] With respect to the use of net generation, Ohio EPA wishes to reiterate our comments under Building Block 1 above. U.S. EPA should be giving consideration to the effects of the installation of pollution control devices on the EGU's heat rate. Even though controls degrade net heat rate, they provide an environmentally beneficial outcome and should therefore be accounted for.

U.S. EPA should not be making direct comparisons in between net and gross generation when providing justification for the requirements imposed under this proposal. Gross generation is only a representation of the generator itself and that such a value reflects nothing else about the generation system. If net generation is to be used, then a mechanism must be established to credit those units equipped with pollution control devices. Failure to do so penalizes those units that have made significant investments in environmental controls, the costs of which are paid for by electricity rate-payers.

An additional concern related to the treatment of biomass is the potential differing treatment of biomass units in the goal-setting and the state compliance plans. In Building Block 3 of the goal setting calculations, biomass is treated as carbon-neutral; biomass generation is included in the denominator, but the emissions from biomass combustion are not included in the numerator. However, in the GHG Abatement Measures TSD [Page 6-12], U.S. EPA references in the footnotes a draft submitted by U.S. EPA to the Science Advisory Board, "Accounting Framework to the Science Advisory Board (SAB) Biogenic Carbon Emissions(BCE) Panel." The footnote also indicates that the SAB recommended that U.S. EPA not treat all biomass as carbon neutral. Ohio EPA is concerned that this may indicate that biomass may not be treated as a completely carbon neutral source in state compliance plans. Ohio EPA strongly urges U.S. EPA to clarify this matter and treat biomass in a consistent manner across the scope of the proposed rule, including in the goal setting procedures.

Rate-Based to Mass-Based Conversion

U.S. EPA requested comment on whether they should provide a presumptive translation of rate-based goals to mass-based goals for all states, for those who request it, and/or for multi-state regions, to assist states that seek to translate the rate-based goal into a

mass-based goal. [79 FR 34912] States, including Ohio, expressed to U.S. EPA during the comment period the need for an example or to provide sufficient detail to assist states in determining how a rate to mass conversion could be accomplished so a state would know how to comply with this option. U.S. EPA answered by scheduling a dedicated webinar to specifically discuss this "conversion", yet were unable to provide any substantive guidance during that webinar. Subsequently, on November 6, 2014, with less than a month remaining in the comment period, U.S. EPA provided stakeholders with additional information regarding an acceptable (to U.S. EPA) method for conversion (public noticed on the November 13, 2014 [79 FR 67406]). Although Ohio EPA believes this is insufficient time to analyze the rate to mass conversion provided, and enter into dialogue regarding this conversion, Ohio EPA has prepared comments that we are including as an attachment to these comments on this proposal.

U.S. EPA references RGGI as a model example of the type of plan that could work under this proposal. RGGI is a mass-based trading system but U.S. EPA makes no claim that the RGGI program is acceptable in its current form. We can only conclude that U.S. EPA does not want states to use RGGI as an example of a mass-based conversion process otherwise U.S. EPA surely would have indicated it as a viable option. In addition, Ohio EPA would like to note RGGI recently reevaluated its program and made changes based on new information and real world application of its mass-based emission reduction system. We would like to stress that even the sample program cited by U.S. EPA needed flexibility to adapt and change its program and this is why Ohio EPA is stressing the need for true flexibility to adjust state goals and plans when warranted.

Rather than providing a proposal that states and other entities could provide meaningful comments on, U.S. EPA is requesting comment on the process for establishing mass-based emission goals. [79 FR 34912] Ohio EPA anticipates U.S. EPA may receive comments and then develop a process that through regulation and/or guidance states must follow. Ohio EPA asserts that any regulatory requirements related to a rate to mass conversion must be subject to public comment prior to finalizing. Details of such an important aspect that was lacking in this proposal cannot be finalized without due process. Likewise, any guidance that addresses this element of the proposal must also be subject to public comment.

Implementation Concerns

State Compliance Plans and Performance Demonstrations

Extensions and Initial Plans

U.S. EPA is proposing to give states the option of submitting a complete plan, or if justified, an initial plan that documents the state's progress in preparing a complete plan. To qualify for an extension, the state must submit an initial plan that

demonstrates the state is on track to develop a complete plan and that includes meaningful steps that clearly commit the state to complete an approvable plan. States developing individual state plans could receive a one-year extension while those electing to do multi-state plans could receive a two-year extension. [79 FR 34915] U.S. EPA is proposing that approvable justifications for seeking an extension include: a state's required schedule for legislative approval and administrative rulemaking, the need for multi-state coordination in the development of an individual state plan, or the process and coordination necessary to develop a multi-state plan. Furthermore, U.S. EPA is proposing the initial plan *must address all components of complete plan*, identifying which are incomplete, and for those incomplete parts, identify a comprehensive roadmap, milestones, and dates. [79 FR 34915]

Among the litany of requirements U.S. EPA is proposing must be in an initial plan in order for it and an extension to be approved [79 FR 34916], Ohio EPA would like to note concern with three. First, U.S. EPA will require a commitment to maintain existing measures that limit or avoid CO_2 emissions (e.g., RE standards, unit-specific limits on operation or fuel utilization), at least until the complete plan is approved. Ohio EPA believes there are practical concerns with this requirement. Currently Ohio EPA has no regulatory requirements to address CO2 emissions in the state of Ohio, except for a few permits issued under the PSD program. U.S. EPA cannot require Ohio EPA to maintain programs out of our regulatory control. In actuality, Ohio EPA would already be out of compliance with this provision. As discussed above, Ohio's RPS under SB221, the very plan that U.S. EPA used to inform RE goals for the states in our region under this proposal, is already frozen by the legislature. Ohio EPA has no authority to require implementation of those reductions continue into the future. Therefore, Ohio EPA would already not qualify for an extension on this basis alone. Furthermore, U.S. EPA cannot create an extension process to address the needs of the states by limiting their ability with criteria such as this.

Second, U.S. EPA will require a comprehensive roadmap for completing the plan, including process, analytical methods, and schedule (with milestones) specifying when all necessary plan components will be complete (e.g., demonstration of projected plan performance; implementing legislation, regulations and agreements; any necessary approvals). Ohio EPA believes there should be flexibility in such a provision. There should not be consequences associated with timelines, milestones, strategies or analytical methods forecasted that don't come to fruition, legislative action, or any other long-term consideration over which Ohio EPA has no authority.

Third, U.S. EPA is requiring initial quantification of the level of emission performance that will be achieved through the plan. There is not enough information provided to know what this entails. What quantification could U.S. EPA expect in an initial plan other than the fact that states will develop a final plan with the intention of meeting U.S. EPA's interim and final goals? Is U.S. EPA suggesting states commit to meeting their interim and rate based goals? Is U.S. EPA expecting states commit to a glide path or identify specifics regarding control strategies and how those strategies will achieve the goals? Ohio EPA believes this provision is un-necessary for an initial

plan submittal and extension request. Any detailed quantification at that stage would be virtually impossible or so inaccurate that it is effectively worthless.

Ohio EPA is concerned regarding how U.S. EPA may take action when a state receives an extension for multi-state plan and later finds that collaboration falls through and the state will need to do a state-only plan. U.S. EPA should not take premature action when good faith efforts among states fail.

U.S. EPA is requesting comment on multi-state plan submittal approaches. Specifically, whether states participating in a multi- state plan should also be given the option of providing a single submittal that addresses common plan elements along with individual submittals that provide state-specific elements, or all states participating in a multi-state plan separately make individual submittals that address all elements of the multi- state plan. [79 FR 34911] While Ohio EPA expects few, if any, states that have not developed multi-state plans in the past will be prepared or have sufficient time to plan a multi-state approach under this proposal, Ohio EPA believes there is no reason to limit and precisely dictate the form of a multi-state plan submittal. Provided the elements are approvable and appropriate signatures are included there is no reason to prescribe in regulation this level of detail.

U.S. EPA is requesting comment on two options for calculating a weighted average, rate-based CO_2 emission performance goal for multiple states. [79 FR 34911] Ohio EPA considered each option, and is providing comment on both.

- Option 1: The weighted average emission rate goal for a group of states is computed using each state's emission rate goal from the emission guidelines and the quantity of electricity generation by affected EGUs in each of those states during the 2012 base year. Different levels would be computed for the interim and final goals. This approach is consistent with the method used to calculate the state-specific, rate-based emission performance goals. However, it does not address the fact that weighted average emission rate performance goal for multiple states may be influenced significantly by the weighting of electricity generation from affected EGUs in different states. This mix of generation among affected EGUs in different states could differ significantly during the plan performance periods from the 2012 base year.

  This approach is somewhat inconsistent with U.S. EPA's approach in calculating state goals, in which generation from non-affected units is included in the denominator. Ohio EPA's objection to this approach is detailed previously in these comments. U.S. EPA needs to develop a coherent procedure in calculating state goals. While simplistic, U.S. EPA's first option for determining a weighted average rate for multiple states would need to be expanded to account for several factors. To demonstrate this, Ohio EPA performed a sample calculation using 2012 generation data from affected units for the states of Ohio, Pennsylvania, and New York. Collectively, affected units in these states generated 310,672,921 MW-h, with

Ohio accounting for 108,935,245 MW-h, Pennsylvania 139,212,406 MW-h, and New York, 62,525,270 MW-h. Following U.S. EPA's proposed method, and using the interim goal for each state, a weighted average rate target of 1,165 lbs. CO2/MW-h was determined. Ohio's individual interim state goal is 1,452 lbs. CO2/MW-h, Pennsylvania's is 1,179 lbs. CO2/MW-h, and New York, 635 lbs. CO2/MW-h. Ohio EPA wishes to call U.S. EPA's attention to the fact that the "regional" goal is almost double New York's individual state goal. This is partially a result of New York's particular generation mix. Ohio EPA believes that, based on this result, a weighted average goal for a group of states is only appropriate when more appropriate, source-specific goals are set for each state, and not the convoluted and outside-the-fenceline approach proposed by U. S. EPA. The state of New York also imports approximately half of the electricity consumed in the state. Thus, the weighted average approach would disproportionately impact those states that provide power to New York while affording New York the opportunity to reach much of its state goal via RECs or similar mechanisms. If U.S. EPA chooses to include weighted average rate targets for groups of states, then a more sophisticated methodology should be developed that accounts for the generation mix of each state and the importer/exporter status of each state.

- Option 2: The weighted average emission rate goal for a group of participating states is computed using each state-specific emission rate goal and the quantity of projected electricity generation by affected EGUs in each state. The calculation would be performed for the 2020 through 2029 period to produce a multi-state interim goal, and for 2030 to produce a multi-state final goal. This projection of electricity generation by affected EGUs would be for a reference case that does not include application of either the state-specific rate-based emission performance goals for the participating states or the requirements, programs, and measures included in the multi-state plan. This approach addresses the fact that the mix of generation among affected EGUs in different states could differ significantly during the plan performance periods from that during the 2012 base year. As a result, it would base the weighted average goal in part on the anticipated business-as-usual mix of generation by affected EGUs across the multiple states during the plan performance period. However, this approach could also significantly alter the weighted average performance goal based on projected retirements of affected EGUs in one or more states.

  In the second option, U.S. EPA proposes a similar approach, but proposes that projected generation be used instead of a generation from a certain year. While this would help to alleviate discrepancies based on differing generation mixes amongst a group of states, Ohio EPA has serious misgivings about the use of such projections in setting federally enforceable targets. Ohio EPA has provided comment herein concerning the accuracy of such projections and the significant difficulty states would encounter in developing such projections. Any potential and unforeseen difficulties arising

from inaccurate projections would only be magnified when applied to a group of states.

Due to the underlying legal and technical flaws in the proposal, neither option is acceptable.

Partial and Conditional Approval

Although U.S. EPA's regulations do not explicitly provide for different forms of approval similar to the Section 110 SIP program, U.S. EPA is requesting comment on incorporating two approval mechanisms provided for in Sections 110(k)(3) and (4), 42 U.S.C. 7410(k)(3) and (4); partial and conditional approval. [79 FR 34916] The basis U.S. EPA cites is found in Section 111(d)(1) which provides that U.S. EPA "shall prescribe regulations which shall establish a procedure similar to that provided under Section 110 under which each state shall submit…" Ohio EPA continues to believe the provisions regarding U.S. EPA's requirement to "establish a procedure similar to that provided under Section 110" is with respect to providing procedures for each state to "submit…a plan which establishes standards of performance." Section 111(d)(2) is clear on U.S. EPA's authority to prescribe a plan when a states fails to submit or to enforce a plan where states fail to enforce. Unlike Section 110, U.S. EPA is given no explicit authority to provide for different types of approvals. Once again U.S. EPA is attempting to fit this proposal into a Section 110 SIP type proposal due to its overly complex nature, which is not the intent of a Section 111(d) requirement. Ohio EPA does not agree with this expansion of U.S. EPA's authority.

SIP Call

U.S. EPA is additionally requesting comment on whether the agency should promulgate a mechanism under Section 111(d) similar to the SIP call mechanism in Section 110. [79 FR 34908] U.S. EPA states this would allow them to require the state to cure a deficiency with a new plan after the agency makes a finding of the plan's failure to achieve the state goal during a performance period. U.S. EPA only has the authority under Section 111(d)(2) to develop a plan where the state fails to submit an approvable plan or to enforce the state's plan where the state fails to do so. Once again it appears U.S. EPA is attempting to turn this Section 111(d) regulation into a Section 110 SIP-like plan in order to address the complexities of this proposal. U.S. EPA lacks the basic authority to modify the Section 111(d) program into a SIP program.

Public Comment and Hearings

U.S. EPA is proposing states with initial plans and extension requests must provide an opportunity for public comment on a substantial draft but this public comment opportunity will not be governed by the procedural requirements of the framework

regulations that apply to the state's adoption of a complete plan. [79 FR 34915] U.S. EPA would use the comment period to determine if the initial plan submittal meets the minimum requirements and to advise the state whether it is on track to submit an approvable initial plan. If the state's request meets the requirements it "will be deemed granted." [79 FR 34916] Ohio EPA has concern that states will have no mechanism to appeal a decision by U.S. EPA that initial plans do not meet U.S. EPA's minimum requirements. U.S. EPA is requiring a very formal initial plan submittal but appears to be very informal about the approval or disapproval of that submittal.

As discussed in our comments below regarding timing, Ohio EPA believes more sufficient time is necessary for plan submittals. Providing sufficient time would eliminate the need for extension requests. However, if U.S. EPA intends to keep this unreasonable implementation schedule, Ohio EPA believes U.S. EPA must provide a mechanism for states to appeal decisions by U.S. EPA regarding initial plan submittals. States will spend significant time developing an initial plan, time that will take resources away from working on a final plan submittal. Potentially unjustifiable denials of extension requests due to concerns with initial plan submittals could place states in a position of being unable to meet a final plan submittal deadline. U.S. EPA is imposing a massive regulatory program on the state without adequate implementation time, even for an extension request. To deny the extension request without due process is a violation of the Administrative Procedure Act. States must have recourse to appeal arbitrary actions by the federal government.

U.S. EPA is proposing that a public hearing must occur on the final state plan and that a list of witnesses and their organizational affiliations along with a brief written summary of each presentation or written submission must be submitted. [79 FR 34914] Ohio EPA cautions U.S. EPA to not be to prescriptive in their regulations with respect to this requirement. We do not understand how U.S. EPA believes that any state can require the complete overhaul of the power generation, transmission and distribution system in its state without significant public input. This language further illustrates U.S. EPA underestimates the regulatory burden and disruption being proposed as part of this regulation.

Pre-Implementation Demonstration, Glide Path and Performance Demonstration

U.S. EPA is proposing that the state plan must contain a pre-implementation demonstration that plan measures are projected to achieve the final emission performance level by 2030. U.S. EPA states they are "striving to find a balance between…flexibility and….properly defined…technical integrity" and that "any material component ….should be accurately represented in emission projections" [79 FR 34922] U.S. EPA states that projections of emission performance under a state plan could be conducted using historical data and parameters for estimating the future impact of individual state programs and measures, or alternatively, a projection could include modeling, such as use of a capacity planning and dispatch model. [79 FR 34922]

No other Section 111(d) regulation necessitates a pre-implementation demonstration of projected emissions and/or modeling. This is not the manner in which Section 111(d) is intended to be implemented. Once again U.S. EPA is attempting to force fit this package into a Section 110 SIP type proposal due to its overly complex nature, which is not the intent of a Section 111(d) requirement. Ohio EPA does not agree with the need for a pre-implementation proposal and believes this is another reason why this entire proposal should be withdrawn and revised to be consistent with the requirements of the CAA.

U.S. EPA is proposing states can create their own glide path during the interim period. However, U.S. EPA is proposing under Section 60.5815 [79 FR 34955] that states develop increments of emission performance on a 2-rolling calendar year period for the interim period (2020 to 2029). Given the numerous references to flexibility and U.S. EPA's understanding that many factors influence the ability to achieve the interim goal, Ohio EPA has concerns regarding a 2-rolling calendar year increment of performance. Ohio EPA does not see the necessity for such frequent milestones to be achieved in the interim period, especially given the implications being proposed relevant to corrective measures and potential penalties or implications for not meeting these 2-year increments of performance. Essentially U.S. EPA is turning a 10-year interim compliance period into a 2-year compliance period.

AVERT

U.S. EPA suggests the use of the AVoided Emission and geneRation Tool (AVERT) as a way to "quantify the displaced CO2 emissions of EE/RE measures within the continental United States." [State Plan TSD, Page 28] The State Plan TSD outlines how AVERT works and how the projection from the model should be interpreted. This model has severe limitations that Ohio EPA does not feel would allow for educated projections for EE/RE quantification for state plans under this proposal.

"AVERT estimates for current or future years are based on historical behavior rather than projected economic behavior. As a result, AVERT does not use projections of future fuel or electricity market prices that affected EGU dispatch, and is therefore not an appropriate tool for longer-term projections." [State Plan TSD, Page 28] This proposal would require a ten year or longer projection to be incorporated in state plans but the model discussed in the TSD is not suitable for such conditions. How can U.S. EPA suggest this as an option for states? Quantifying EE/RE credits under this proposal would require a much more sophisticated model.

"AVERT approximates historical dispatch behavior using a statistical algorithm. It does not represent transmission constraints, or significant changes in grid structures or future economic conditions." [State Plan TSD, Page 29] Again, Ohio

EPA has concerns about relying on a model that cannot account for changes in economic conditions.

In addition, AVERT "does not capture inter-regional transmissions" the state of Ohio is part of PJM who provides electricity through all or part of 13 states plus the District of Columbia. U.S. EPA's suggestion to use this model is not a viable option for Ohio if it cannot account for regional transmission because that is how Ohio's electricity is distributed; and more importantly, our existing EE programs are structured such that EE measures undertaken in other states can be credited to in-state generators serving that portion on the grid. [State Plan TSD, Page 33]

Performance Demonstrations

U.S. EPA is proposing states provide performance demonstrations on a rolling–multi-year performance period, in order to provide flexibility for year-to-year variation in actual emission performance. Flexibility may occur as the power system responds to economic fluctuations and in light of year-to-year variability in economic and other factors, such as weather, that influence power system operation and affect EGU CO_2 emissions. Specifically the following demonstrations and performance checks are proposed:

- Interim goal—Projected plan performance demonstration: To be approvable, a state plan must demonstrate that the emission performance of affected EGUs will meet the interim emission performance level on average over the 2020–2029 period.
- Interim goal—Actual plan performance check: In 2030, the emission performance of affected EGUs during the period 2020–2029 must be compared against the interim goal. (In addition, as described earlier, interim emission performance checks will occur during this 10-year period.)
- Final goal—Projected plan performance demonstration: To be approvable, a state plan must demonstrate that the emission performance of affected EGUs will meet the final emission performance level no later than 2030, on a single-year basis.
- Final goal—Actual plan performance check: Starting at the end of 2032, emission performance of affected EGUs must be compared against the final goal on a three-year rolling average basis (i.e., 2030–32, 2031–33, 2032–2034, etc.).

[79 FR 34906]

Ohio EPA disagrees with the necessity for increments of emission performance on a 2-rolling calendar year period for the interim period (2020 to 2029) while post 2030 is based on a 3-year period. States should be able to define a glide path that does not necessitate short 2-year increments. Second, Ohio EPA disagrees with the need for final goal performance checks beyond the final determination of compliance with the 2030 goal. This proposal implies three-year performance

checks would continue indefinitely into the future. U.S. EPA is also proposing an option where, in addition to submitting a plan demonstrating emission performance through 2030, states would be required to make a second submittal in 2025 showing whether their plan measures would maintain the final-goal level of emission performance over time. If not, the state submittal would be required to strengthen or add to measures in the state plan to the extent necessary to maintain that level of performance over time. [79 FR 34905] Ohio is also in disagreement with this approach. These proposed demonstrations go far beyond necessity and the intended scope of a Section 111(d) plan and even far beyond the scope of plans under Section 110.

Annual Reporting

U.S. EPA is also proposing approvable state plans must specify a process for annual reporting of overall plan performance and implementation (including compliance of affected entities with applicable emission standards) during the plan performance periods. [79 FR 34910]

U.S. EPA has no legal basis to impose a regulatory requirement for annual reporting of overall plan performance and implementation. No such requirement exists under Section 110 for SIPs. No other Section 111(d) emission guideline requires states to submit an annual report identifying compliance of affected entities with applicable emission standards. Even U.S. EPA's Emerging and Voluntary Measures guidance contemplates an initial evaluation of the effectiveness of each measure within 18 months of the measures being in place and then provides for states to re-evaluate these measures every three years. [Page 21] Reporting under Regional Haze only requires a performance check every 5 to 10 years. Section 110 maintenance plans do not require any reporting back to U.S. EPA after initial submittal. However, this proposed rule contemplates an annual evaluation will occur. Why is it necessary to impose such burdensome, resource draining requirements under Section 111(d) that are not even found under Section 110 SIPs? This is overly burdensome and overly intrusive of U.S. EPA. Affected entities should be reporting to the states and the states will appropriately handle implementation of the Section 111(d) standards, including compliance issues, as is typical for a Section 111(d) plan.

Consideration should also be given to how much time will be necessitated for other entities to prepare and provide reports to Ohio EPA after the end of the reporting year. And then the time for Ohio EPA to compile all the information, compare it against the projected plan, and prepare a final report for U.S. EPA. It is absolutely impossible to do such a monumental task under this complicated proposal within one year. PUCO alone requires over a year's time to prepare and issue their annual report which despite the detailed effort in compiling most likely would not meet U.S. EPA's requirements under this proposal. Ohio EPA provides additional considerations regarding timing issues under the Timing Section of our comments.

Corrective or Contingency Measures

U.S. EPA is proposing to require corrective measures be implemented as expeditiously as practical if a state is not within 10% of the performance projected. U.S. EPA is proposing to give states a choice regarding when to adopt into regulation the corrective measures that the state plan identifies for implementation in the event that state plan performance is deficient: either adopting prior to plan submittal in a manner that enables a state to implement the measures administratively without further legislation/rulemaking, or adopting after the deficiency is discovered. However, U.S. EPA proposes that if the latter is chosen, then contingency measures would be required when a state is not within 8% of the performance projected where the purpose "is to identify a gradually developing deficiency in plan performance earlier in time….legislative and/or regulatory action…will take significant time." [79 FR 34907] Once again, Ohio EPA finds this proposed rule very similar to the structure of Section 110 SIP requirements, which exceeds U.S. EPA authority under Section 111(d) as discussed above with respect to partial and conditional approval.

First, Ohio EPA was not under the impression that all requirements a state elects for their Section 111(d) plan would necessitate each element be implemented through legislation or rulemaking, for example, taking credit for certain EE or RE programs. Therefore, it should not be necessary that any contingency measures require adoption into legislation or regulation as would be expected under a Section 110 SIP.

Second, Ohio EPA disagrees that contingency measures are even necessary. No other Section 111(d) plan has yet to ever require contingency measures. Section 111(d) plans are not Section 110 SIPs and U.S. EPA does not have the authority to impose Section 110 SIP requirements on states under this rule. U.S. EPA states Section 111(d) is not specific on the point of consequences when actual emission performance under a plan is not met. [79 FR 34908] Ohio EPA disagrees. Section 111(d)(2) specifies U.S. EPA's authority in cases where a state fails to submit a satisfactory plan or to enforce the provisions of a plan. It is evident the CAA did not contemplate contingency measures would be necessitated under Section 111(d) as they did under Section 110.

Third, U.S. EPA is seeking comment on what consequences, apparently in addition to contingency measures, should be imposed in the event of plan failure. Specifically, U.S. EPA states they believe the emission guidelines should specify the consequences and requests comment on how they should vary depending on the reasons for a deficiency. [79 FR 34908] Again, U.S. EPA does not have the authority to specify requirements for contingency measures or consequences beyond those identified in Section 111(d)(2).

U.S. EPA takes this proposal a step further and requests comment on whether contingency measures should be required to achieve additional emission reductions above the deficiency [79 FR 34708] and if the emission guidelines should specifically identify an amount of emission rate improvement required and provide a deadline for implementing those measures. [79 FR34912] U.S. EPA does not have the authority to require reductions beyond BSER be implemented under any circumstance. On one

hand U.S. EPA states they desire to provide flexibility and states can develop their own glide path for reductions and then on the other hand U.S. EPA considers providing strict regulatory framework for potentially requiring beyond-BSER reductions and requiring them in a specified time frame.

Developing a plan under this proposal would require significant assumptions about parameters that are very difficult to forecast. These are parameters that key organizations that have worked in grid reliability, electricity forecasting, and EE/RE development have had limited success implementing with any degree of accuracy being contemplated by U.S. EPA under this proposal. But U.S. EPA is now asking states to take the reign. There must be flexibility to understand that in a plan such as this, adjustments may be necessary in the future and states need flexibility in determining when and how those adjustments are made.

Fourth, U.S. EPA is taking comment on a range of triggering percentages anywhere from five to 15%. Ohio EPA does not agree with any of these percentages. Ohio EPA cannot support requiring contingency measures in a Section 111(d) plan.

U.S. EPA is also proposing approvable state plans must include a process and schedule for implementing corrective measures if reporting shows that the plan is not achieving the projected level of emission performance. U.S. EPA is requesting comment on whether the process should include the adoption of new plan measures and subsequent resubmission of the plan to U.S. EPA for review and approval, or whether the process should specify the implementation of measures that are already included in the approved plan in the event that the projected level of performance is not being achieved. And lastly, U.S. EPA is requesting comment on the point at which such a process and schedule would be triggered, such as at the end of a multi-year plan performance period if emission performance is not met, or at specified interim stages within a multi-year plan performance period. However, self-correcting mechanisms will not require corrective measures be included in the plan. [79 FR 34910]

As discussed above, Ohio EPA does not believe corrective, or contingency, measures are appropriate or lawful for a Section 111(d) plan. Any BSER developed by U.S. EPA that would necessitate contingency measures cannot be of the type of BSER ever intended under the CAA.

Permanence

U.S. EPA believes that Congress either intended the emission performance improvements required under Section 111(d) to be permanent or, through silence, authorized the U.S. EPA to reasonably require permanence citing other Section 111(d) emission guidelines set emission limits to be met permanently. Therefore, U.S. EPA is proposing that the level of emission performance for affected EGUs represented by the final goal should continue to be maintained in the years after 2030. [79 FR 34904] Ohio EPA believes permanence can only be associated with direct emission limitations imposed at the affected EGU and cannot be extended to

any other elements of a state's plan, such as RE, EE, nuclear preservation or re-dispatch. As discussed above, states must have the ability to make adjustments to the plans as technology changes and unforeseeable events occur.

U.S. EPA also must be able to adjust the goals as appropriate under warranted circumstances. RE and EE technologies change and requiring 70% utilization of existing NGCC under the re-dispatch building block may not be necessitated in the future. To assume 40 year old nuclear plants can continue to operate indefinitely is irresponsible and likely in direct contradiction of the Nuclear Energy Regulatory Commission. To require permanence of programs of this nature is unreasonable and short-sighted. Ohio EPA does wish to note that U.S. EPA acknowledges under the modified and reconstructed Section 111(b) proposal that "the standard that the EPA develops, based on the BSER, is commonly a numeric emission limit, expressed as a performance level (e.g., a rate-based standard)". [79 FR 34969] This Section 111(d) proposal for existing sources is counter to all proposals before under Section 111 and is not workable in the manner proposed. U.S. EPA cannot expect permanence of non-numeric emission limitations for non-EGU entities.

Maintenance

The state plan must identify requirements that continue to apply after 2030 and are likely to maintain affected EGU emission performance meeting the final goal. In lieu of quantitative projections of emission performance beyond 2030, U.S. EPA is proposing that the state plan would be considered to provide for maintenance of emission performance if the plan measures will continue in force and not sunset. As an alternative proposal, U.S. EPA is taking comment on requiring a state plan include projections demonstrating that emission performance would continue to meet the final goal for up to 10 years beyond 2030 through a second round of state plan analysis and submittals in 2025. [79 FR 34908] U.S. EPA is also taking comment on what a state would need to require in its plan to show that performance will be maintained after 2030 with respect to EE. [79 FR 34908]

Ohio EPA believes this alternative is overstepping the confines of Section 111(d) and infringing upon requirements similar to a Section 110 SIP. A state should only be required to demonstrate that affected sources meet the standard of performance established for the source. Section 111(d) plans should not establish the types of standard of performance that necessitate a "maintenance plan" be developed to ensure continued compliance is occurring. The very fact that U.S. EPA anticipates this may be a necessity demonstrates that U.S. EPA's determination of BSER, the emissions guidelines and the standard of performance that should therefore be met are not appropriate strategies under Section 111(d).

EGU Emission Limits, EE/RE Responsibility and Enforceability

U.S. EPA identifies three important issues in the design of state plans [79 FR 34901]: (1) Whether the plan should require the affected EGUs to be subject to emission limits that assure that the emission performance level is achieved, or instead, whether the plan could rely on measures such EE/RE); (2) Whether the responsibility for all of the measures other than emission limits should fall on the affected EGUs, or, instead, could fall on entities other than affected EGUs. U.S. EPA is requesting comment on whether plans should require the affected EGU to be solely responsible; and (3) Whether the fact that requiring all measures relied on to achieve the emission performance level to be included in the state plan renders those measures federally enforceable. U.S. EPA is proposing that all measures relied on to achieve the emission performance level be included in the state plan, and that inclusion in the state plan renders those measures federally enforceable.

As noted by U.S. EPA, Section 111(d) gives states "the primary responsibility for designing their own state plans." [79 FR 34901] However, it appears U.S. EPA is taking every opportunity to limit this role. Ohio EPA reiterates that states should have the flexibility to determine the best approach given their specific abilities. U.S. EPA should not be limiting options under this proposal. RE and EE should not be components of BSER; however, Ohio EPA continues to believe states should have the flexibility to choose what measures apply to an affected EGU.

Federal Enforceability Concerns

U.S. EPA notes that stakeholders have raised concerns regarding the inclusion of RE and EE in state plans rendering them "affected entities" and subject to federal enforceability. This extends federal presence into areas that, to date, largely have been the exclusive preserve of the state, in particular, PUCs and the electric utility companies they regulate. Ohio EPA agrees with stakeholder concerns.

U.S. EPA is taking comment on a "state commitment approach.'' [79 FR 34902] Under the state commitment approach, the state requirements for entities other than affected EGUs would not be components of the state plan and therefore would not be federally enforceable. Instead, the state plan would include an enforceable commitment by the state itself to implement state-enforceable (but not federally enforceable) measures that would achieve a specified portion of the required emission performance level on behalf of affected EGUs. U.S. EPA does raise concerns that under this approach, the state programs upon which the state bases its commitment may rely on compliance by third parties, and if those state programs fail to achieve the expected emission reductions, the state could be subject to legal challenges— including by citizen groups—for violating CAA requirements and, as a result, could be held liable for CAA penalties.

U.S. EPA is also soliciting comment on a variation of this "state commitment plan" approach in an attempt to address stakeholder concerns. With this variation, the

state plan would in effect shift a portion of that responsibility to the state, in the following manner: The state plan would impose the full responsibility for achieving the emission performance level on the affected EGUs, but the state would credit the EGUs with the amount of emission reductions expected to be achieved from, for example, RE or demand-side EE measures. The state would then assume responsibility for that credited amount of emission reductions in the same manner as the state commitment plan. Ohio EPA is attempting to understand, practically, how these two options differ. U.S. EPA has provided no specificity as to how, and what level of detail, would be required in the state plan under either approach. Would U.S. EPA still have to approve components such as EM&V?

Not enough information regarding U.S. EPA's intentions under these two options is available to be able to provide meaningful comments. Ohio EPA assumes that U.S. EPA intends the "full responsibility for achieving the emission performance level" would be applied to the EGU and that the EGU would receive a rate indicative of the performance expected as a result of HRIs and EE/RE. Then Ohio would commit to crediting a certain amount of EE/RE from a "state pool". How could this practically work? Ohio EPA can foresee significant issues that would develop. What if Ohio's EE/RE pool does not produce as expected? Is the EGU out of compliance? Is Ohio subject to enforcement? U.S. EPA has clearly not examined the potential implications of the numerous alternatives and variations that are being put forth for comment under this proposal.

U.S. EPA implies that a "state plan *must* include enforceable CO2 emission limits (either rate-based or mass-based) that apply to affected EGUs." [79 R 34909 (emphasis added)] Yet U.S. EPA states they are providing flexibility and that under the portfolio approach states are free to use any of the building blocks or choose strategies not even included in the building blocks and the states themselves can assume responsibility for compliance with the plan. Is it U.S. EPA's intent that each affected EGU must have an emission limitation and assume at least part of the direct responsibility for compliance? U.S. EPA wrongly places the burden on the state to reduce CO2 emissions under Section 111(d).

U.S. EPA is seeking comment on the appropriateness of existing U.S. EPA guidance on enforceability in the context of state plans under Section 111(d), considering the types of affected entities that might be included in a state plan. U.S. EPA acknowledges this guidance serves as the foundation for the types of emission limits that they have found can be enforced as a practical matter and sets forth the general principle that a requirement that is enforceable as a practical matter is one that is quantifiable, verifiable, straightforward, and calculated over as short a term as reasonable. The guidance referenced by U.S. EPA includes: (1) September 23, 1987 memorandum and accompanying implementing guidance, ''Review of State Implementation Plans and Revisions for Enforceability and Legal Sufficiency,'' (2) August 5, 2004 ''Guidance on SIP Credits for Emission Reductions from Electric-Sector Energy Efficiency and Renewable Energy Measures,'' and (3) July 2012 ''Roadmap for Incorporating Energy Efficiency/ Renewable Energy Policies and Programs into State and Tribal Implementation

Plans, Appendix F. [79 R 34909] Ohio EPA has serious concerns with the use of these existing guidance documents for non-EGU entities. Ohio EPA believes U.S. EPA should provide guidance on enforceability considerations related to requirements in a state plan for entities other than affected EGUs and should have provided this guidance as part of the rulemaking docket available for comment. As noted before, especially with RE and EE, it is difficult for states to analyze the ability to meet the goals proposed without the context of how U.S. EPA will define enforceability. States should have had the opportunity to review this proposal within that context.

U.S. EPA identified there would be a need for approvable plans to have quantification, monitoring and verification provisions for EE/RE. [79 FR 34910] U.S. EPA identifies that state plans must include "an evaluation, measurement, and verification (EM&V) plan that explains how the effect of these measures will be determined in the course of plan implementation." These EM&V plans must specify analytical methods, assumptions, and data sources that the state will employ and will be subject to U.S. EPA approval. [79 FR 34920] Obviously U.S. EPA intends to hold states to a high standard for EM&V yet provides no indication of what those standards will be. U.S. EPA states they intend to develop guidance for EM&V. This guidance should have been developed and made available for comment during this proposal. Not only does it inhibit the states' ability to provide meaningful comments on feasibility of U.S. EPA's goals, but ultimately it could jeopardize the ability of states to prepare plans that meet U.S. EPA's requirements. Undoubtedly if this proposal is finalized with EE and RE components, those components will take significant time for states to develop as it encroaches into a territory little states have experience with; implementing EE and RE programs that meet U.S. EPA definitions of quantifiable, non-duplicative, permanent, verifiable, and enforceable so that plans may be approvable. U.S. EPA is well known for providing ill-timed guidance that has made it difficult for states to prepare approvable plans. And as Ohio EPA has noted, the timing of state plan submittals is already overly aggressive without additional obstacles to overcome. Often states find it necessary to revise submittals after ill-timed guidance has been issued in order to address approvability concerns. This acts to consume the state's energy and efforts during implementation, which Ohio EPA has already expressed as also not having sufficient enough time.

U.S. EPA acknowledges for EE programs there is a "well-defined and generally accepted set of industry practices" but states may still use different input values and assumptions in applying these practices which "can result in significant differences in claimed energy savings values for similar energy efficiency measures between states." [79 FR 34920] They also acknowledge for RE measures, there is a "set of standard practices and procedures" and as a result, "existing state and utility requirements generally provide a solid foundation for minimum requirements or guidance established by the U.S. EPA for state plans." [79 FR 34920] U.S. EPA must give greater consideration to the fact that state environmental agencies have little to no experience with EM&V plans. This

expertise has been at the privy of other agencies, entities and EGU owners. U.S. EPA must accept the EM&V procedures these entities have established. When setting EE/RE goals, U.S. EPA apparently accepted the EM&V procedures by purporting the individual goals are demonstrated. If U.S. EPA insists upon standardized EM&V then goals must be adjusted to account for EE/RE practices that would be excluded from use in compliance because they do not meet the EM&V expectations of U.S. EPA for that purpose. Those programs would not be considered demonstrated if they would not even qualify for inclusions in the state plan because of EM&V expectations that are considered unacceptable.

With respect to the 2nd and 3rd guidance documents cited above, Ohio EPA has reviewed this suggested guidance and has the following comments regarding the possibility of prior guidance influencing future EE/RE guidance in relation to the CPP. Ohio EPA believes this proposal has left large gaps in how EE/RE would become federally enforceable. Ohio's RPS encourages research and development to further improve technology and find the best cost effective ways to reduce pollution. Ohio EPA anticipates U.S. EPA's forthcoming requirements for quantifiable, non- duplicative, permanent, verifiable, and enforceable EE/RE will discourage industries and third parties from using these practices and strongly hurt development of these programs.

The August 2004 document "Guidance on State Implementation Plan (SIP) Credits for Emission Reductions from Electric-Sector Energy Efficiency and Renewable Energy Measures" (hereinafter referred to as SIP Credit Guidance) provides three way to make EE/RE measures enforceable; directly against a source; against another party responsible for EE/RE activity; or under voluntary measures policy. For legal and practical reasons, Ohio EPA cannot directly enforce EE/RE measures against an affected EGU or third party affected source under Section 111(d). Section 111(d) only requires a state to establish standards of performance to individual sources of pollutants, and U.S. EPA's proposal that forces states to enforce EE/RE measures radically departs from the authority granted under Section 111(d). Ohio EPA does not have authority to enforce EE/RE measures as proposed because they fall within the realm of "outside-the-fenceline." As discussed in the Legal Concerns Section of our comments, forcing states to regulate well beyond the fenceline under a Section 111(d) plan violates the essential principles of cooperative federalism. This proposal acknowledges other entities or state agencies can be affected entities subject to the enforceable requirements of this rule. However, Ohio EPA only has the authority to regulate emissions of air contaminants from air contaminant sources. U.S. EPA is setting up Ohio to fail to meet our goal for EE/RE under this proposal. Never has there been a proposal by U.S. EPA that contemplates states would have this mandatory obligation.

U.S. EPA acknowledges in its July 2012 Roadmap Guidance that a "high level of coordination among multiple government agencies" and "early coordination" between responsible agencies will be needed in developing strategies,

determining their effectiveness and understanding each agencies role in the process. [Page F-5] The short timeframe provided in this proposal to design a state plan does not provide states enough time to work across state agencies and sort out complex legal and logistical issues. Not to mention, from a practical matter, to have multiple agencies legally responsible for different elements of a CAA requirement will become highly complex and under current resource constraints, virtually impossible.

U.S. EPA is not proposing to provide any additional funding to states to manage their plans as a part of this highly complex proposal. And as a legal matter, EE and RE projects, even with the best available data, do not always achieve the levels predicted. With the added pressure that sources or third parties could be liable, not only to U.S. EPA but also citizens, if reductions are not achieved as expected, is a risk many entities may not want to take and could greatly limit the amount and type of projects undertaken.

U.S. EPA notes in the Roadmap Guidance:

> The jurisdiction's EE/RE policies and programs need to be mandatory, created either by specific state legislation, commission order, or regulation. Under the CAA, states are required to have enforcement authority for the policy or program. If a state submits a SIP that incorporates EE/RE programs, the programs also become federally enforceable. Making state adopted EE/RE programs federally enforceable puts them on par with more traditional air pollution control programs for which states have sought SIP credit in the past. Once these policies and programs become federally enforceable EPA has the authority under the CAA to apply CAA-mandated penalties against the party responsible for noncompliance. Depending on the policy, the responsible party would not be the agency administering the policy – typically a PUC. Instead, the party may be the load serving entity responsible for delivering power to customers and upon whom the duty to use EE/RE has been placed, for example, through a permit or the rate setting process. For example, under a Renewable Portfolio Standard policy, a state could require certain entities to purchase an amount of RE. If the state relies upon such requirements within the SIP, then such measure could be enforceable against the entities required to purchase the renewable electricity, even if those entities are not responsible for the operation of the electricity generating units at which the emission reductions are expected to occur. [Page F-8]

Mandating an EE/RE program that must meet the requirements proposed under this rule or face the ramifications noted above is completely inappropriate under Section 111(d). EE/RE measures under Section 110 are not mandated and U.S. EPA does not require a percentage of SIP measures incorporate EE/RE. Under Section 110 this option is at the states discretion when they see it as viable. U.S.

EPA has gone beyond what could ever be contemplated as BSER given the significant road blocks states would have to overcome in order to incorporate EE/RE into a state plan. Under this proposed Section 111(d) program, states are being set up to fail.

Within this proposal, U.S. EPA referenced how a hand-full of states and case studies demonstrate that states have incorporated EE/RE measures in past ozone SIPs, and therefore, how these measures can be included in future plans under this proposal. In Appendix K of the Roadmap Guidance U.S. EPA cites that states, among other things, determined the "amount, type, and location of electric generation that would be displaced by EE/RE measures being pursued in the jurisdiction" and resolve "policy barriers to incorporating reductions into state air quality plans." [Page K-8] Upon review of these SIPs and case studies, it appears state legislation and/or complicated legal agreements were needed in most cases. Ohio EPA has significant concerns about the ability to implement similar measures under this proposal when there is very limited actual implementation under Section 110 SIPs. The ability to develop EE/RE under programs that states have administered, and as U.S. EPA notes have "demonstrated", on their own is vastly different then developing those same programs that meet federal requirements for SIPs or potentially under this proposal. Ohio EPA asserts that EE/RE, under the restrictive federal requirements to be quantifiable, non-duplicative, permanent, verifiable, and enforceable, is NOT a "demonstrated" technology.

Voluntary and Emerging Measures

If U.S. EPA is to continue with a proposal that incorporates EE/RE, which Ohio EPA does not agree with, voluntary and emerging EE/RE measures must be allowed under the proposal with significant flexibility afforded to the states. U.S. EPA does site guidance related to voluntary and emerging measures in this proposal when discussing other guidance provided to states on EE/RE options: U.S. EPA's September 2004 "Incorporating Emerging and Voluntary Measures in a State Implementation Plan (SIP)" guidance document. (hereinafter referred to as Emerging and Voluntary Measures) [79 FR 34887] As identified in this guidance, a "***voluntary measure*** is a measure or strategy that is not enforceable against an individual source" and an "***emerging measure*** is a measure or strategy that does not have the same high level of certainty as traditional measures for quantification purposes." [Page 1] Under this policy, U.S. EPA intends to "provide some flexibility in meeting established SIP requirements for enforceability and quantification." [Page 1] U.S. EPA must allow these measures as a part of this proposal as they have done with SIPs. Additionally, these measures must have sufficient flexibility and not rigorous restrictions on how they can be utilized. The Emerging and Voluntary Measures guidance states U.S. EPA feels it is "appropriate to presumptively limit the amount of emission reductions allowed for approval under this policy." [Page 9] Specifically, the guidance includes SIP credit limits of only "6 percent of the total amount of emission reductions required for the ROP, RFP,

attainment, or maintenance demonstration purposes." This severely confines states options of applying EE/RE measure in state plans. Such a small limitation on available potential would be a critical issue for states that do not wish or cannot use options for EE/RE that would meet U.S. EPA's enforceability requirements.

If U.S. EPA was to limit voluntary and emerging EE/RE to 6% of the total EE/RE possible measures, Ohio EPA would never be able to achieve its EE/RE targets. Based upon the EE/RE goal set by U.S. EPA, U.S. EPA predicts Ohio's interim 2020 goal would require 9,159,576 MW-h from EE/RE out of a total predicted 129,672,708 MW-h (data from U.S. EPA's goal-computation-Appendix-1-2 spreadsheet). That would mean only 549,575 MW-h could come from voluntary and emerging measures. U.S. EPA cannot restrict these measures as they do with SIPs. Under SIPs, 6% of the RFP/ROP (glide path to attainment) can come directly from these measures. Allowing 6% of total generation to be from voluntary and emerging measures would allow 7,240,362 MW-h from these measures (based on 2020 predicted total MW-h of 120,672,708). Even limiting the 6% to total generation would leave Ohio with 21% short fall over U.S. EPA's predicted interim period generation needs for EE/RE (9,159,576 MW-h). U.S. EPA must provide for more flexibility to use these measures.

Discount Factors

U.S. EPA's SIP Credit Guidance states "by using conservative assumptions, *appropriate discount factors* or verification techniques, emission reduction estimates from energy efficiency or renewable energy measures can be appropriately applied for SIP purposes." [Page 11 (emphasis added)] These assumptions and techniques have been applied by the example states identified under this proposal seeking approval of SIP credit for EE/RE measures. While Ohio EPA understands the methodology of discounting estimated reductions from uncertain programs based on the degree of uncertainty, Ohio EPA has significant concerns in how this was, and will be, applied under this proposal. First, some of the discounting Ohio EPA has seen in the example states SIPs seems quite excessive. For example, in Texas' "Dallas-Fort Worth Eight-Hour Ozone Nonattainment Area Attainment Demonstration", discounting by as much as 60% was applied initially and then an additional 5% per year to account for degradation of the EE program. [Appendix W, Page 4-21] Ohio EPA questions how discount factors will be included under Section 111(d). The EE/RE goals set under this proposal and determined to be feasible, do not allow room for states to apply discount factors. Ohio EPA questions if U.S. EPA assumed discounting when applying the goals to states? If U.S. EPA intends to require some level of discounting under this proposal for quantifying and verifying reductions from EE/RE programs, U.S. EPA must make the same assumptions in setting goals. Although U.S. EPA claims the EE/RE goals proposed are reasonable and demonstrated by states already, again, they must remember these programs were

likely not held to the same standards of quantifiable, non-duplicative, permanent, verifiable, and enforceable.

Demonstrating Compliance with Non-BSER Options

U.S. EPA raises some practical concerns with how to demonstrate compliance when states use non-BSER options. U.S. EPA raises concerns on how emissions changes under a rate-based plan resulting from substitution of generation by new NGCC for generation by affected EGUs should be calculated toward a required emission performance level for affected EGUs. Specifically, considering the legal structure of Section 111(d), whether the calculation should consider only the emission reductions at affected EGUs, or should the calculation also consider the new emissions added by the new NGCC unit, which is not an affected unit under Section 111(d). Ohio EPA believes U.S. EPA again is completely rewriting the CAA. How can U.S. EPA even consider adding CO2 emissions from *new* NGCC in determining compliance by affected entities when new NGCC would be regulated under the Section 111(b) proposal for new sources? U.S. EPA has no authority to regulate new NGCC under the existing Section 111(d) regulations just as U.S. EPA has no authority to require existing sources continue to be subject to this proposal after a modification or reconstruction.

Monitoring, Recordkeeping and Reporting by Entities

With respect to quantification and verification of emissions from affected EGUs, U.S. EPA is proposing to be approved state plans must specify how CO2 emissions from EGUs are monitored and reported. They must include monitoring, reporting and recordkeeping (MRR) for useful energy output (electricity and useful thermal output). U.S. EPA states MRR under this proposal is consistent with proposed new power plants requirements with the exception that under this proposal useful energy output is measured in terms of net output rather than gross. [79 FR 34910]

Specifically, U.S. EPA is proposing the CO2 monitoring already conducted by most affected EGUs under 40 CFR Part 75, that is reported using the EPA's Emission Collection and Monitoring Plan System (ECMPS), would *generally* satisfy CO_2 emission reporting requirements under this proposal. [79 FR 34913] Ohio EPA believes U.S. EPA may be over estimating the number of affected EGUs that may meet the monitoring requirements. Some of Ohio's combustion turbine stations do not have CO2 analyzers. They are instead monitoring O2. This should be an adequate substitute for CO2 monitoring.

U.S. EPA is considering and requesting comment on two possible adjustments to the Part 75 Relative Accuracy Test Audit (RATA) requirements for steam EGU stack gas flow monitors that can affect reported CO_2 emissions. [79 FR 34913]

- The first possible adjustment would be to require use of the most accurate

RATA reference method for specific stack configurations.

- The second possible adjustment would be to require a computation adjustment when an EGU changes RATA reference methods. The rationale for these possible adjustments is described further in the Part 75 Monitoring and Reporting Considerations TSD available in the docket.

Under this proposal, U.S. EPA is not defining what "most accurate" means or who determines the "most accurate" RATA test method. A requirement that leads to "most accurate" is unwise, indefensible, and will result in a never ending pursuit of "more accurate" equipment. Since CO2 is such a ubiquitous pollutant, and emitted in such large quantities, a "most accurate" standard is not necessary for purposes of determining CO2 emissions from point sources.

U.S. EPA also does not specify who would be responsible for developing any "computation adjustment" when there is a change in test methods. Ohio EPA believes it should be the states determining when and how an adjustment is applied.

If U.S. EPA is truly worried that the slight variances that may show up when comparing flow numbers measured using the various allowed test methods are skewing data a significant amount, U.S. EPA should adjust the approved test methods.

Since there are multiple flow measurement test methods that are defined as reference methods, and available equally for use in Part 75 and for cap and trade programs, Ohio EPA questions why does the addition of CO2 require the use of even more accurate measurements?

The resolution of data that is seemingly being required would lead one to believe that no computational adjustments or standardized work conversions should be allowed, as, depending on the particular emissions unit being monitored, this could bias the data either high or low. Will extensive emission unit specific testing be required to develop specific conversions and adjustments necessary for each subject emissions unit? Ohio EPA believes that this topic needs more consideration by U.S. EPA and an additional proposal.

Aside from the judgment calls mentioned above as part of a reference method flow measurement that could potentially bias data one way or the other, the ability of both the reference method and the facility's monitoring systems to measure flow or CO2 accurately may also be dependent on many factors, some of which could vary from day to day. These variances could be as simple as a change in the operator, and how the operator runs the emissions unit. Other factors could include barometric pressure, the amount of moisture in the fuel supply, and the ambient temperature.

U.S. EPA is also proposing that an approvable state plan specify appropriate periodic reporting requirements for each affected entity in a state plan that will be reported at least annually, electronically, and disclosed on a state database accessible by the

public and U.S. EPA. U.S. EPA is requesting comment on the scope of these reports. [79 FR 34910] Ohio EPA firmly believes no new reporting requirements for affected EGUs should be created within the Section 111(d) requirements. States should be given the flexibility, depending upon the nature of their plan, to develop appropriate reporting mechanisms and frequencies to include in their plans. U.S. EPA should not be incorporating specific and detailed regulatory requirements for reporting under this proposal given the broad nature of this proposal and purported flexibility for states to incorporate compliance options for various affected entities. In addition, imposing an additional requirement that the state maintain a database accessible by the public is a burden that is not necessitated by this rule. U.S. EPA is proposing no funding as a result of this regulation yet U.S. EPA is proposing a regulatory burden that will drain the already limited resources of state regulatory agencies. Ohio EPA does not support this level of over sight and unnecessary reporting.

As discussed above in our comments regarding the performance demonstration reporting, consideration should also be given to how much time will be necessitated for other entities to prepare and provide reports to Ohio EPA after the end of the reporting year. PUCO alone requires over a year's time to prepare and issue their annual report. One year is absolutely not enough time for other entities to prepare reports and for Ohio to synthesize those reports into a final report that would meet U.S. EPA's detailed guidelines.

Plan Revisions

U.S. EPA is proposing to provide a mechanism for states to make adjustments to the enforceable measures in their plans but affords no ability to make necessary adjustments to the goals. U.S. EPA is proposing that the state may revise its state plan provided that the revision does not result in reducing the required emission performance for affected EGUs specified in the original approved plan. "In other words, no ''backsliding" on overall plan emission performance through a plan modification would be allowed." [79 FR 34917] U.S. EPA is taking comment on whether, for such new projections of emission performance, the projection methods, tools, and assumptions used should match those used for the projection in the original demonstration of plan performance, or should be updated to reflect the latest data and assumptions, such as assumptions for current and future economic conditions and technology cost and performance. Again, Ohio EPA believes, under this type of proposal, U.S. EPA must provide a mechanism to adjust goals and overall plan emission performance when warranted. Furthermore, Ohio EPA believes flexibility should be provided when making changes to plans. It should be left to the states to determine whether the original data and assumptions or updated data and assumptions are appropriate given the specifics of the change proposed by the state. U.S. EPA should not be placing regulatory or policy restrictions on the ability for states, in working with U.S. EPA, to determine the best method of analysis and use of data. The Section 110 "backsliding" provisions do not apply to Section 111(d) and U.S. EPA has no legal authority to apply these provisions.

Record Retention

U.S. EPA is proposing state plans must include a record retention requirement of ten years. [79 FR 34914] Ohio EPA does not believe there is any need to specify record retention policies for CAA Section 111(d) plans. Ohio and other states have developed state level record retention policies.

Timing

40 CFR 60.23 requires that state plans be submitted within nine months of promulgation of the emission guidelines, unless U.S. EPA specifies otherwise. U.S. EPA is proposing state plans be submitted by June 30, 2016, more than one year after the *expected* finalization date (June 1, 2015) of the emission guidelines, acknowledging "these plans may require states to develop new regulatory or statutory authority" and U.S. EPA "recognizes that certain options….involve more analytic effort to precisely demonstrate sources of emission reductions" Therefore, as noted above, U.S. EPA is proposing to give states the option of submitting a complete plan, or if justified, an initial plan when an extension is applicable. [79 FR 34915] U.S. EPA notes a "state must adopt rules and requirements in advance of submitting." [79 FR 34905] Ohio EPA has serious concerns with the ability to meet the proposed timeline, extension or not. U.S. EPA's expectation that states can adopt rules and requirements in advance of submitting when states have little more than a year to perform such an act is impossible. U.S. EPA's timeframe for submittal of state plans is impractical, not realistic, not based on a serious consideration of the extent of work involved such that the schedule is arbitrary and capricious.

Legislative Timing

U.S. EPA requires states to submit a plan within 13-months, essentially one year, of the *anticipated* promulgation of the final rule with a possibility of a year extension if certain stringent conditions are met. The Section 111(d) proposal set out by U.S. EPA demands the restructuring of the power generation, transmission and distribution system in the United States. A state cannot fulfill these requirements in either one or two years. Unless a state has some type of CO2 control program already in existence, the timeframe proposed by U.S. EPA is not possible to meet for most states. First, almost all states will need to adopt legislative authority to either modify or create the structure to regulate electricity in-state in the manner proposed by U.S. EPA. Once U.S. EPA rules are finalized, states will have to develop their plans to a certain degree to understand what legislation will be necessary. Then it will take at least six months to draft all of the necessary legislative changes, and then two years for the legislature to introduce the bill, hold hearings, and pass legislation, that become effective. After the legislation is completed, it will be another 18 months for the various regulatory agencies to draft, propose, and adopt rules. The following would be a best case schedule assuming a June 2015 adoption of the Section 111(d) rules.

Milestone	Time Period	Date
Draft legislation	6 months	December 2015
Legislation introduced, hold hearings, adopts changes into state law	24 months	December 2017
State agencies draft, propose and adopt rules	18 months	June 2019
Deadline for submittal to U.S. EPA	1 month	July 2019

It is not possible for states to meet the deadline of 2020 for the initial reductions. States should not be penalized for the arbitrary dates in the Presidential order that were chosen without a complete understanding of the process needed to modify state legislation, propose and adopt rules, and then have the regulated entities have adequate time to initiate control measures.

U.S. EPA's proposed schedule is arbitrary and unrealistic for state compliance plans to meet the initial compliance deadline of 2020. States cannot achieve the initial state goals within the proposed time schedule. U.S. EPA must abandon the current schedule and propose a more realistic schedule that takes into account the scope of the task U.S. EPA is proposing.

As discussed above in the state compliance plan comments portion of this document, U.S. EPA may allow a one-year extension, when justified, to June 30, 2016 for the required state submittal plan deadline. To qualify for an extension, the state must submit an initial plan that demonstrates the state is on track to develop a complete plan and that includes meaningful steps that clearly commit the state to complete an approvable plan. Furthermore, U.S. EPA is proposing the initial plan *must address all components of complete plan*, identifying which are incomplete, and for those incomplete parts, identify a comprehensive roadmap, milestones, and dates. [79 FR 34915]

Extension Timing

Specifically, U.S. EPA proposed, in order to be eligible for this one-year extension, states must provide the following information:

a. You must include the following required elements in an initial submittal in lieu of a complete state plan;

1. A description of the plan approach and progress made to date in developing each of the plan elements in § 60.5740;

2. An initial projection of the level of emission performance that will be achieved under the complete plan:

3. A commitment by the state to maintain existing state programs and measures that limit or avoid CO2 emissions from affected entities (e.g., renewable energy standards, unit-specific limits on operation or fuel utilization), which must at a minimum apply during the interim period prior to state submission and EPA approval of a complete plan, and must continue to apply in lieu of a complete plan if one is ultimately not submitted and approved.

4. Justification of why additional time is needed to submit a complete plan:

5. A comprehensive roadmap for completing the plan, including process, analytical methods and schedule (including milestones) specifying when all necessary plan components will be complete (e.g., projection of emission performance implementing legislation, regulations and agreements; necessary approvals);

6. Identification of existing and future programs, requirements, and measures the state intends to include in the plan:

7. If a multi-state plan is being developed, an executed agreement(s) with other states (e.g., MOU) participating in the development of the multistate plan; and

8. A commitment to submit a complete plan by June 30, 2017, for a single-state plan, or June 30, 2018, for a multi-state plan, and actions the state will take to show progress in addressing incomplete plan components prior to submittal of the complete plan.

9. A description of all steps the state has already taken in furtherance of actions needed to finalize a complete plan.

10. Evidence of an opportunity for public comment and a response to any significant comments received on issues relating to the approvability of the initial plan.

U.S. EPA again fails to recognize the effort that is needed to even obtain an extension for one year. A state, in accordance with U.S. EPA's proposal, would have to have completed a draft plan complete with emission targets. U.S. EPA fails to grasp that some of the elements of this required plan are not within the purview of the state air quality agency. Ohio EPA would not be able to even submit a request for

one-year extension without legislative approval and Ohio EPA cannot dictate the timeframe of operation of the Ohio General Assembly to pass authority on the wide ranging commitments demanded by U.S. EPA.

Advance Planning

U.S. EPA has suggested that in order for states to have an opportunity to meet the timeframes proposed in this rule, states should not wait until the final rules are issued but start to prepare for this rule based on the proposal. This approach is impractical and unreasonable. It is not possible for states to discuss legislative changes based on a proposal; there must be a final goal or target promulgated. These statements also imply that U.S. EPA does not intend to carefully consider and modify the proposal based on comments. This reinforces the fact that U.S. EPA has not allowed sufficient time to develop the state plan for such a sweeping requirement that completely modifies the manner that electricity is produced and generated in the United States.

Timing of Interim Goal

U.S. EPA acknowledges a state's circumstances and choice of emission reduction strategies may affect the timing and that certain emission reduction measures and programs (e.g., HRIs) are generally easier to implement in the near term, while others (EE/RE) may require several years to implement because of the time necessary to establish the proper infrastructure if a state does not already have such programs in place. The 10-year performance period is intended to "allow states flexibility for timing of program implementation as the state ramps up its programs to achieve the final performance level." [79 FR 34906] Ohio EPA has discussed the issues around U.S. EPA's perceived "flexibility". States are heading into unchartered territory if this proposal is implemented as structured and, yes, measures and programs necessitated under this proposal will likely take significant time to implement, if they even can be implemented. If this proposal is finalized, there must be mechanisms to afford states more time if needed.

Although these may be worthy goals, attempting to force fit the Section 111(d) rules to achieve this goal is inappropriate and not consistent with the operation of Section 111(d) and cannot be achieved in the timeframe suggested by U.S. EPA. This is evident in the Southwest Power Pool's October 9, 2014 comments on this proposal requesting at least a five year extension on the interim goals in order to reduce their modeled reliability impacts and violations of reliability standards. U.S. EPA cannot expect changes of this magnitude be accomplished in a ten-year timeframe.

The beginning of the performance period, January 1, 2020 [79 FR 34905], begins 3.5 years from the proposed June 2016 deadline for plan submittals, 2.5 years for those with an extension, and 1.5 years for those doing multi-state plans. U.S. EPA believes affected entities "may have greater lead time for compliance than might be implied by

the plan submittal dates" because of "knowledge of state requirements as they are adopted." Ohio EPA has serious concerns that 1.5 to 3.5 years is sufficient time for compliance. Assuming an entity will have the ability or authority to begin implementation of planning and compliance strategies based upon "knowledge" or what the state may be doing as they are attempting to develop and adopt plans, regulations or legislation is unsound. And entities will have significant concerns with implementing any finalized state plan strategy prior to U.S. EPA approving that strategy as meeting the requirements of this rule. U.S. EPA is proposing to extend their time to review and approve plans from four months to 12 months. Essentially, entities under state plans will have anywhere from 6 months to 2.5 years from the time they are aware a state plan is approvable to begin implementation. This is unacceptable.

U.S. EPA provides several points of justification as to why 2020 is an appropriate and achievable starting period for compliance. U.S. EPA states "heat rate improvements…may be undertaken promptly" and "best practices…are the least-cost HRI method and can be applied quickly, without lengthy EGU outages." U.S. EPA believes "more costly…upgrades…may require modest EGU outages to implement, but have also been applied on numerous EGUs to improve or maintain performance." Therefore, "EPA expects that it would be feasible to implement HRI projects…by 2020" U.S. EPA also thinks it will be feasible for 70% utilization of NGCC by 2020 citing the average availability factor for NGCC in us exceeding 85% and "the existing NG pipeline and electricity transmission networks are already connected to every existing NGCC facility, and can support aggregate operation of the NGCC fleet at 70% (or above) at the state level, or can be reasonably expected to do so in the time frame for compliance with this rule." [79 FR 34905] Ohio EPA has also provided comments regarding the feasibility of being able to implement HRI methods, our concerns regarding NGCC utilization, and our concerns regarding infrastructure. Ohio EPA believes U.S. EPA's 2020 start date will not be achievable and only demonstrates U.S. EPA's lack of due diligence in researching the feasibility of this proposal.

Timing of Heat Rate Improvements

Ohio EPA wishes to expand on our concerns regarding the feasibility of implementation of HRIs, specifically with respect to timing. If U.S. EPA finalizes this overly ambitious schedule and Ohio EPA can meet the June 2016 deadline for plan submittal without the need for an extension, firm and legally binding heat rate goals would not be in place until June of 2017 (allowing U.S. EPA's 1-year approval process). As discussed elsewhere, Ohio EPA contends that the goal for the Ohio is overly ambitious, and that in order to meet this goal (both interim and final), many improvements would have to be in place by 2020. If this timing holds, the utilities would have two-and-a-half years (30 months) to complete the necessary HRI projects in order to realize reductions in time for 2020. Keep in mind, if Ohio must request an extension, which we surely believe would be necessary considering the schedule and

scope of work needed, this would be reduced to one-and-a-half years (20 months). Whether 20 months or 30 months, it is unrealistic to assume that sufficient numbers of HRI projects across Ohio's large coal-fired fleet with meaningful impact on achieving U.S. EPA's goal for Ohio could be completed in this time frame without significantly impacting grid reliability, reserve capacity, and costs to consumers. And Ohio is just one state. These impacts will occur regionally and nationally when all states prepare to meet their goals at the same time.

Ohio EPA conducted rigorous stakeholder outreach. As part of this outreach, Ohio EPA received several cradle-to-grave timelines of recent efficiency improvement projects at several Ohio EGUs. Ohio EPA urges U.S. EPA to consider the following issues regarding the timing of major improvement projects at a typical coal-fired boiler. Ohio EPA presents here the timing considerations that must be accounted for when scheduling an outage via the RTO in Ohio, PJM Interconnection. Larger projects that involve boiler and/or turbine repair, replacement of major components, and the installation of new equipment are performed during major outages, and these outages are typically budgeted for three to five years in advance. For the purposes of grid reliability, these outages must first be scheduled with PJM, and such outages typically last six to ten weeks. To help ensure grid reliability, these outages are carefully scheduled on regular and well-established maintenance cycles based on previous maintenance activities. Outages for boilers are typically scheduled every three to five years, and turbine outages approximately every six years. To avoid outages during periods of high demand, most outages are scheduled during the Spring and Fall months when demand is typically lower, and PJM reserves the right to cancel all scheduled outages up to the day before the unit is scheduled to be offline. Ohio EPA finds it unreasonable that a large proportion of its coal-fired EGUs will be expected to schedule and complete major improvement projects, in just the spring and fall months over the course of 20 to 30 months without impacting grid reliability. Utilities in the PJM region are already competing for limited down time for making improvements and limited labor and supply resources.

Even more concerning is that Ohio is anticipated to lose approximately 27% of its coal-fired generating capacity between 2015 and 2016, and Ohio EPA is concerned that it will become increasingly difficult for units to schedule lengthy outages. As discussed elsewhere, the remaining coal fleet in Ohio will be well maintained, highly efficient and well controlled. Ohio anticipates any remaining HRIs that can occur will be more substantial major upgrade projects. Ohio EPA reiterates that the proposed rule raises substantial grid reliability concerns and urges U.S. EPA to re-examine the proposed rule in this light.

In addition to timing considerations with respect to maintaining grid reliability, the types of major upgrades that U.S. EPA specifies as part of the overly-ambitious target of 6% HRI set by U.S. EPA require lengthy planning, engineering, construction, and testing processes that go well beyond the 20 to 30 months of the proposed rule's timetable. Ohio EPA urges U.S. EPA to consider the following timetable for such projects, provided by Ohio stakeholders:

Initial planning: 6 to 8 months

A/E firm contracting: 3-6 months

Create engineering/spec package: 3 to 7 months

Solicit proposals/contracting for construction: 3 to 5 months

Design/fabrication/delivery: 3 months for “off the shelf” products, 18-24 months for unique components

Installation: 2 to 4 months

Using the lower estimates for each phase of a project, approximately 20 months would be necessary for a facility to complete a major upgrade. Ohio EPA is concerned that major upgrades at even a small number of units, let alone the fleet-wide improvements envisioned by U.S. EPA, could not be completed in time to have meaningful impact on the glide path to achieve the state-wide emission intensity goal. Furthermore, if a particular project were to trigger NSR/PSD permitting, Ohio EPA anticipates that an additional 18-24 months would be required. Clearly, the timetable of the proposed rule is unrealistic, presents significant reliability concerns, and was created without regard for any of the above considerations.

A second project timeline, supplied to Ohio EPA via stakeholder outreach, details the upgrade of the low pressure turbines at a coal-fired power plant in Ohio. The objective of the upgrade was to increase the efficiency of the low-pressure side of generating system. The actual historical timeline is presented below:

May 2007: Requested OEM Feasibility Study for this LP Upgrade.

September 2007: OEM presented results of Feasibility Study.

December 2007: Preliminary economics evaluated, required cash flows, and recommendations for going out for competitive bid.

January 2008: Requested Long Range (5-year) Budgeting approved for 2012 cash flow commencement.

January 2011: RFP’s issued for competitive bids.

April 2011: Proposals received and evaluated.

October 2011: Capital project and funding approved and Contract Issued to Seller.

November 2011: Released for detail engineering.

December 2011: Long lead time materials (16-24 months) ordered for expedited delivery to assembly shops.

June 2012: Commenced detail planning of outage including duration development.

April 2013: First materials received at shops for assembly (6 months for assembly prior to shipment to plant).

September 2013: Commenced outage for LP Upgrade.

December 2013: LP Upgrade completed, unit returned to service and testing initiated.

Ohio EPA understands that this project also necessitated an alteration to the normal outage period scheduled with the RTO. However, this alteration only impacted the schedule by approximately 90 days. It is typically the preference of EGU operators to schedule upgrades such as the one described above to coincide with the regular and well-established generator and boiler inspection and repair outage schedule, but such a scheduled outage was not possible in this particular instance. This does not diminish the fact that the turbine upgrade required almost seven years to complete and the unit return to normal operation. Again, as with previous example, U. S. EPA clearly did not explore and/or consider appropriate time periods in the proposed rule. Ohio EPA believes that it is impossible for those states that generate significant quantities of electricity from coal-fired EGUs to have sufficient numbers of generators upgraded to meet U.S. EPA's strict goals in time to have a meaningful impact on the glide path to achieve the state-wide emission intensity goal.

Load Serving Commitment Timing

Also of consideration is how generators commit generation to the RTOs. It is Ohio EPA's understanding that Ohio units are required to nominate units to serve loads in 2020 by the fall of 2015. The owners of these units will have no understanding of their compliance obligations under state plans at this time yet they will have to commit to serve load in the compliance year. U.S. EPA's timeline appears to give no consideration to this issue.

Interstate Credits

U.S. EPA notes that many states programs allow for actions in neighboring states to meet the in-state requirement or explicitly address CO2 emissions in neighboring states. Some states also apply CO2 emission requirements related to the generation of power purchased by regulated utilities, including power imported from out of state. U.S. EPA is therefore seeking comment on options and alternatives on how to address the

likelihood of double-counting in both the projections of plan performance and the reporting of achieved performance. [79 FR 34921]

For EE, U.S.EPA is proposing that, consistent with the approach used for BSER, a state could take into account in its plan only those CO2 emission reductions occurring (or projected to occur) in the state that result from EE measures implemented in the state. For states that participate in multi-state plans, the participating states would have the flexibility to distribute the CO2 emission reductions among the states. However, U.S. EPA is also requesting comment on whether a state should be able to take credit for emission reductions out of state due to in-state EE measures if the state can demonstrate that the reductions will not be double-counted when the relevant states report on their achieved plan performance. [79 FR34921] States should be able to take credit for EE projects outside state boundaries. The double-counting issues arise due to U.S. EPA injecting the federal government into an area that has been the jurisdiction of states. U.S. EPA is suggesting some type of federally approved system which U.S. EPA has no authority to review, approve, or endorse.

For RE, U.S. EPA is proposing that, consistent with existing state RPS policies, a state could take into account all of the CO2 emission reductions from RE measures implemented by the state, whether they occur in the state or in other states. This acknowledges the existence of RE certificates (REC) that allow for interstate trading of RE attributes and the fact that a given state's RPS requirements often allow for the use of qualifying RE located in another state to be used to comply with that state's RPS. U.S. EPA is also seeking comment on how to avoid double-counting emission reductions using this proposed approach. U.S. EPA is also proposing that states participating in multi-state plans could distribute the CO2 emission reductions among the states. U.S. EPA is also request comment on the option of allowing a state to take into account only those CO2 emission reductions occurring in its state. U.S. EPA is also requesting comment on whether a state should be able to take credit for emission reductions out-of-state due to RE if the state can demonstrate that the reductions will not be double-counted when the relevant states report on their achieved plan performance. [79 FR 34921] It is apparent U.S. EPA has not given enough consideration to the design of this proposal especially with respect to EE and RE. U.S. EPA knows double-counting will be a concern under both EE and RE and rather than propose a process and solution, U.S. EPA only points out the flaws in this proposal and is relying on stakeholders to provide the solution. U.S. EPA is creating a system ripe for litigation between EGU owners, EGU owners and states, as well as states and states.

Not all REC programs are uniform and U.S. EPA has not proposed an acceptable REC process. If U.S. EPA is to acknowledge and allow for RECs, will U.S. EPA require a uniform REC system? Will RECs become federally enforceable or subject to federal review? This section provides another example of U.S. EPA overstepping its legal authority and attempting to be a "REC approver and enforcer." This is a domain that should be left up to the states to develop and enforce at the state level.

Ohio EPA also wishes to reiterate our comments regarding how RE and EE goals were set. U.S. EPA is being inconsistent in the goal setting methodology assumptions

regarding importing and exporting under state RPS and EE programs and what is proposed for compliance purposes.

Baseline Date for Considering Reductions and Existing Measures

Ohio EPA believes this proposal needs significant clarification regarding the date reductions can be considered for meeting plan requirements. This proposal contains numerous inconsistencies that concerns Ohio EPA.

In general, U.S. EPA is proposing "that measures that a state takes *after the date of this proposal*, or programs already in place, which result in CO2 emission reductions during the 2020-2030 period, would apply" towards achieving the goal. [79 FR 34839, 34851] First, at a minimum, Ohio EPA believes there is no basis for U.S. EPA to not consider allowing states to apply any and all emission reductions that occur after the base-year period used for establishing BSER (2012) towards meeting the goal. U.S. EPA based all analysis on each of the building blocks on programs, emissions, capabilities and measures from 2012.

Ohio EPA is also concerned with U.S. EPA not allowing emissions reductions, or at least certain types of reductions, that occur prior to the 2020 start date to be included in the state plan. Not allowing EE programs between 2012 and 2020 will provide a significant disincentive for states to develop EE programs early. U.S. EPA questions whether pre-2020 implementation of new requirements would be practical for states. It should not matter. U.S. EPA should not develop a system that discourages early reductions, no matter how few they may be. U.S. EPA must consider the timing of states needing to adopt programs and bring them online in order to start realizing reductions in 2020. A system as proposed, starting in 2020, can prolong reductions early in the interim period as states wait to bring programs online in order to be able to account for the emission reductions in 2020 and beyond. This proposal will slow down the states trajectory.

U.S. EPA questions if an approach that allows pre-2020 reductions to count "would in effect allow higher emissions during the 2020-2029 period than would occur under the proposed approach." [79 FR 34919] It appears U.S. EPA is assuming states will continue to develop new EE/RE programs and that utilities will continue HRIs between this proposal and 2020 so in addition to the post-2020 reductions required under the BSER, even higher reductions then predicted under this proposal would occur as a result of these additional pre-2020 reductions. Ohio EPA believes U.S. EPA will likely find the exact opposite occurs. With the stringency of the individual building block's goals and the obstacles states must overcome in order to meet enforceability requirements, states and utilities will be forced to delay potential early reductions not required by Section 111(d) in order save those reductions for compliance. Furthermore, any HRI that a facility has implemented, regardless of when, that was assumed in the S&L Study used to develop Building Block 1, should be included as reductions meeting the plan requirements. U.S. EPA should be encouraging forward thinking and responsible facilities who have acted prior to this rule to make HRIs. Likewise, any and

all EE measures that utilities or states have implemented, regardless of when, that still bring reductions during the compliance period should count towards a state's goal. U.S. EPA must ensure they do not limit the EE measures that utilities and other entities within the states have already gained success implementing.

U.S. EPA does provide that the states "may apply towards its required emission performance level the emission reductions that *existing* state programs and measures achieve during a plan performance period as a result of actions taken after the date of this proposal" and they are "also proposing that this proposed limitation would not apply to existing RE….because existing RE generation prior to the date of proposal …was factored into ….block 3." [79 FR 34918 (emphasis added)] U.S. EPA defines e*xisting state program, requirement, or measure* as:

> In the context of a state plan, a regulation, requirement, program, or measure administered by a state, utility, or other entity that is currently established. This may include a regulation or other legal requirement that includes past, current, and future obligations, or current programs and measures that are in place and are anticipated to be continued or expanded in the future, in accordance with established plans. An existing state program, requirement, or measure may have past, current, and future impacts on EGU CO2 emissions. [79 FR 34956]

U.S. EPA also clarifies in the preamble that ""existing measure" refers to a state or utility requirement, program, or measure that is currently "on the books."" [79 FR 34918]

Ohio EPA is concerned U.S. EPA may be unintentionally excluding some programs, requirements or measures that should not be excluded. The definition of existing should be relative to 2020 but not necessarily relative to today. For example, U.S. EPA does say the exclusion of pre-existing hydropower generation from the baseline "does not prevent states from considering incremental hydropower generation from *existing facilities* (or later-built facilities) as an option for compliance with state goals." [79 FR 34867 (emphasis added)] Obviously U.S. EPA does not intend to exclude *programs, requirements, or measures* that do not exist today. This should be clarified and the definition adjusted to reflect this. In actuality, it should be clear that just like for hydropower, any RE source in existence before 2020 would be considered eligible for inclusion in the plan regardless of when it became "on the books", was established, or was anticipated.

U.S. EPA acknowledges, with the exception of hydropower, the RE levels represent total RE, rather than incremental amounts above a baseline, so the RE generation can be supplied by any RE capacity regardless of its date of installation. [79 FR 34869] Ohio EPA assumes this to mean that provided Ohio EPA reaches its interim goal of 6% of total generation from RE and a final goal of 11%, whether that RE was in existence prior to 2020, 2017 or even 2012, its generation can apply to the goal, including hydropower that was not even included in the goal setting. This should be clearly stated.

Further, it should be clarified that existing nuclear beyond the 6% of at-risk generation should also be able to be applied as an existing measure. U.S. EPA is proposing states can take credit for "any additional new nuclear generating units or uprating of existing nuclear units, relative to a baseline of capacity." [79 FR 34923] U.S. EPA must allow states to take credit for preserving greater than 6% of these zero-emitting sources. Existing units should be encouraged to operate rather than creating a disincentive to operation if they cannot be considered as a compliance option.

U.S. EPA also requests comment on the following alternatives: start date of the initial plan performance period, date of promulgation of the emission guidelines, end date of the base period for BSER-based goals analysis (e.g., the beginning of 2013 for Building Blocks 1–3 and beginning of 2017 for Building Block 4, end-use EE), end of 2005, or another date. [79 FR 34918] Ohio EPA believes U.S. EPA should leave it up to states to determine their appropriate baseline based on the measures used to develop the goals. U.S. EPA "recognizes that states that have already shifted toward lower carbon-intensity generation or ramped up demand-side EE programs are better positioned to meet state-specific goals" and that existing state measures taken after the date of proposal would be recognized in a way that "may be generally compatible with the forward-looking methodology that the EPA used to propose state emission performance goals." [79 FR 34918]

Ohio EPA believes that these statements are a clear reflection of the flawed logic throughout the proposed rule. Firstly, those states, such as Ohio, that already have taken measures to shift to lower intensity fuels, maintain a robust generation mix, and improve end-use efficiencies, received more stringent state emission goals than states that have done nothing with respect to early adoption. Secondly, Ohio EPA recognizes that U.S. EPA did use a "forward-looking methodology" in setting state goals. Unfortunately, such a methodology is contrary to the intent of Section 111, in which the BSERs is based on adequately demonstrated, commercially available technologies, not optimistic projections of what might be possible in each state.

To avoid what is viewed by Ohio EPA as a penalization of states that have adopted beneficial measures prior to this proposal, U.S. EPA should allow the states to determine when reductions should be credited to its emission performance goals. Ohio EPA urges U.S. EPA to consider, in the name of flexibility and to avoid penalizing forward-looking state actions, the ability for states to recognize and credit prior emission reduction measures based on reasonable and defensible analyses of prior actions. U.S. EPA's action on excluding some CO2 reductions prior to 2020 is arbitrary, , and without technical foundation.

Modified/Reconstructed Proposal, NSR and Title V

NSR

U.S. EPA, as a result of such flexibility and anticipated state involvement, expects that a limited number of affected sources would trigger NSR when states implement their plans. [79 FR 34928] Ohio EPA believes U.S. EPA is under estimating how NSR may impact sources under this proposal and over-estimating the ability of states to offer flexibility in a manner that would allow sources to avoid NSR. U.S. EPA acknowledges HRI changes could cause the triggering of NSR but they "expect those situations to be few" as "states have considerable flexibility in selecting varied measures" [79 FR 34928] U.S. EPA is incorrect in its assumptions. Appendix X contains a listing of HRIs which U.S. EPA identified as violating either PSD or NSR rules. This factual information cannot be disregarded and U.S. EPA must consider the acquisition of the appropriate permits as part of the implementation schedule. Furthermore, the October 15, 2014 Sargent & Lundy letter states "many of the options for HRI listed in our 2009 Report have triggered New Source Review actions by EPA and others." [Appendix C]
U.S. EPA contemplates states could adjust EE/RE as a way of reducing the future emissions of an affected source initially predicted (without such alterations) to increase its emissions as a result of a plan requirement…..due to reduced demand for their operations", or "develop conditions for a source expected to trigger NSR that would limit the unit's ability to move up in the dispatch enough to result in a significant net emissions increase…(effectively establishing a synthetic minor limit)" [79 FR 34928] Ohio does not agree with these options. This is another example of U.S. EPA negating the perceived flexibility they are affording states. Now in the process of developing our plans we must add in another complex layer of eliminating measures that could trigger NSR for our sources.

And the process of triggering NSR would act to further exacerbate the timing issues apparent under this proposal. There is not enough time for companies to analyze regulations, conduct HRI studies, prepare NSR permit applications, perform modeling, and obtain permits under U.S. EPA's timeline. U.S. EPA believes HRI is the one component of this plan that can most easily and quickly be implemented. Ohio EPA disagrees. The lead time for these types of improvements, to obtain internal approval, acquire parts and/or equipment, manpower, and approval from PJM in order to have down time in some cases, is considerable. Adding NSR to the mix will greatly hinder the state's ability to develop plans with any type of early reductions.

U.S. EPA is requesting comment on whether, with adequate record support, the state plan could include a provision, based on underlying analysis, stating that an affected source that complies with its applicable standard would be treated as not increasing its emissions, and if so, whether such a provision would mean that, as a matter of law, the source's actions to comply with its standard would not subject the source to

NSR. Ohio EPA does not believe the states should have to provide any analysis to support not subjecting sources to NSR under this plan. Ohio EPA firmly believes this rule should exempt any source from NSR that undertakes a change that results in the triggering of NSR, not just for CO2 but for an increase in any other pollutant, because the change is required under the state plan.

Modified/Reconstructed Proposal

On the same date as this proposal, U.S. EPA proposed requirements for modified and reconstructed units under Section 111(b). [79 FR 34960] Ohio EPA has submitted comments regarding this proposal and has requested U.S. EPA take into consideration the comments submitted under this proposal and under the modify/reconstruct proposal jointly with respect to both proposals due to the interconnected nature of the two proposed rules and the overlap in the comments.

As noted above, U.S. EPA is proposing that an existing source that becomes subject to Section 111(d) will continue to be subject to those requirements even after it undertakes a modification or reconstruction. [79 FR 34903] U.S. EPA is proposing this "once-in-always-in" policy for modified and reconstructed sources recognizing that the type of integrated system wide regulatory proposal that has been proposed would face serious implementation issues if affected sources were no longer subject to these plans. As discussed in the legal section of our comments, Ohio EPA does not agree with this "interpretation" nor its extension to any existing source subject to any Section 111(d) plan.

Likewise, Ohio EPA also raised concerns under a co-proposed option for modified sources regarding U.S. EPA proposing the date for determining whether a unit is subject to a Section 111(d) plan is the date that the plan is initially *submitted* to U.S. EPA, [79 FR 34988]; that is *whether the modification occurs before or after the promulgation of a Section 111(d) plan*. [79 FR 34965] Ohio EPA wishes to reiterate our significant concerns with how these two Section 111 plans will function together. If alternative 2 of the modified proposal is promulgated by U.S. EPA then a modified source will be subject to one of the two limits if the modification occurs before Ohio EPA submits their plan. However, recognizing the time it takes for a plan to be developed, Ohio EPA and sources would be working together and plans under Section 111(d) may be well underfoot. We have concerns that some changes that may be chosen by a utility necessary to comply with Section 111(d) may trigger a modification or reconstruction under this rule. Sources will be leery about making those changes, although they may be quite beneficial for the purpose of reducing CO2, if they know it will trigger the modify or reconstruct applicability.

U.S. EPA has not thoroughly investigated and resolved the implications regarding the integration of these two proposals. U.S. EPA must separate these proposals and develop traditional Section 111 proposals that follow the intent of the CAA to address existing sources and also modified and reconstructed sources.

Title V

Under the proposal for new sources under Section 111(d), U.S. EPA proposed to exempt GHGs from the fee rates ($/ton) in effect for other fee pollutants, while proposing an alternative fee that would be much lower than the fee charged to other fee pollutants, yet sufficient to cover the costs of addressing GHGs in operating permits. U.S. EPA states there is no need to address any Title V fee issues in this proposal. Thus, we are not revisiting these Title V fee issues in this proposal, and we are not proposing any additional revisions to any Title V regulations as part of this action. [79 FR 34929]

Ohio EPA disagrees with U.S. EPA's proposal to exempt CO2 from the $/ton Title V fees. The CAA states:

> (3) (A) A requirement under State or local law or interstate compact that the owner or operator of all sources subject to the requirement to obtain a permit under this title pay an annual fee, or the equivalent over some other period, sufficient to cover all reasonable (direct and indirect) costs required to develop and administer the permit program requirements of this title, including section 507, including the reasonable costs of:
>
> (i) reviewing and acting upon any application for such a permit,
>
> (ii) if the owner or operator receives a permit for such source, whether before or after the date of the enactment of the CAA Amendments of 1990, implementing and enforcing the terms and conditions of any such permit (not including any court costs or other costs associated with any enforcement action),
>
> (iii) emissions and ambient monitoring,
>
> (iv) preparing generally applicable regulations, or guidance,
>
> (v) modeling, analyses, and demonstrations, and
>
> (vi) preparing inventories and tracking emissions.
>
> (B) The total amount of fees collected by the permitting authority shall conform to the following requirements.
>
> (i) The Administrator shall not approve a program as meeting the requirements of this paragraph unless the State demonstrates that, except as otherwise provided in subparagraphs (ii) through (v) of this subparagraph, the program will result in the collection, in the aggregate, from all sources subject to subparagraph (A), of an

> amount not less than $25 per ton of each regulated pollutant, or such other amount as the Administrator may determine adequately reflects the reasonable costs of the permit program.

Ohio EPA is not suggesting that the $25/ton adjusted to the CPI is the appropriate amount for CO2, only that U.S. EPA is obligated under the CAA to calculate the proper value and not just "exempt" these emissions. It is apparent that U.S. EPA is attempting to rush through this entire package to meet the President's deadlines. These deadlines, however, cannot allow U.S. EPA to bypass specific provisions of the CAA. The recent U.S. Supreme Court case UARG vs. EPA related to permitting of CO2 sources should be an important reminder to U.S. EPA that the federal government cannot create exemptions that do not exist in the CAA. Please refer to Ohio EPA comments on Title V fees for CO2 for EGU's that were part of the comments for U.S. EPA proposal for new sources under Section 111(b).

Cost

Ohio EPA has serious concerns regarding the cost of this proposed rule. Ohio EPA believes U.S. EPA has drastically underestimated these costs and has attempted to disguise the true costs under the umbrella of elements like EE. In actuality, U.S. EPA has not been able to determine the actual cost of this proposal. U.S. EPA even acknowledges their analysis is "illustrative" because there is "considerable uncertainty with regards to the precise measures that states will adopt to meet the proposed requirements, because there are considerable flexibilities." [79 FR 34934]

U.S. EPA cites "the cost of CO2 emission reductions achievable through heat rate improvements is quite low, and that cost would remain reasonable even if it was substantially increased." Ohio EPA disagrees. U.S. EPA's assumption regarding the cost-effectiveness of HRIs is primarily based on units being able to achieve the more cost-effective "maintenance type" HRIs. Ohio EPA has discussed in our comments above with respect to HRIs that Ohio's fleet will be a well-controlled, well-maintained and efficient fleet after the post-MATS shutdowns occur. Cost-effective HRIs will not provide additional benefit in Ohio as much of these actions have already occurred.

The costs that will be incurred by state agencies alone, attempting to administer this proposal, will be enormous. U.S. EPA states "that each state will rely on the equivalent of two full time staff to oversee program implementation, assess progress, develop possible contingency measures, state plan revisions and the subsequent public meetings if revisions are indeed needed, download data from the ECMPS for their annual reporting and develop their annual EPA report." [Regulatory Impact Analysis (RIA), 3-47] This massive new program will take more than two staff persons per state. If states are the implementing bodies of the rules and we have only two work years of effort, will U,.S. EPA restrict it oversight staff to one or two? The level of analysis, into uncharted areas, the level of reporting, and the staff time to address NSR and permitting issues will be a colossal drain on resources. And U.S. EPA is providing no additional funding to states to administer such an enormous project. Although U.S. EPA

proposes more Section 105 funding or states in the budget, Congress has not approved, and is unlikely to approve, more funding and U.S. EPA must be more realistic in its workload analysis.

The predicted electric power generation costs (or "compliance costs") seem staggering to Ohio EPA; annual incremental compliance cost (including monitoring, reporting and recordkeeping) of $5.5 to 7.5 billion in 2020 and $7.3 to 8.8 billion in 2030. [RIA, ES-7]

Since this proposal, Ohio EPA has had significant outreach with numerous different entities that will be impacted by this rule. The message we have heard from them is clear. This will be an unprecedented, expansive and costly rule that will drastically change the power industry.

The manufacturing industry is a very important piece of Ohio's work force. Manufacturing in the state relies heavily on electricity and it is a substantial expense for companies. An independent analysis was conducted by Cleveland State University's Center for Economic Development and Energy Policy Center entitled "Moving Ohio Manufacturing Forward: Competitive Electricity Pricing. [Appendix Y] This analysis looked at the impact of electricity pricing on manufacturing productivity for Ohio, Indiana, Kentucky, Michigan, and Pennsylvania. The results indicated that electricity price had a statistically significant negative effect on manufacturing productivity across the states from 1990 to 2010, leading to the conclusion that higher industrial electricity rates in Ohio will most likely be associated with lower manufacturing productivity. There are concerns about how far components of this plan, such as EE requirements, will impact manufacturing let alone the impact increased costs of electricity will have on an already strained industry. The costs of discovering and implementing EE programs at large manufacturing and industrial facilities can be substantial. And yes, the results are typically a reduction in electricity consumption providing benefit in return. However, Ohio EPA questions if they would realize a net benefit as a result. This proposal is very discouraging in light of Ohio's current system in place for assisting industry with EE initiatives that works well. U.S. EPA is attempting to forever change the landscape of how EE programs are implemented, turning it into a federally enforceable program with arbitrary approval mechanisms.

This proposal gives little consideration to how such drastic changes in the way states generate electricity will affect those employed in the electricity sector. But U.S. EPA notes the average delivered coal price is expected to decrease 16 to 17% in 2020 and 18% in 2030. And coal production is predicted to decline by 25 to 27% in 2020 and 30 to 32% in 2030. [79 FR 34934] There is no doubt that the driving goal of this plan is to reduce utilization of coal-fired EGUs. And there is no doubt this will result in displacement of those in the coal mining industry. U.S. EPA contemplates those who will be displaced will in turn get jobs in the newly expanding RE sector. Ohio EPA is a little more realistic about the negative impact this proposal will have on communities, families and individuals.

The impact of the increased cost of electricity is not only a concern for the industrial sector but also the residential sector. U.S. EPA attempts to down play their estimated 6-

7% increase predicted for 2020 in retail electricity prices and 3% increase for average electricity bills. [79 FR 34934] Ohio is more in tuned with what impact that increase will have on the residents of Ohio. Ohio EPA also believes U.S. EPA has drastically underestimated these costs, as we have pointed out throughout our comments.

As illustrated in PUCO's comments regarding this proposal, PUCO's state-specific analysis showed the aggregate total price increase as a result of the CPP will be substantial. Compliance with Building Block 2 would cost Ohioans approximately $2.5 billion (in nominal dollars) more for electricity in 2025 alone. PUCO used a modeling methodology much more superior to the IPM model used by U.S. EPA. PUCO also performed a state-specific analysis rather than providing nationwide averages.

IHS Energy's July 2014 report on "The Value of US Power Supply Diversity" [Appendix Z] identifies the importance of a diversified energy portfolio. IHS Energy performed modeling to assess the current value of fuel diversity by comparing a base case of the current US power sector with a "reduced diversity" case that could be very similar to plans developed under this proposal. IHS Energy found reduced diversity increases average wholesale power prices by about 75% and retail power prices by 25%. [Page 5] Further, they found moving from the current diverse generation mix to the less diverse generation mix could reduce US GDP by nearly $200 billion, lead to roughly one million fewer jobs, and reduce the typical household's annual disposable income by around $2,100. [Page 6] Also noted in this report:

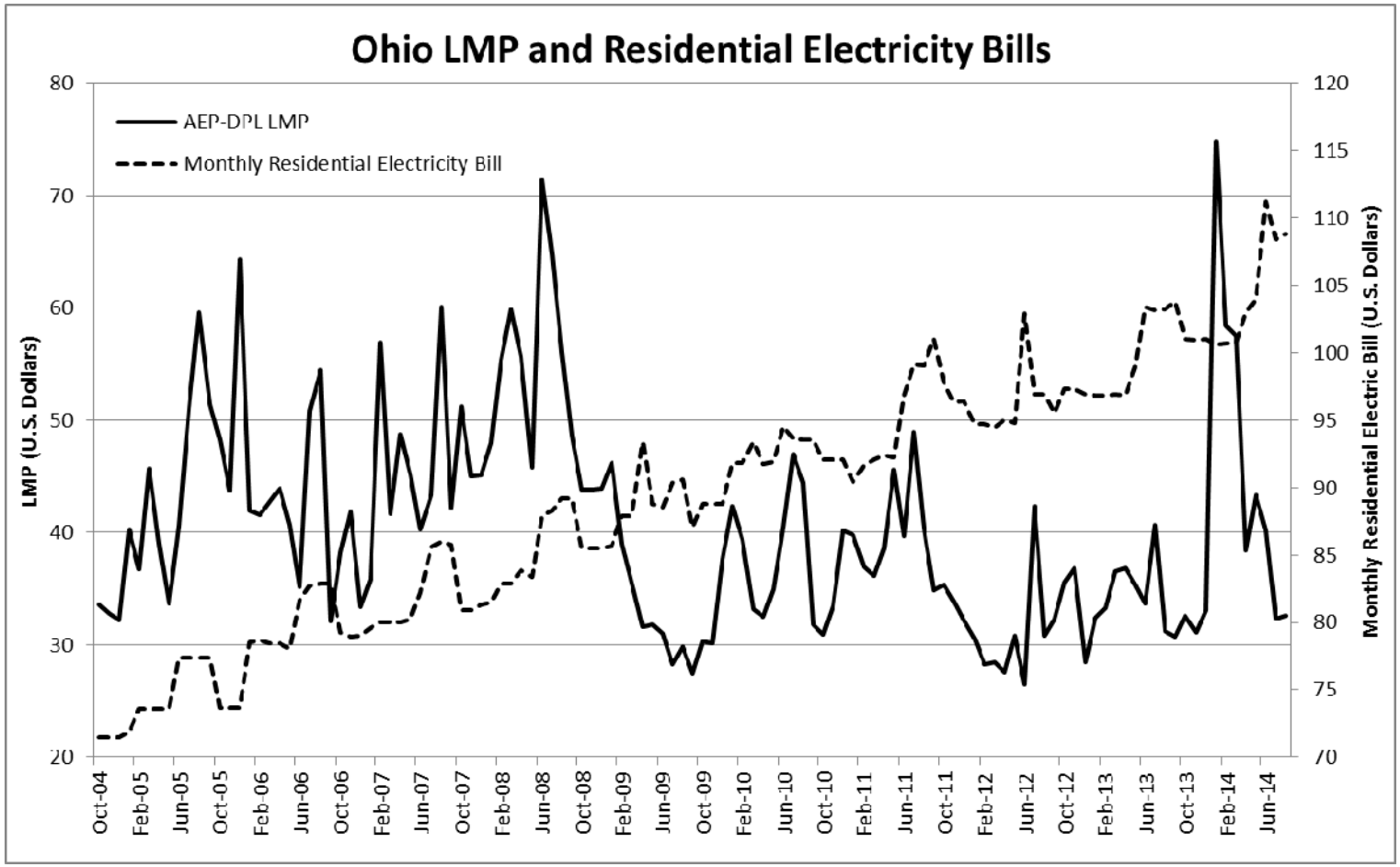
> However, this past winter demonstrated the danger of relying too heavily on any one fuel and that all fuels are subject to seasonal price fluctuations, price spikes, and deliverability and infrastructure constraints. The natural gas price spikes and deliverability challenges during the past winter were a jolt for a number of power systems that rely significantly on natural gas in the generation supply. These recent events demonstrated that natural gas deliverability remains a risk and natural gas prices continue to be hard to predict, prone to multiyear cycles, strongly seasonal, and capable of significant spikes. The root causes of these price dynamics are not going away anytime soon. The best available tool for managing uncertainty associated with any single fuel or technology is to maintain a diverse power supply portfolio.
>
> Maintaining power supply diversity is widely supported—the idea of an all-of-the-above approach to the energy future is supported on both sides of the aisle in Congress and at both ends of Pennsylvania Avenue. Four decades of experience demonstrate the conclusion that government should not pick fuel or technology winners, but rather should create a level playing field to encourage the economic decisions that move the power sector toward the most cost-effective generation mix.

U.S. EPA cannot ignore these staggering results and the impact they will have on electricity customers in Ohio.

U.S. EPA believes “states would be able to address the economic interests of their utilities and ratepayers by using the flexibilities in this proposed action to…reduce costs to consumers…” [79 FR 34834] We have spoken to this misperceived flexibility. And U.S. EPA actually believes average monthly electricity bills will decline by 9% in 2030 due to demand-side EE programs. [79 FR 34934] Ohio is realistic in our perception of the ability for EE programs that reach the residential consumer to reduce their electricity needs to the degree necessary to offset the undoubted increase in cost they will realize. EE programs of that nature will be few and far between due to the expected challenges regarding meeting criteria such as developing EE that is quantifiable, non- duplicative, permanent, verifiable, and enforceable.

U.S. EPA, throughout the proposed rule, accompanying TSDs, and the RIA, insists that costs to consumers will increase only slightly initially, followed by reductions in electricity costs as state plans reach maturity. This assumption is primarily driven by the assumption that reduced demand will translate to reduced electricity bills. Indeed, based on Ohio EPA’s interpretation of U.S. EPA’s IPM results accompanying the proposal, it appears that reduced demand is translated to reduced wholesale electricity prices. These reductions in wholesale electricity prices are then assumed to translate directly to reductions in consumer electricity prices. Ohio EPA contends that these assumptions are false, and do not accurately reflect the complexity of the electricity market.

To explore these assumptions, Ohio EPA conducted an analysis of electricity prices at both the wholesale and residential level. Average monthly residential power bills were compiled for years 2004 to August of 2014 from the PUCO’s monthly Ohio Utility Rate Surveys. Residential electricity bills were chosen for this analysis because they best reflect Ohio EPA’s concern that the proposed rule will greatly impact the costs of electricity to the citizens of Ohio. Ohio EPA’s first analysis was conducted to determine the impact of wholesale locational market pricing (LMP) on the average residential electric bill in Ohio. LMP data was collected from the PJM Locational Market Pricing Data Miner system, October 2004 through August 2014. The AEP-Dayton Power and Light pricing node was selected for this analysis, as this region covers the majority of Ohio. The graph below presents these LMP data co-plotted with historical average monthly residential electricity bills.


Ohio LMP and Residential Electricity Bills
AEP-DPL LMP
Monthly Residential Electricity Bill
LMP (U.S. Dollars)
Monthly Residential Electric Bill (U.S. Dollars)
80
70
60
50
40
30
20
120
115
110
105
100
95
90
85
80
75
70
Oct-04
Feb-05
Jun-05
Oct-05
Feb-06
Jun-06
Oct-06
Feb-07
Jun-07
Oct-07
Feb-08
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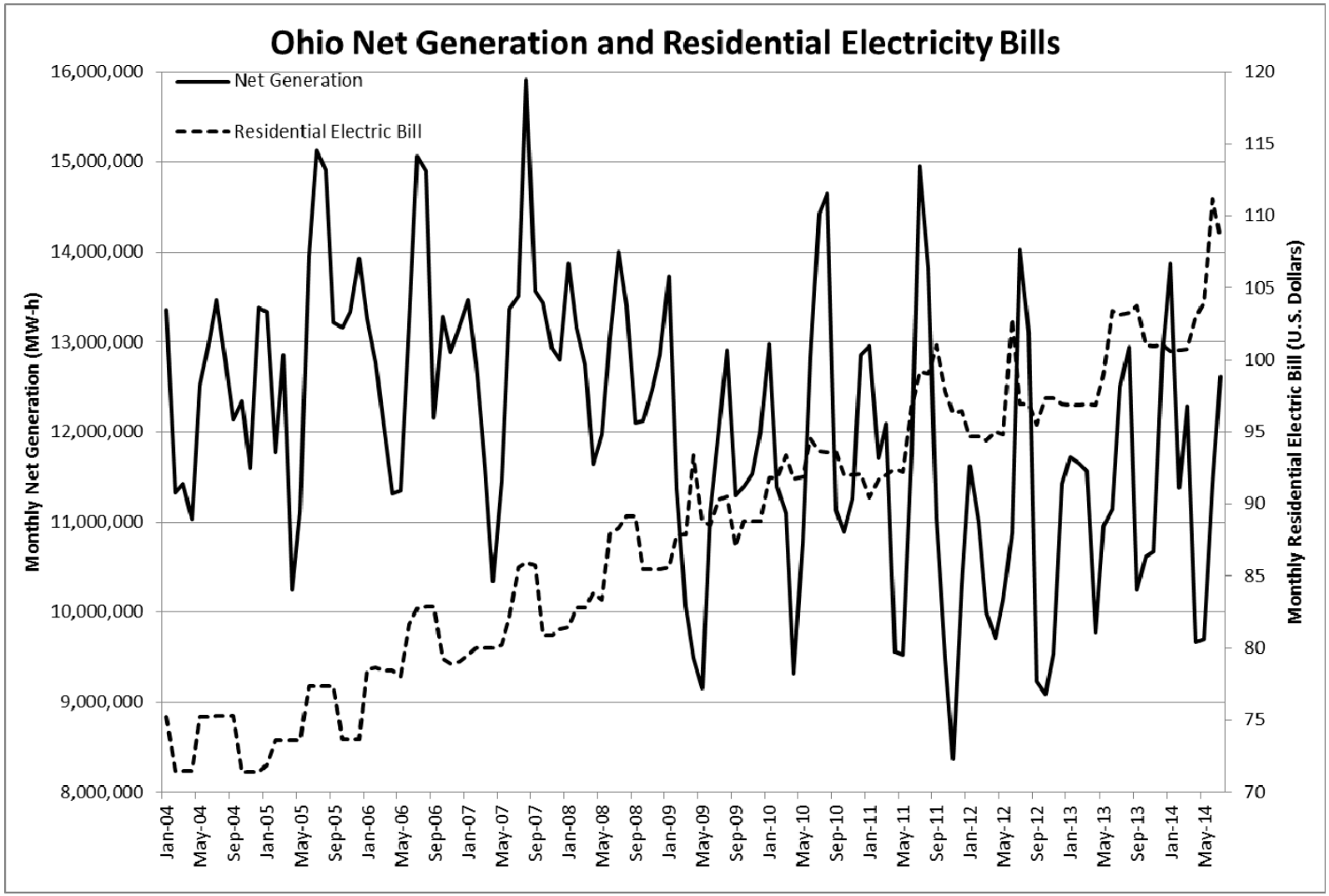
Oct-13
Feb-14
Jun-14

Even a cursory examination of the above graph reveals that there is little to no correlation between LMP (a reflection of wholesale electricity prices) and the costs passed on to the consumer. Indeed, significant reductions in LMP are observed starting in 2009 and continuing, with no impact on the average monthly electricity bill of Ohio citizens. Electricity bills for Ohio citizens have increased steadily for the entirety of the dataset. Therefore, Ohio EPA's contention that any relationship, assumed, modeled, or otherwise, between wholesale electricity prices and consumer electricity bills is false, and that such assumptions cannot be used as justification for the proposed rule.

Ohio EPA understands that much of the projected cost savings of the proposed rule is linked to decreased consumer demand via EE measures. Ohio EPA examined the relationship between average monthly residential electricity bills to net generation. Ohio EPA believes that it is reasonable to assume that net generation can serve as a measure of overall electricity demand. Total monthly net generation data for the state of Ohio was obtained from EIA's monthly generation database. As above, monthly residential electricity billing data was collected from PUCO. These data are plotted in the graph below.


Ohio Net Generation and Residential Electricity Bills
Net Generation
Residential Electric Bill
Monthly Net Generation (MW-h)
Monthly Residential Electric Bill (U.S. Dollars)
16,000,000
15,000,000
14,000,000
13,000,000
12,000,000
11,000,000
10,000,000
9,000,000
8,000,000
120
115
110
105
100
95
90
85
80
75
70
Jan-04
May-04
Sep-04
Jan-05
May-05
Sep-05
Jan-06
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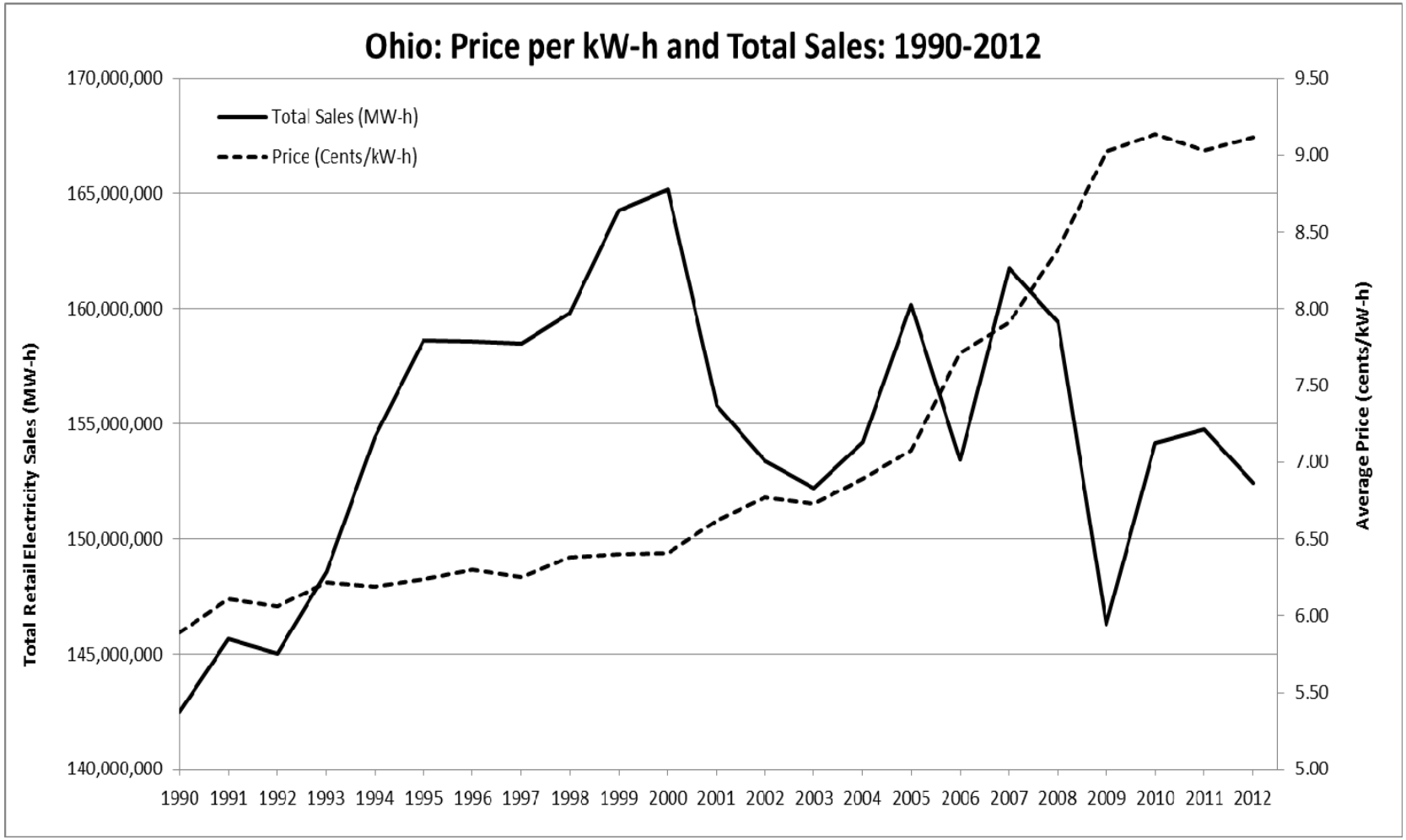
Sep-13
Jan-14
May-14

The graph above shows that despite decreasing demand from 2009 onward, as represented by net generation in Ohio, residential electricity bills have not responded in like manner. Indeed, there appears to be little correlation between demand and consumer electricity bills. This calls into question U.S. EPA's assertion that reducing demand via demand-side EE measures will reduce the price of electricity in the latter portion of the proposed state plan.

Lastly, Ohio EPA compiled annual EIA data on total annual electricity sales (MW-h) to all sectors (residential, industrial, transportation, etc.) and the average price of electricity, expressed as cents per kilowatt-hour. Ohio EPA notes that monthly data was not available for these datasets. Ohio EPA believes it is reasonable to assume that total retail sales are an appropriate proxy for total demand across the relevant EIA sectors. These data are co-plotted in the graph below.


Ohio: Price per kW-h and Total Sales: 1990-2012
Total Sales (MW-h)
Price (Cents/kW-h)
Total Retail Electricity Sales (MW-h)
Average Price (cents/kW-h)
170,000,000
165,000,000
160,000,000
155,000,000
150,000,000
145,000,000
140,000,000
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

Ohio has experienced a substantial decrease in electricity sales from the 2000 peak across all consuming sectors. However, the cost per kilowatt hour of electricity has not responded in like manner. Examination of the above graph demonstrates that prices have steadily increased. Indeed, it could be argued that the above data demonstrates an acceleration of cost increases since demand began to fall after the peak occurring in year 2000.

Ohio EPA has significant concerns that much of U.S. EPA's costs estimates accompanying the proposed rule are based on flawed and faulty assumptions that are not demonstrated in "real-life". The above data demonstrate clearly that reduced demand for electricity does not translate into reduced electricity prices for residential customers, and indeed across all consumption sectors. It is without question that electricity prices have increased in Ohio. Ohio EPA believes that the proposed rule will exacerbate this considerably, primarily by shifting generation away from Ohio's well-controlled and economical coal-fired fleet to more expensive generating technologies. The proposed rule will force the dispatch of electricity away from economic models to environmental ones. This will make fossil-fuel-fired units less economical to operate. After the significant retirements of coal-fired generation scheduled to occur in Ohio in response to the Mercury and Air Toxics standards, the remaining coal-fired fleet in Ohio will be well controlled, efficient, and economic. Indeed, many have installed environmental controls in the last decade at substantial costs. There is real potential under the proposed rule that these units will become uneconomical, and thus represent significant "stranded costs" to Ohio rate-payers. The proposed rule offers only that stranded costs could be minimized through adding new resources "on a more aggressive time-frame." [79 FR 34934] Such action would only serve to increase "stranded costs", not alleviate them. Ohio EPA wishes to be clear; the proposed rule will increase the costs of electricity to all Ohio consumers.

And then there are the unknown costs associated with unknown changes that will be necessary in the supply and distribution infrastructure. U.S. EPA has provided no analysis of these impacts other than to say it will likely be minimal as states have the flexibility to adopt plans to minimize these impacts. Ohio EPA does not have the ability, nor have we had the time, to do such analysis of what these impacts would be in Ohio. The true costs will only be known long after U.S. EPA finalizes this rule.

The one thing apparent under this proposal is U.S. EPA is heavily relying on EE/RE expectations to make this appear to be a cost-effective proposal. [79 FR 34934] In each analysis provided, natural gas prices and demand increase early in the compliance period and then drastically fall by 2030 as U.S. EPA assumes dramatic amounts of EE/RE are implemented. Electric power sector delivered natural gas prices are expected to increase by 9 to 12% in 2020 and become negligible in 2030. Natural gas use is expected to increase as much as 1.2 trillion cubic feet (TCF) in 2020 and then begin to decline thereafter. U.S. EPA's compliance modeling assumes "overall electric demand will decrease significantly, as states ramp up programs that result in lower overall demand". Energy efficiency alone creates a predicted 11% reduction by 2030. Ohio EPA has spoken to our belief on how challenging implementing EE/RE will be to the degree U.S. EPA expects.

Even FERC Commissioner Moeller recognized in the transcript from a recent House of Representatives Subcommittee on Energy and Power meeting regarding this proposal, "I

wouldn't want to predict how much rates would go up, but, again, even EPA admits that rates will be going up based on this rule. It would depend a lot on how they chose to come up with their State implementation plan. They could go the energy efficiency route, but that gets more and more expensive as you get more efficiency out of the system," and "transition to gas would probably be expensive because a lot of those coal units are relatively low cost. There are other ways to perhaps get there, but, again, this will result in higher rates, which I don't think is denied by anybody." [Appendix F, Page 56]

Reliability

There is no doubt this proposal raises reliability concerns. The amount of down time that will be necessitated in order to make HRI upgrades in such a short amount of time is unknown due to this national averaging approach in lieu of unit-by-unit capabilities analysis. Those exact impacts will only be known as states begin to work with their affected EGUs and PJM to see what each unit is truly capable of achieving. That process will take time. Obtaining NSR permits in some cases will take additional time. And there is just not enough time under this proposal, especially considering HRI improvements is the very building block U.S. EPA assumes can be achieved the quickest.

At the same time while discovering our capabilities for HRI improvements we will also need to determine our supply and distribution infrastructure. Will Ohio be able to supply and distribute enough natural gas? Ohio EPA does not know and neither does U.S. EPA. This proposal includes no analysis of state-specific capabilities. Ohio EPA is certain that a proposal as comprehensive as this will unmask reliability concerns. In a short amount of time, states will be required to make unprecedented changes to the power sector. To drastically reduce utilization of coal-fired EGUs, drastically increase utilization of NGCC EGUs and bring significantly more RE technologies into play. It is foolish to believe this will not impact reliability from some states or regions, especially considering no state-specific reliability analyses were ever conducted.

The GAO's August 2014 report on EPA Regulations and Electricity [Appendix G] discusses a previous report prepared by the GAO in July 2012. In that report the GAO recommended U.S. EPA, FERC and DOE develop a formal joint process to monitor progress and issues related to the significance and number of U.S. EPA regulations affecting EGUs. Since that July 2012, the GAO decided to revisit progress and analyze progress and changes due to this proposal. The GAO found that EPA, FERC and DOE were jointly coordinating with RTOs on a regulator basis to focus on identifying potential impacts on reliability but these agencies "did not formally analyze the information they obtain through these meetings; however….based on information obtained…they do not anticipate widespread reliability concerns." [Page 9] Ohio EPA is amazed that U.S. EPA would not formally analyze information obtained during these meetings regarding reliability, as it appears U.S. EPA has also not done under this proposal. As noted in our comment document, this report reiterated FERC testimony before Congress indicated "concerns and uncertainty related to potential reliability and price impacts associated with

environmental regulations. Specifically, the Commissioner expressed concerns about the reliability of data on which generating units are retiring and the resources to replace those retiring generating units and called for a more formal review process including FERC, EPA, and others to analyze the specific details of retiring units, as well as the new units and new transmission that will be needed to manage the transition and ensure reliability of the nation's electricity sector." [Appendix G, Page 13] Further, RTO officials told the GAO that "while widespread reliability concerns are not anticipated, some regions may face reliability challenges." [Appendix G, Page 13] This report also notes, based on data they reviewed at the time of the report, that it is anticipated by 2024 13% of the nation's coal-fueled capacity is planned for retirement and that capacity is geographically concentrated in four states: Ohio (14% of Ohio), Pennsylvania (11%), Kentucky (7%) and West Virginia (6%). [Appendix G, Introduction]

PJM coordinates the movement of electricity through all or parts of Delaware, Illinois, Indiana, *Kentucky*, Maryland, Michigan, New Jersey, North Carolina, *Ohio, Pennsylvania*, Tennessee, Virginia, *West Virginia* and the District of Columbia. This geographically concentrated retirement is occurring all within the PJM region yet U.S. EPA made no attempt to specifically analyze reliability concerns within the specific regions under this proposal; a proposal that sets precedence in attempting to regulate the movement of electricity beyond any other U.S. EPA regulation in history. One unnamed RTO reported to the GAO that as a result of this proposal, there will be "significant effects on the industry's ability to reliably deliver electricity," that their region is "forecasting shortfalls in its reserve margin" and that "greater reliance on natural gas may require more consideration of potential fuel-related future reliability challenges." [Appendix G, Page 14] U.S. EPA cannot ignore the message being sent. There are reliability concerns resulting from this rule.

Ohio EPA has heard the message from U.S. EPA over the course of this comment period; U.S. EPA will adjust state goals based upon <u>proven cost and reliability impacts</u>. How long did it take U.S. EPA and how much staff was devoted to preparing this proposal and perform modeling and analysis of cost impacts and reliability concerns? Ohio EPA is not aware of too many states with environmental agencies with the staff, funding and capabilities to analyze the true costs and impact of this rule on states, affected entities, other industrial and manufacturing sectors, and citizens or to analyze reliability, especially in the time frame provided by U.S. EPA to prepare comments. And as noted above, in actuality, U.S. EPA has not been able to determine that actual cost of this proposal nor the actual impact on reliability. They have only been able to provide illustrative examples.

In the transcript from a recent House of Representatives Subcommittee on Energy and Power meeting where FERC was able to provide perspectives concerning U.S. EPA's proposal, Chairman Whitfield noted "EPA does not have the expertise on the intricacies of electric markets and reliability implications of this radical transformation that they are proposing for electrical generation…many legal experts see nothing in the CAA that empowers EPA to commandeer State decision making authority over how each State produces, delivers and uses electricity.…The EPA is also embarking on a comprehensive effort to Federalize electric generation, even though the Agency, as I said, has absolutely no energy policy setting

authority or expertise. That is why it is important today to hear from the Federal body that actually does have that authority and expertise. Although, I might add that the top-down command and control efforts of EPA go far beyond even FERC's jurisdiction." [Appendix F, Page 3-4] In the same document, FERC Commissioner Moeller stated "Well in my opinion, I don't expect them to know electric markets like we do, just like we wouldn't know the details of CAA either. That is not really their job, but that is why I think we need a more formal relationship because we have the expertise. NERC has the expertise. The people that run the markets do and it is really drilling down into some very detailed engineering analysis, and it can be done. [Appendix F, Page 56]

Yet the level of analysis U.S. EPA should have conducted, or worked with FERC and other experts to conduct is now being pushed onto the states if states expect U.S. EPA to revise this rule into a true Section 111(d) plan that is actually workable and achievable. As discussed in our comments above regarding IPM, Ohio EPA has serious reservations concerning the ability of the IPM to accurately predict and demonstrate grid reliability under the proposed rule. IPM is categorically not a dispatch model, and is limited in multiple ways in its reliability assessment capabilities as we discussed above. Accurate and reliable transmission modeling of the type conducted routinely by RTOs and other entities concerned with grid reliability can only be accomplished with sophisticated dispatch models. Models of this type are non-linear, rely on historical operating data to achieve optimal dispatch, correctly treat generating units as specific, geographically located entities, and are capable of identifying congestion at the proper level of detail. Ohio EPA contends that absent independent, transparent and open dispatch modeling that implements the proper dispatch modeling tools, reliability under the proposed rule has not been adequately demonstrated by U.S. EPA via IPM modeling results. Given the far-reaching impacts of the proposed rule and the grave consequences of grid reliability issues, Ohio EPA urges U.S. EPA to engage in outreach with the various RTOs, FERC, NERC, and other entities capable of adequately modeling dispatch scenarios under the proposed rule.

Ohio EPA's concerns with respect to grid reliability, insufficient timing considerations, unrealistic EE and RE goals, as well as overly ambitious assumptions with respect to growth of transmission and natural gas infrastructure are echoed by multiple entities, including the Southwest Power Pool, Inc., PJM Interconnection, LLC, and the PUCO, as well as the regulated community itself. The scope of the reports and/or comments from these groups is extensive and goes well beyond Ohio EPA's comments. Ohio EPA will therefore reference these reports briefly, provide relevant summaries of concerns and issues, and provide each report as an appendix to these comments.

Southwest Power Pool, Inc. (SPP) is a FERC approved RTO which serves members in nine states: Arkansas, Kansas, Louisiana, Mississippi, Missouri, Nebraska, New Mexico, Oklahoma, and Texas. SPP conducted several analyses with respect to the impact of the proposed CPP, and submitted their findings to the docket. Ohio EPA is including a copy of these comments as Appendix AA. In the first trial, SPP modeled U.S. EPA's predicted retirements and assumed that unused generating capacity would be used to replace retired capacity. For the second analysis, SPP modeled a similar situation, but assumed that increased output from existing and new generation would replace retired capacity, according to

SPP's resource planning and transmission assessment. While SPP does not serve generating units in Ohio, the results of SPP's analysis and accompanying comments are jarring and revealing; the implications cannot be ignored by Ohio EPA, and are presented here in support of Ohio EPA's concerns. Briefly, SPP's analyses revealed that the region would experience thermal overloads, low voltage occurrences, and the need for the addition of significant amounts of transmission infrastructure under the proposed rule. Most concerning is that the modeling revealed that "the power grid would suffer extreme reactive deficiencies" and that some portions of the grid "were so severely overloaded that cascading outages and voltage collapse would occur".

Additionally, SPP's analyses revealed significant impacts on reserve margin, falling well below NERC reliability standards. In combination, these results indicate that the proposed rule will have significant and potentially dangerous impacts on grid reliability and led SPP to conclude "unless the proposed CPP is modified significantly, SPP's transmission system impact evaluation indicates serious, detrimental impacts on the reliable operation of the bulk electric system in the SPP region, introducing the very real possibility of rolling blackouts or cascading outages that will have significant impacts on human health, public safety and economic activity within the region". Furthermore, SPP did not attempt to evaluate impacts during "critical scenarios", such as drought or periods of polar vortex when demand is high and reserve capacity is most critical to the stability of the grid. The report indicates that past upgrades to the transmission grid have required up to eight and a half years, and that U.S. EPA failed to account for both the costs and time required to complete major upgrades to the transmission system. Ohio EPA concurs; the timeframe of the proposed rule is unrealistic and over-ambitious and presents significant reliability concerns.

To partially address these concerns, SPP makes a number of recommendations that Ohio EPA finds both reasonable and necessary. Firstly, it is suggested that FERC and U.S. EPA work collaboratively to assess the impacts of the proposed rule on grid reliability. Secondly, SPP recommends that an independent, transparent, and open analysis of the proposed rule be conducted with respect to reliability. In order to maintain reliability and to help ensure that appropriate and adequate infrastructure can be developed, SPP recommends, at a minimum, that interim goals should be extended five years beyond the proposed 2020 start. Lastly, SPP recommends that a "reliability safety valve", similar to that proposed by the ISO/RTO Council in January of 2014 be adopted as part of the proposed rule. The reliability safety valve recommendation is strongly supported by Ohio EPA, and as such, the proposal is discussed in brief here.

In January of 2014, in anticipation of U.S. EPA action on CO2 emissions from the power industry, the ISO/RTO Council (IRC), which is comprised of nine RTOs covering a significant portion of the United States and Canada, published a white paper entitled EPA CO2 Rule – ISO/RTO Council Reliability Safety Valve and Regional Compliance Measurement Proposals. [Appendix BB] A "Reliability Safety Valve" (RSV) was proposed for consideration in any upcoming CO2 action from U.S. EPA. Briefly, the proposal would provide a means to assess and mitigate reliability impacts resulting from compliance action. This would be accomplished via a reliability review process by relevant RTOs, and would be done on a rolling basis.

Additionally, long term solutions would be a part of the RSV (and indeed the final goal), but interim mechanisms, such as keeping some units operating beyond the compliance deadline, with a primary focus on reliability and flexibility in enforcement to accommodate any necessary interim measures would be a major component. By maintaining flexibility in both goals and interim measures via near-continuous rolling assessments, the grid is treated appropriately as a dynamic and evolving entity. This is in stark contrast to U.S. EPA's treatment of the grid as static and unchanging. Additionally, the RSV would provide additional flexibility not found in the proposed rule. An RSV component of the proposed rule would also help to mitigate unforeseen issues arising from potential conflicts between SIPs. Ohio EPA encourages U.S. EPA to review and evaluate the substantial merits of this proposal.

In November of 2014, NERC published an initial review of the U.S. EPA's CPP, entitled "Potential Reliability Impacts of EPA's Proposed Clean Power Plan: Initial Reliability Review." NERC clearly states in the Executive Summary of this document that "the objective of this review is to identify the reliability implications and potential consequences from the implementation of the proposed CPP and its underlying assumptions." NERC maintains that further assessment will be required to fully and completely understand the implications of the proposed rule and its implementation. However, given NERC's significant expertise in the area of power reliability, Ohio EPA is compelled to draw U.S. EPA's attention to multiple elements of this document and strongly urges U.S. EPA to consult with NERC in the development of any proposal with such broad reaching and long-term impacts on the electric power grid. Additionally, NERC's concerns closely mirror many of those expressed by Ohio EPA and detailed herein. A full description of NERC's initial study is far beyond the scope of Ohio EPA's comments. Therefore, Ohio EPA is presenting for U.S. EPA's consideration a summary of the report, and is providing the report in its entirety as Appendix CC.

NERC presents a preliminary analysis of each of the four building blocks utilized by U.S. EPA in constructing the best system of emission reductions. Ohio EPA presents here a summary of NERC's initial concerns with each building block in turn.

Building Block 1: NERC's initial review of U.S. EPA's HRI goals identified several deficiencies, namely that the 6% improvement may be difficult to achieve and that many incentives already exist for units to operate as efficiently as possible. NERC identifies that control equipment was not adequately accounted for in U.S. EPA's calculations, and that U.S. EPA's statistical analysis failed to account for a variety of additional factors influencing efficiency. The review also indicates concern that increased cycling as a result of Building Block 2 will degrade the heat rates of coal-fired units, and that U.S. EPA failed to account for this interaction in their analysis. Lastly, NERC indicates that site specific analyses are required to determine if there are opportunities to improve heat rates.

Building Block 2: NERC's primary concern with U.S. EPA's second component of BSER, the re-dispatch of NGCC, lies with the switching of the role of NGCC units from load-following to base-load type units within a narrow timeframe. As noted by NERC, low natural gas prices have recently made it economical for some NGCC units to be dispatched as base-load units, but this is purely an economically driven phenomenon. It is uncertain if such trends in natural

gas prices can and will continue. NERC's secondary concern lies with increased reliance on a single fuel type. NERC contends that a diverse fuel mix serves to minimize and offset unforeseen events, and increased reliance on a single fuel type would degrade this resiliency. Lastly, NERC expresses concern that the timeline of the proposed rule is insufficient to add required pipeline infrastructure necessary to support increased gas utilization.

Building Block 3: NERC expresses several concerns with U.S. EPA's approach to increasing renewable generation as the third component of the BSER. Much of this concern is related to U.S. EPA's assumptions of rapid growth in RE, which exceeds most other RE growth estimates, including the EIA's. NERC also notes that the regionalization of RPS goals, and the crediting of only "primary" renewables from relevant state RPSs, introduces potentially unrealistic targets in many states. Lastly, and most concerning, is that NERC contends that U.S. EPA failed to adequately assess the multiple grid reliability issues and additional planning necessary to incorporate variable generation resources into the resource mix. NERC extends this concern to the need for longer lead times to incorporate new transmission and related infrastructure necessary to support increased variable generation resources in a reliable manner.

Building Block 4: NERC notes in the report that EE measures constitute a major reduction in nationwide CO2 under the proposed rule. NERC expresses concern with multiple elements of U.S. EPA's assumptions and analysis of EE growth. Primarily, NERC is concerned that U.S. EPA concludes that growth in EE will outpace growth in electricity demand. Such a conclusion has not been replicated by any other agency or entity, including EPRI, EIA, and NERC, each of which have far more experience and expertise in such projections than U.S. EPA. NERC also expresses concern with what appears to be a misapplication of the twelve studies used to derive the EE growth rate. These concerns include wide variation in base years, inconsistent project lifetimes amongst the studies, and U.S. EPA's extrapolation of EE measures well beyond the study length of several of the studies. Additionally, NERC expresses doubts as to the validity of approximating thousands of measure lives with a single average through the entire compliance period. Lastly, NERC's concerns with U.S. EPA's ambitious EE expansion are substantial enough to lead NERC to question the results of the entirety of U.S. EPA's RIA.

NERC further details reliability impact concerns, ranging from early retirements of coal-fired generation, significant impacts on reserve margins, to substantial and unrealistic timing constraints. To alleviate these concerns, NERC proposes a multitude of recommendations, primarily focused on increased co-operation between U.S. EPA, NERC, and RTOs to adequately assess and alleviate foreseen reliability issues.

Ohio EPA recognizes NERC and its personnel as the foremost experts in nationwide energy reliability. Ohio EPA therefore strongly encourages U.S. EPA to consider NERCs preliminary concerns and recommendations as to how best to implement any proposed carbon regulation in a safe, timely, and reliable manner. Ohio EPA notes with some concern that U.S. EPA's Office of Air and Radiation was quick to dismiss NERCs preliminary report, stating that "There are a lot of assertions and claims in the report that aren't really substantiated by any particular

analytics they mention, or supported by a deeper look into the issues."[18] Ohio EPA contends that this rapid dismissal of expert opinion with regards to grid reliability does not hold with U.S. EPA's stance throughout the period leading up to the release of the proposal through the comment period; that stakeholder input would be a key component of the rule development. Given NERCs mandate to maintain grid reliability and considerable expertise in doing so, Ohio EPA believes it is unwise of U.S. EPA to ignore such a valuable resource in crafting a feasible carbon pollution rule.

FERC and NERC should have been utilized more thoroughly by U.S. EPA to assess resource adequacy, reliability impacts and cost impacts of this rule. FERC, through authority in the Section 215 of the FPA is responsible for assuring the reliability of the Nation's bulk power grid. As explained on their website, "The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system in North America. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the bulk power system through system awareness; and educates, trains, and certifies industry personnel. NERC is the electric reliability organization for North America, subject to oversight by the FERC and governmental authorities in Canada. NERC's jurisdiction includes users, owners, and operators of the bulk power system, which serves more than 334 million people." NERCs standards are "NERC's Standards program ensures the reliability of the bulk power system by developing quality reliability standards in a timely manner that are effective, clear, consistent and technically sound."[19]

Even FERC Commissioner Moeller stated in the transcript from a recent House of Representatives Subcommittee on Energy and Power meeting regarding this proposal, "Essentially, what I have been calling for is a more formal role for our commission as we deal with EPA on these issues, kind of an open and transparent role, so that basically we can get the engineers together to discuss the challenges involved because it really comes down to a very granular level with reliability. The laws of physics will trump regulations. There are always unintended consequences when we shut down power plants because, although they may not produce a lot of power, they may be producing other products, ancillary services that maintain reliability in the grid. And the location of those plants is key, and sometimes you can't replicate a plant in that location." [Page 26]

U.S. EPA has initiated no *meaningful* collaboration with FERC or other experts in the power industry. These entities have a long successful history of assuring reliable and affordable power to the country. Yet U.S. EPA appears to have limited their interactions with these organizations to a few staff meetings that generated no official meeting notes and no reports. [Appendix F]

Instead of utilizing the federally designated resources available to them, U. S. EPA outsourced the reliability predictive modeling to a private third party, ICF. ICF used Integrated Planning

[18] "EPA faults grid overseer's analysis of power plant rule," Jean Chemnick, Greenwire, November 7, 2014.
[19] http://www.nerc.com/Pages/default.aspx

Model (IPM) to assess (and justify) various policy scenarios and the predicted impacts on resource adequacy and reliability. U.S. EPA's Resource Adequacy and Reliability Analysis TSD describes "IPM as a multi-regional, dynamic, deterministic linear programming model of the U.S. electric power sector. It provides forecasts of least cost capacity expansion, electricity dispatch, and end emission control strategies while meeting energy demand and environmental, transmission, dispatch, and reliability constraints."

Hiring a third party to prove the adequacy and reliability of a proposal undermines the very purpose of predictive modeling. It is no surprise that the private, third party modeling that tried to demonstrate Section 111(d) feasibility would find that potential problems would be minor. The contract with ICF was not entered by U.S. EPA into the docket. Ohio encourages U.S. EPA to add to the docket any and all documents related to this contract, including, but not limited to the contract, scope of project, expected outcomes, limitations, data, assumptions, and all written correspondence between ICF and U.S. EPA. Without these documents, it is impossible to review the results with any degree of faith that reliability and cost were accurately and independently reflected by ICF.

FERC rightfully indicates reliability requires analysis at a granular level. [Appendix F, Page 26] U.S. EPA has made no attempt to analyze this highly complicated proposal at a granular level on any matter, let alone reliability. The very organizations that could actually perform that level of analysis were not utilized. Yet, again, U.S. EPA expects stakeholders to provide "proven" reliability impacts if we can expect a change in this erroneous proposal.

Why U.S. EPA ignored known experts in the field federally designated the responsibility for ensuring reliability of the national electricity grid, and ignored data and modeling platforms used by NERC and utilities to assure reliability of the grid. This key failure cannot be underestimated, since blackouts and brownouts have significant human health and economic impacts.

Through Ohio EPA's stakeholder outreach, we were presented with a grid reliability analysis conducted by American Electric Power (AEP) in the PJM region. [Appendix DD] AEP has a very large footprint in Ohio, via a mix of coal and natural gas generation. As such, an analysis of reliability conducted by AEP cannot be ignored by the State of Ohio which has a duty to protect the health and welfare of its citizens. Ohio EPA understands that AEP presented the same information to U.S. EPA, and will be including the results of this analysis in their formal comments on the Section 111(d) proposal. Given the above considerations, the results and conclusions of this analysis, along with Ohio EPA's concerns, are presented in brief below.

AEP conducted their transmission and reliability study in the PJM region for year 2019, which assumes that those activities necessary to achieve 2020 performance goals would be in place. AEP took U.S. EPA's low-cost IPM modeling results and included those shutdowns projected by U.S. EPA for this modeling exercise. Ohio EPA wishes to point out that in the PJM region, there are approximately 14,036 MW of generation scheduled to close, and that these closures will not be fully in place until 2016. In addition to those closures, U.S. EPA's IPM modeling results for the proposed Section 111(d) rule project an additional 8,600 MW of retirements. To

replace this generation, AEP assumed that 100% of generation in PJM's queue would be online and available for its transmission and reliability simulation. Briefly, this queue represents facility requests to construct new generation, pending verification and reliability analysis by PJM. Ohio EPA understands that typically, at best 25% of those units in this queue are approved and actually constructed. Thus, AEP's replacement generation assumptions are highly conservative, and the queue represents a mix of wind and gas generation totaling 8,300 MW. It should also be noted that HRIs, RE generation, and EE measures were included in this analysis only to the extent they currently exist or were expected by 2019 absent the CPP. The impacts of RE and EE beyond those existing or already expected by 2019 are relatively minor under the CPP prior to 2020. In addition, incorporation of any pre-2020 HRIs would have no direct impact on the results of a reliability analysis as they do not change generation potential.

AEP's preliminary results indicate that implementation of the CPP by 2020 will cause severe and widespread reliability issues across the PJM region, which includes Ohio. In several instances, the model failed to resolve these reliability issues, suggesting voltage collapse and cascading outages would occur. Hundreds of instances of both voltage and thermal overload were observed in all modeled scenarios. Ohio EPA wishes to note here that these voltage collapses and thermal and voltage overloads are the common outcomes from reliability analysis reviewed by and presented to Ohio EPA during Ohio's extensive outreach and research conducted in the preparation of these comments. This raises serious concerns for Ohio that a rapid change in power generation from coal to natural gas, and deployment of RE and EE is not feasible by the 2020 interim period and will likely take additional time to develop. AEP's analysis shows that when generation from the existing coal-fired fleet is removed and replaced by NGCC (and some wind generation), the current transmission system is not capable of maintaining reliability.

AEP, like Ohio EPA, raises significant concern with the lack of consideration given to the time necessary to implement the CPP. AEP's analysis demonstrated construction of new and upgraded transmission will be necessary under the proposed CPP to support not only the closure of coal-fired power plants, but the addition of new natural gas and renewable generation onto the grid. AEP communicated that transmission line upgrades can be completed in approximately five years when using existing right-aways. However, this can only occur if replacement generation is constructed in the same location as a retiring unit. This is highly unlikely and does not reflect reality. More realistically, new transmission lines built along newly-secured right-aways would be necessary and that process can take approximately eight to ten years to complete. This process is now further complicated, and often lengthened, by FERC Order 1000, which orders transmission entities to compete for transmission construction. It is apparent to Ohio EPA that U.S. EPA's lack of expertise in maintaining a reliable power generation, transmission and distribution system coupled with their lack of expertise in performing a reliability analysis has led to a proposal of an overly ambitious schedule that does not take into account these significant time constraints. Further, AEP estimates conservatively that the constraints of the proposed rule, <u>exclusive of the costs of new generation</u>, will require one to two billion dollars to resolve in AEP's portion of the PJM system alone. Transmission upgrade costs are typically socialized in the PJM market and

passed on to the rate payers. It is obvious that U.S. EPA's cost analysis has not factored in these costs that will be passed to consumers.

Lastly, while not apparent to U.S. EPA, Ohio EPA fully understands that significant and costly transmission upgrades will need to occur to implement the proposed CPP and maintain grid reliability. This proposal calls for an annual incremental increase in RE generation for the 2020-2029 period. Thus, transmission upgrades that were sufficient to maintain reliability in one year may become outdated and unnecessary in another, requiring additional transmission upgrades to accommodate shifting generation sources and locations as more and more RE is incorporated into the system. RTOs will be faced with both a transmission system and resource mix that is constantly in flux as a result of the proposed interim glide-path goal, as opposed to the relatively stable system currently in place. This alone places a significant and unnecessary burden on those RTOs to maintain reliability in a constantly shifting environment, and raises additional and significant reliability concerns in general. Further, the constant need for transmission upgrades will necessitate additional costs across the entire compliance period. These costs will be passed on to ratepayers, and it is clear that such costs were not considered by U.S. EPA in the RIA or represented adequately in the IPM model.

Throughout this comment period, Ohio EPA has conducted thorough research and outreach to understand the impacts of the proposed rule on costs and reliability. The amount of information presented to Ohio EPA on these matters has been unprecedented. This information has come from interested parties including, but not limited to, the regulators themselves and regulated entities. These entities, with entirely different objectives and motivations, have largely delivered the same three messages that simply cannot be ignored by Ohio EPA.

1. The proposed rule will increase the costs of electricity to all ratepayers, far beyond what U.S. EPA estimates;

2. The rule, as proposed, will cause significant reliability issues nationwide, including voltage collapse and cascading blackouts, and;

3. The timeline of the proposed rule is far too short to accommodate necessary significant alterations to both the generation mix and transmission system.

Additionally, stakeholders with experience in power generation, transmission and distribution reliability have expressed to Ohio EPA that to successfully develop a workable CO2 reduction plan, U.S. EPA must work with those entities responsible for, and having vast expertise in, maintaining grid reliability. Ohio EPA understands that reliability concerns can only be addressed by transparent and adequate reliability modeling using appropriate modeling techniques and software. U.S. EPA's reliance on one proprietary model (IPM) that cannot accurately illustrate both reliability and congestion on the grid reflects the lack of knowledge and understanding of the workings of the current power generation, transmission and distribution system in the country. Ohio EPA urges U.S. EPA to consider the immense weight-of-evidence presented from such a broad spectrum of entities with regard to reliability and costs.

Missing Data and Information

As discussed in our cover letter to these comments, Ohio EPA still asserts that U.S. EPA released critical guidance far too late in the comment period and also omitted vital information from the docket that would allow stakeholders to fully understand the proposal at hand. Below is a list of the major elements. Appendix EE includes a formal request to U.S. EPA for additional necessary information.

IPM Parsed Files: Option 1 State, 2030

IPM Parsed Files: Option 1 Regional, 2025

IPM Parsed Files: Option 1 Regional, 2030

IPM Parsed Files: Option 2 State, 2025

U.S. EPA heat rate improvement analysis data

Sufficient detail on enforceability and EM&V approvability

NODA lacked data, reformulated state goals, cost analysis, technical analysis and other administrative elements

Conclusion

Ohio EPA has conducted a detailed review and analysis of U.S. EPA's proposed CPP in the timeframe allotted. As our detailed comments indicate, this current proposal contains serious legal and technical flaws that must be corrected in order for U.S. EPA to conform to the CAA and other federal laws. These conclusions are only a summary and the detailed comments provide the actual rationale for these conclusions.

The underlying basis for the CPP is the Presidential Order of 2013 that requires U.S. EPA to develop a rule that lowers greenhouse gas emissions by 30% by 2030. Instead of developing a plan that evaluated the overall feasibility and cost effectiveness of reducing CO2 emissions from power generation, U.S. EPA has "force-fit" the CPP to meet the Presidential mandate resulting in a proposal that is ill-considered and unworkable in the time frame proposed.

U.S. EPA does not have the authority to implement Section 111(d) for sources that are covered by a MACT. The CAA specifically prohibits this dual regulation and the CPP is in direct conflict with the CAA. U.S. EPA must completely abandon the CPP in order to conform to the CAA.

U.S. EPA has failed to properly evaluate and accurately analyze the impact that this proposal has on the reliability of the electric grid. Several authorities that maintain the electrical grid reliably and stably have warned U.S. EPA about the possible effects of the proposal. U.S.

EPA must have a detailed reliability analysis completed in a transparent, open, and independent manner by organizations that have statutory authority for assuring reliable power.

U.S. EPA's CPP proposal is formulated based on four separate building blocks. Only Building Block 1 is based on controlling CO2 emissions from power plants. The other three rely on "outside-the-fence" actions. In addition to the underlying legal authority issue for Section 111(d), Building Blocks 2, 3, and 4 are not directly related to the stationary source and cannot be regulated under a stationary source program. It is Ohio EPA's opinion U.S. EPA does not have authority to require implementation of Building Blocks 2, 3, and 4 and these elements must be removed from the plan.

U.S. EPA's CPP proposal places the obligation on states to reduce CO2 emissions from power generation in the state. U.S. EPA's control obligation on the state is misplaced. U.S. EPA does not have the legal authority to declare the state to be the regulated entity under the Section 111(d) stationary source program.

U.S. EPA has failed to properly evaluate the possible reductions from Building Block 1. U.S. EPA used an assumed improvement value of 6% (or 4%) based on a study from Sargent & Lundy that now indicates in clear terms was misapplied. In addition, Building Block 2 would cause the coal-fired power plants to lose additional efficiency. U.S. EPA must abandon a nationwide average number for improvement and, if going forward with this plan, require a case-by-case evaluation of the actual improvement potential at each affected EGU.

U.S. EPA does not have the authority to require the implementation of Building Block 2 under the CAA. Further, U.S. EPA has failed to provide states with the authority to oversee grid management, an activity regulated under the FPA and the FERC. Building Block 2 also requires states to manage, and possibly restrict, the amount of electricity that is produced at certain plants that supply electricity to other states beyond state authority.

U.S. EPA does not have the authority to impose SIP-like CAA requirements of Section 110 on states under Section 111. U.S. EPA must drop all of the extraneous Section 110 requirements that are being proposed for inclusion into the Section 111(d) plan requirements.

U.S. EPA does not have authority under a stationary source rule of the CAA to mandate states adopt RE portfolios and EE standards under Building Blocks 3 and 4. U.S. EPA has failed to demonstrate that the RE targets are achievable for Ohio by making incorrect assumptions on state legislation and by not properly evaluating the actual potential of the RE in the state. Further, U.S. EPA has made vast assumptions and failed to demonstrate that the EE improvements demanded by the CPP are achievable and cost effective over the entire compliance time period through 2030.

U.S. EPA has relied heavily on the flawed application of the IPM model to support and justify the CPP. There are numerous examples in Ohio EPA's comments indicating the IPM cannot reflect reality. U.S. EPA cannot use the IPM model in its current form and must use an

appropriate model that accurately reflects reliability and cost to evaluate the impacts of the proposal.

U.S. EPA has not provided all of the background information used to support the proposed plan in violation of the APA. U.S EPA must make public all of the information and provide an appropriate time for comment.

U.S. EPA has failed to consider the needed time for states to adopt legislation and rules needed to implement the CPP. The one year time frame is unreasonable and the one year extension places onerous and unreasonable demands on the state. If U.S. EPA goes forward with the CPP, more time must be allowed for states to develop plans for this massive overhaul of the generation, transmission and distribution system.

U.S. EPA's plan allows for states to enter into multi-state agreements that regulate electric generation and distribution. Since electric distribution is part of the regulatory purview of the federal government, any multi-state agreements must be approved by Congress or it would be in violation of Article I, Section 10 of the U.S. Constitution. U.S. EPA must amend its proposal to allow for adequate time for Congressional approval of any multi-state plans.

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 legally and technically fundamentally flawed in its design and construction and jeopardizes Ohio's ability to provide low-cost, affordable, and reliable power to our citizens. Ohio EPA recommends U.S. EPA completely abandon this proposal and if in the future U.S. EPA desires to implement an authorized plan to address climate change, Ohio EPA is more than willing to offer our assistance in developing a workable approach.