American
Public Power
Association

2451 Crystal Drive
Suite 1000
Arlington, VA 22202-4801

Ph: 202.467.2900
Fax: 202.467.2910
www.PublicPower.org

Statement of
Susan N. Kelly, President & CEO, American Public Power Association

Submitted to the
Federal Energy Regulatory Commission

In Advance of the
February 19, 2015 Technical Conference On
the Environmental Protection Agency's Clean Power Plan

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Contents

I. Summary

The American Public Power Association (APPA) commends the Commission for holding this technical conference and appreciates the opportunity to participate. The Environmental Protection Agency's (EPA) Clean Power Plan seeks to address climate-change concerns by reducing the emissions of carbon dioxide (CO_2) from existing and modified fossil-fuel fired power plants under Section 111(d) of the Clean Air Act (CAA). APPA agrees that such emissions should be reduced, but believes that EPA's proposed rule aims to do too much too quickly and is simply unworkable. If the proposed rule is not modified, it will create unnecessary costs for the Nation as a whole; impose those costs inequitably among retail electric consumers in different states; threaten the reliability of the Nation's electricity system; and compel a risky overreliance on a single fuel, natural gas, to generate the majority of the Nation's electricity.

APPA is the national service organization representing the interests of not-for-profit, publicly owned electric utilities throughout the United States. More than 2,000 public power utilities provide over 15 percent of all kilowatt-hour sales of electricity to consumers and do business in every state except Hawaii. All APPA utility members are Load Serving Entities (LSEs), with the primary goal of providing customers in the communities they serve with reliable electric power and energy at the lowest reasonable cost, consistent with good environmental stewardship. This orientation aligns the interests of APPA utility members with the long-term interests of the residents and businesses in their communities. Collectively, public power utilities serve more than 47 million customers.

The EPA proposal would have a tremendous impact on many of APPA's members and their communities. APPA prefers congressional action to address climate change. However, in the absence of legislation, APPA wants to work with EPA to address the substantial problems with its proposed rule. For example, the proposal's building blocks are unworkable, and few states will be able to meet the required interim emissions reductions by 2020. States (and public power utilities) need a longer glide path.

The proposal also gives states too little time to develop their compliance plans. This problem is exacerbated if states want to develop multi-state or regional compliance plans or if a state must rely on one or more Regional Transmission Organizations (RTOs) to dispatch all or part of the state's generation fleet. To ensure the reliable operation of the Bulk Power System (BPS), changes to the Nation's bulk transmission grid will need to be identified, planned, permitted, and built. The same goes for the Nation's interstate gas transportation and storage infrastructure.

As Chairman LaFleur rightfully noted in her recent remarks at the National Press Club, the Commission will play a vital role in implementing the final rule. But equally important, the Commission can and should play a vital role in shaping the final rule before it is issued. Therefore, APPA recommends that the Commission take several actions prior to the issuance of EPA's final rule:

- Support the North American Electric Reliability Corporation's (NERC) ongoing analysis of EPA's proposal and any recommendations that NERC may offer in its report due later this spring.

- Support the inclusion of a "reliability safety valve" in the final rule.
- Support APPA's recommendations to EPA (echoed by many states and other stakeholders) for changes to the proposal to give states more time and more discretion in implementing the final rule.
- Continue to seek improvements and efficiencies in coordination between the natural gas and electricity sectors.
- Expedite approvals for new infrastructure necessary to implement the final rule.
- Review RTO market structures, rules, and operations to retain the features that support and facilitate implementation of the final rule and to modify those features that impede economical and reliable implementation.
- Provide guidance to the states and other stakeholders on how to reflect public policy requirements associated with state implementation of the final rule in the regional and interregional transmission planning required by Order No. 1000.

II. Overview of APPA's Reliability Concerns

The reliability of the BPS must be preserved during the implementation of any final rule. APPA is concerned that the proposal will not preserve the reliability of the BPS unless significantly modified. Our concerns include:

- Inadequate time to build the natural gas infrastructure necessary to support the unprecedented increase in natural gas generation.
- The proposal's overly optimistic assumptions about the availability and pricing of natural gas supply.
- Inadequate time to build the electric transmission facilities necessary to support the changed generation fleet, including the projected level of renewable generation resources.
- The amount of coal generation that would be forced into retirement.
- Relying on RTO-run markets, regional planning processes, and diffuse governance structures to implement state compliance obligations.
- Lack of a reliability safety valve in EPA's proposal.

These issues are discussed more fully below. In addition, APPA is attaching the executive summary from its comments on the proposal filed with EPA on December 1, 2014. That summary includes a link to the full set of APPA comments and attachments.

III. APPA Supports NERC's Ongoing Review

APPA appreciates and supports the efforts of NERC to review the reliability impacts of EPA's proposal. NERC reliability standards, and the system models planners use to assure reliable operation of the BPS in compliance with those mandatory standards, are key drivers in the development of new infrastructure. Since new transmission and generation projects take many years to plan and construct, NERC, the industry, and government agencies need to work together to assess and ensure the long-term reliability of the BPS. The requirements of EPA's final rule will need to be incorporated into the utility transmission and generation planning process to

assure continued BPS reliability. NERC points out the need for detailed analysis of any changes to the BPS in its *Initial Reliability Review*[1] of the proposal:

> The preliminary review of the proposed rule, assumptions, and transition identified that detailed and thorough analysis will be required to demonstrate that the proposed rule and assumptions are feasible and can be resolved consistent with the requirements of BPS reliability. This assessment provides the foundation for the range of reliability analyses and evaluations that are required by the ERO, RTOs, utilities, and federal and state policy makers to understand the extent of the potential impact. Together, industry stakeholders and regulators will need to develop an approach that accommodates the time required for infrastructure deployments, market enhancements, and reliability needs if the environmental objectives of the proposed rule are to be achieved. [2]

APPA supports NERC's initial assessment and has encouraged EPA to incorporate a detailed and thorough BPS reliability analysis into the implementation plan of the final rule. The reliability of the BPS requires careful study and detailed modeling to understand the flow of electricity on the system. These studies inform the reliable integration of new resources and decommissioning of old resources. Transmission modeling will assure that system operators can balance generation against load, while operating the grid within system operating limits. These models also allow system operators respond to unexpected loss of equipment to prevent a blackout, cascade or uncontrolled separation of equipment.

NERC's *Initial Reliability Review* makes four primary recommendations:[3]

- **Fossil-Fired Retirements and Accelerated Declines in Reserve Margins –** The Regions, ISO/RTOs, and states should perform further analyses to examine potential resource adequacy concerns.
- **Transmission Planning and Timing Constraints –** EPA and states, along with industry, should consider the time required to integrate potential transmission enhancements and additions necessary to address impacts to reliability resulting from the Proposed Rule. EPA and policy makers should recognize the complexity of the reliability challenges the final rule will undoubtedly pose and ensure there is sufficient time for the industry to take the steps needed to significantly change the country's resource mix and operations without negatively affecting BPS reliability.
- **Regional Reliability Assessment of the Proposed CPP –** ISO/RTOs, regional reliability entities, and states should prepare for the potential impacts to grid reliability, taking into consideration the time required to plan and build transmission infrastructure.

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[1] Potential Reliability Impacts of EPA's Proposed Clean Power Plan, NERC November 2014 http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/Potential_Reliability_Impacts_of_EPA_Proposed_CPP_Final.pdf (hereinafter "*Initial Reliability Review*").

[2] *Id*. at 1.

[3] *Id*. at 3, Recommendations to Address Direct Impacts to Resource Adequacy and Electric Infrastructure.

- **Reliability Assurance** – EPA, FERC, DOE, and state utility regulators should employ the array of tools and their regulatory authority to develop a reliability assurance mechanism, such as a "reliability back-stop." These mechanisms should include timing adjustments and granting extensions where there is a demonstrated reliability need.

NERC's *Initial Reliability Review* identified a number of additional issues needing further study and assessment for a complete reliability evaluation, as shown in the following table.[4]

Local Reliability Assessments	**Area/Regional Reliability Assessments**
• Specific generator retirement studies • Specific generator interconnection studies • Specific generator operating parameters • Power flow (thermal, voltage) • Stability and voltage security • Offsite power for nuclear facilities	• Resource adequacy • Power flow (regional) • Stability and voltage security (regional) • Gas interdependencies; pipeline constraints • Operating reserves and ramping • System restoration/blackstart

NERC plans to produce a Special Reliability Assessment to evaluate the long term reliability impact of the EPA proposal. NERC's Phase I assessment will have three parts:

- **A** sensitivity analysis of natural gas prices and the implementation of the proposal to identify resource adequacy needs, general timelines for needed reliability reinforcements, and the need for new natural gas infrastructure.
- **A** transmission adequacy assessment and identification (through stakeholder input) of infrastructure upgrades needed to support the scenarios analyzed in Part 1.
- NERC's independent evaluation of existing studies completed by industry stakeholders to identify cumulative impacts on a region-wide basis.

NERC's Phase I study is targeted for release on April 2, 2015. APPA believes that NERC's initial reliability review raises critical issues that EPA needs to address in its final rule. APPA recommends that the Commission urge EPA take fully into account this baseline technical evaluation of generation and transmission adequacy in developing the final rule and implementation timelines.

IV. New Transmission Facilities Will Likely Be Needed

The final rule may require major changes to the bulk transmission system. The realignment of generation resources contemplated in EPA's proposal will need to be studied for the impact on BPS reliability, locally, regionally and interconnection-wide. One example is the loss of inertial

[4] *Id*. at 26, Table 4. Study and Assessment Types Needed for a Complete Reliability Evaluation.

mass on the system. This mass provides stability to the BPS during a fault or loss of a major generating unit. Without this mass on the system, faults may cascade and cause blackouts.

The realignment of generation resources may even reverse the flow of electricity on a transmission network. These reverse flows must be studied so they can be anticipated and managed. An example of reverse flows is highlighted in a study the Brattle Group conducted for Salt River Project in Arizona. This study evaluates the challenges of new flows on the Western Interconnection that would occur due to the loss of fossil-fired generation in Arizona. It illustrates the problems with EPA's assumptions about the availability of transmission capacity to provide other lower or non-emitting resources from the Northwest and California to Arizona to compensate for this lost generation during periods of peak demand.

New Extra-High Voltage (EHV) transmission systems will need to be studied, planned, and built to maintain reliability. If the timeline in the proposal is not adjusted, certain regions may see a significant impact on reliable operations. The Southwest Power Pool's (SPP) October 9, 2014 comments to EPA highlight the reliability issues that will occur if new generation and transmission cannot be built within the proposed timeframe:

> SPP is also concerned with the timing proposed for compliance with the CPP [Clean Power Plan]. Within the SPP region, the timing associated with CPP compliance is problematic at best. Based on SPP's review of the proposed CPP, EPA has considered neither the cost nor the time required to plan and construct electric transmission facilities. In the SPP region, as much as eight and a half years to study, plan for, and construct new transmission facilities has been required. Compliance with the proposed CPP is impossible due to the transmission expansion that will be required and the time it takes to complete the required transmission expansion.[5]

NERC's *Reliability Impact Review* reaches similar conclusions: "a construction timeline for a new high-voltage line can range from 5 to 15 years."[6] Accordingly, NERC has stated that strict compliance with EPA's proposed interim timelines will adversely impact reliability:

> The proposed timeline does not provide enough time to develop sufficient resources to ensure continued reliable operation of the electric grid by 2020. To attempt to do so would increase the use of controlled load shedding and potential for wide-scale, uncontrolled outages.[7]

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[5] Comments of SPP at 8, http://www.spp.org/publications/2014-10-09_SPP%20Comments_EPA-HQ-OAR-2013-0602.pdf

[6] Potential Reliability Impacts of EPA's Proposed Clean Power Plan, NERC November 2014 http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/Potential_Reliability_Impacts_of_EPA_Proposed_CPP_Final.pdf (hereinafter "*Initial Reliability Review*").

[7] *Id*. at 22.

The Commission intended that the regional and interregional transmission planning processes Order No. 1000 mandates be flexible enough to incorporate the transmission needs driven by public policy requirements, including new environmental requirements such as those set out in EPA's proposal. But the Commission must still ensure that the reasonable needs of LSEs to meet their service obligations are met, as section 217(b)(4) of the Federal Power Act requires.[8] Without changes to the EPA's proposed rule, however, the transmission needs may be so far-reaching and the timelines so short that transmission planning processes throughout the Nation will be strained. Transmission providers, transmission planners, LSEs, and other grid users will need careful Commission oversight and guidance throughout this new era of transmission planning to ensure Congress' goals in the Federal Power Act are not endangered.

Even if the EHV transmission planning and construction processes were shortened to their best case minimums, utilities will require time to procure the necessary equipment, such as EHV transformers. Manufacturing of these specialty products can take from one to five years. Most manufacturers of EHV transformers are located overseas where equipment, raw materials and skilled labor may be controlled by foreign countries. Instability in countries providing raw materials may also slow the manufacturing process. Lead times are a concern according to DOE's June 2012 Study, *Large Power Transformers and the US Electric Grid*:[9]

> In 2010, the average lead time between a customer's [Large Power Transformer] LPT order and the date of delivery ranged from five to 12 months for domestic producers and six to 16 months for producers outside the United States. However, this lead time could extend beyond 20 months and up to five years in extreme cases if the manufacturer has difficulties obtaining any key inputs, such as bushings and other key raw materials, or if considerable new engineering is needed.

V. EPA Has Not Adequately Considered the Long-Term Availability and Pricing of Natural Gas or the Time Needed To Build New Natural Gas Infrastructure

In its proposal, EPA assumes that a massive switch from coal- to gas-fired generation (including the use of existing natural gas generation at a highly optimistic 70 percent capacity factor) will be relatively easy for the power sector and inexpensive for consumers. Both assumptions are problematic. For example, EPA assumes ample gas supplies and relatively flat long-term gas prices, but does not consider how future increased demand for natural gas by manufacturers, the transportation sector, and export markets is likely to tighten supplies and increase prices over time. EPA also assumes that natural gas infrastructure can be expanded to meet the significant increased demand of electric utilities in a relatively short amount of time, yet that expansion faces many impediments. EPA needs to reexamine these assumptions and its implementation

[8] In its opinion denying petitions for review of Order No. 1000, the United States Court of Appeals for the District of Columbia Circuit unequivocally held that section 217(b)(4) "creates a requirement for the Commission," which the Commission would violate if it "exercised its authority in a manner that was at odds with the needs of load-serving entities." S.C. Pub. Serv. Auth. v. FERC, 762 F.3d 41, 90 (D.C. Cir. 2014). "Section 217(b)(4) requires the Commission to facilitate the planning of a reliable grid." Id. This obligation is undiminished if EPA's proposal becomes law.

[9] US Department of Energy, Large Power Transformer Study June 2012 at 9, http://energy.gov/sites/prod/files/Large%20Power%20Transformer%20Study%20-%20June%202012_0.pdf

timetables in order to ensure continued BPS reliability. The Commission, as the federal agency that certificates new interstate natural gas infrastructure, is well placed to assist EPA in this analysis.

As the Commission is well aware, domestic natural gas producers and marketers are most interested in exporting LNG to world markets where natural gas trades at multiples of its price in the U.S., even as world oil prices have tumbled. More than 25 applications for LNG export terminals have been filed with DOE. Several have been approved while others require further review by the Commission or the State Department. It is unclear how many of these facilities, even if approved, will be constructed or how much natural gas will in the end actually be exported. But given the great demand for natural gas in Europe and Asia, it is likely that the U.S. will start exporting LNG, which will likely put upward pressure on domestic natural gas prices and tighten the long-term supply of natural gas for use by the domestic utility, manufacturing, and other sectors.

EPA's proposal also does not factor in announcements by the manufacturing sector of more than $95 billion in new investments in the U.S. that would use shale gas as a feedstock to produce a wide variety of chemicals, fertilizers, specialty tubing, specialty steel, plastics and other commodities.[10] Greater use of natural gas as a feedstock and the increasing number of power plants that will use natural gas will likely put upward pressure on the price of natural gas in the long term.[11]

According to the Energy Information Administration (EIA), there are approximately 300,000 miles of interstate and intrastate natural gas pipeline capacity in the U.S.[12] The Interstate Natural Gas Association of America (INGAA) anticipates that the pipeline industry would need to build approximately 2,000 miles of pipeline each year or a total of 300,000 miles of pipelines (interstate and intrastate) between 2014-2035 to meet anticipated natural gas demand.[13] EPA asserts that "over a longer time period, much more significant pipeline expansion is possible."[14] Unfortunately, EPA's analysis fails to examine whether this significant expansion can happen by 2020 or even 2030 given the impediments the pipeline industry faces in constructing and expanding pipelines. As the Commission knows full well, opposition to significant energy projects, including new pipelines, is increasing. Opponents are taking full advantage of regulatory procedures, social media, and even demonstrations, to make their concerns known.

While new pipeline projects are pending approval before the Commission in Georgia, Florida, Pennsylvania, and New England,[15] it is still the case that very few pipeline investments have been made by major pipeline companies for downstream customers, especially power plants. A

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[10] "Industry to Invest $95 Billion in Manufacturing Renaissance." Comments of the Industrial Energy Consumers of America on the Department of Energy Office of Fossil Energy 2012 LNG Export Study.
[11] http://www.houstonchronicle.com/business/energy/article/LyondellBasell-adds-to-Gulf-Coast-boom-with-plans-5711990.php
[12] http://www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/intrastate.html
[13] See INGAA comments filed regarding Endangered Species Act listings determinations, but not specifically for EPA's ESPS/NSPS for power sector http://www.ingaa.org/File.aspx?id=22680
[14] 79 Fed. Reg. at 34,864
[15] http://www.eenews.net/energywire/2014/11/13/stories/1060008811

March 2014 study by ICF International for the INGAA Foundation[16] shows that most of the oil and gas pipeline investments made in the last four years were made to move the upstream production of natural gas to gas processing centers or oil to refineries. Very little pipeline capacity has been built to address power generators' current or future demand for natural gas. This issue has already become acute in New England, as the Commission knows.

Even if a pipeline were to decide to expand to meet increased demand from the power sector, it faces a lengthy process of securing the approval of multiple government agencies. During the Commission's certificate process, the environmental impact analysis required by the National Environmental Policy Act (NEPA) must be completed.[17] The Commission must also verify that applicants have secured permits from local, state, and other federal agencies before construction can begin.[18] Conflicts can arise during the review process among the various permitting agencies involved. These conflicts delay project approval, often drive up project costs (which eventually are borne by consumers), and sometimes prevent a project from going forward. Contentious permitting issues can lead project developers to avoid certain areas of the country, "constraining the ability of supply to reach markets."[19]

For these reasons, APPA supports H.R. 161, the Natural Gas Pipeline Permitting Reform Act by Rep. Mike Pompeo (R-KS). This legislation would provide the Commission a maximum of 12 months to issue a decision on a natural gas pipeline permit application, and provide other agencies 90 days to comment on the application once the Commission completes its environmental review. A project application would be deemed approved if those agencies fail to make a determination within the 90 days, though agencies may request a 30-day extension. The legislation has passed the House of Representatives and is pending consideration in the Senate.

The EPA proposal also does not examine whether sufficient natural gas storage exists or can be developed to support large-scale fuel switching. Underground natural gas storage will be necessary to allow the electric utility industry to generate more power from natural gas-fired power plants. Natural gas storage allows a power-plant operator to ramp up or down quickly, manage imbalances, maintain reliability, and potentially hold less pipeline capacity.[20] The construction of natural gas storage facilities is even more difficult than constructing pipelines, however, because of the limited geology for natural gas storage. Many states do not have adequate geologic formations to store gas that is needed by generators to back up intermittent renewables, provide peaking power, or respond to daily/hourly price signals. In a few states,

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[16] North America Midstream Infrastructure through 2035: Capitalizing on Our Energy Abundance, http://www.ingaa.org/Foundation/Foundation-Reports/2035Report.aspx and INGAA's related Building Interstate Natural Gas Transmission Pipelines: A Primer http://www.ingaa.org/File.aspx?id=19618

[17] "Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews." 79 FR 77801. Proposed new agency guidance for NEPA issued by the White House Council on Environmental Quality would require climate change impacts of new pipelines to be considered.

[18] See INGAA Foundation report, Avoiding and Resolving Intergovernmental Conflicts with Interstate Natural Gas Facility Siting, Construction, and Maintenance, available at http://www.ingaa.org/Foundation/Foundation-Reports/Studies/FoundationReports/52.aspx

[19] *Id.*

[20] APPA, Implications of Greater Reliance on Natural Gas for Electricity Generation, p. 57 (July 2010), available at http://www.publicpower.org/files/PDFs/ImplicationsOfGreaterRelianceOnNGforElectricityGeneration.pdf.

semi-depleted natural gas fields offer excellent locations for seasonal storage of natural gas, but they are not suitable for natural gas re-injection on the "multi-turn" or "rapid-use" basis that electric generators need to respond to sudden changes in electric load or prices.[21] The EPA needs to look at these issues and adjust its assumptions about the timetables by which states and the electric utility industry can meet the requirements of building block 2. APPA urges the Commission to advise EPA in this area.

VI. RTOs Add Complexities to Implementing EPA's Proposal

There are many real-world features of the RTO-run wholesale electricity and capacity markets that will increase costs and create difficulties in implementing environmental dispatch or other strategies for reducing CO_2 emissions.

First, the RTO wholesale energy spot markets run on a combination of complex security-constrained economic dispatch algorithms, system operator intervening actions, and frequent market-power mitigation measures. Accordingly, they bear little resemblance to truly competitive energy markets. The flaws in the RTO-operated markets may interfere with the ability of a carbon price or fee to achieve the goals of reducing CO_2 emissions while minimizing costs and preserving reliability. The carbon fee would be layered upon an energy market where offers to sell electricity can vary significantly from the underlying production costs. Generation owners might have many reasons for offering their power at prices above or even below the actual marginal costs. For example, an owner of a fleet of plants may choose to offer a marginal plant at a higher price to drive up the clearing price and thus the earnings for its other plants, even if it means that the higher-priced plant is less likely to be dispatched. This absence of a direct cost and price connection and the use of different offer strategies by generators make wholesale electric power prices much more volatile. According to EIA, "[p]ower prices formed in RTOs tend to be spikier than those formed in markets featuring bilateral trading between market participants (Pacific Northwest and Southeast)."[22]

Second, RTO tariffs and market rules have been in continual flux, creating significant uncertainty about future market design. The RTOs continuously tinker with and add to their market rules. Multiple dockets are often pending simultaneously, and their cumulative effects are difficult for the Commission or stakeholders to comprehend, much less take into account in long-range planning. In addition to the many RTO-specific dockets, the Commission currently has three open generic dockets that raise fundamental questions about the capacity, energy, and ancillary services markets and could pave the way for potentially broad changes to these markets.[23]

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[21] "Single-turn storage is used to inject and withdraw generally once per year; multi-turns storage allows several cycles of injections and withdrawals over the course of the year." APPA, Implications of Greater Reliance on Natural Gas for Electricity Generation, p. 61.

[22] http://www.eia.gov/todayinenergy/prices.cfm

[23] Price Formation in Energy and Ancillary Services Markets Operated by Regional Transmission Organizations and Independent System Operators, Docket No. AD14-14-000; Winter 2013-2014 Operations and Market Performance in Regional Transmission Organizations and Independent System Operators, Docket No. AD14-8-000; and Centralized Capacity Markets in Regional Transmission Organizations and Independent System Operators, Docket No. AD13-7-000.

Third, some RTO governance structures do not ensure adequate representation of the views of all entities affected by RTO policies, including the states that would be charged with implementing the EPA proposal. Were an RTO to manage a CO_2 emissions-reduction program for a state or group of states, it would be difficult to ensure that state goals would be achieved or that that the public would be adequately protected. Frank A. Felder of Rutgers University sums up the longstanding critiques of certain RTO governance structures as follows:

> Larger entities that can form large voting blocks; smaller entities do not have the financial resources to participate in stakeholder meetings that occur almost every business day, so their participation is not meaningful; even if other stakeholders have interests that overlap in part with those of consumers, it is unreasonable to expect those entities to adequately represent consumers; and ISOs are able to take advantage of competing stakeholder interests to advance their own agendas.[24]

Finally, and perhaps most importantly, several states—and even some individual utilities (including a number of APPA members)—are split by existing RTO boundaries. These states will have to draft their proposed state implementation plans with a view toward complying with rules and requirements of more than one RTO to achieve EPA approval. At the same time, most of the existing RTOs operate in more than one state, each with its own emission-reduction goal under the EPA proposal and state implementation plan. These RTOs must plan and operate with a view toward complying with each state's goal. Other complications include identifying an optimal carbon price that achieves emissions reductions in each state while not causing a level of retirements that threatens reliability; determining the appropriate price to pay generators or charge load from states not participating in a regional plan but located within the RTO; deciding whether to subject new generators complying with EPA New Source Performance Standards to the same pricing rules as existing generators; and how to handle generators with legacy long-term contracts that are priced outside of the RTO markets.

VII. Mandatory Capacity Auctions Impose Barriers To Implementing EPA's Proposal

The mandatory capacity auctions that certain eastern RTOs (PJM Interconnection, ISO New England and the New York ISO in certain constrained zones) administer have been ineffective in inducing timely new generation construction to date. There is no reason to expect they will be any better at inducing the new generation additions contemplated under EPA's proposal.

The difficulties imposed by the mandatory capacity auctions for new resource development in this context were identified in an APPA-commissioned paper released in May 2014 entitled *Markets Matter: Expect a Bumpy Ride on the Road to Reduced CO_2 Emissions*, by Cliff Hamal of Navigant Economics ("Navigant Paper").[25] The Navigant Paper concludes that the mandatory capacity auctions "are already floundering over existing challenges and will be severely stressed

[24] *Watching the ISO Watchman*, by Frank A. Felder, The Electricity Journal, December 2012, Vol. 25, Issue 10. T. (The term ISO as used in this article is the same as the use of the term RTO in these comments.)
[25] Available at: http://appanet.files.cms-plus.com/PDFs/Markets_Matter_--_Hamal_Report.pdf

by the added complexity of maintaining reliability while shifting to a lower CO_2 emission portfolio."[26]

There are numerous flaws in the mandatory capacity auctions that have made them ineffective and costly constructs that will likely impede the development or retention of more efficient and lower CO_2-emitting resources:

- Different resources have different costs, but these are not reflected in the capacity auction prices. A 50-year old coal plant is paid the same amount per MW and for the same duration as a brand new, highly efficient combined-cycle natural gas plant.
- The vast majority of the revenue collected through capacity auctions has been paid to older, existing units, although many older plants have paid off their fixed costs (some multiple times). For example, only 9 percent of the $73 billion in revenue committed through the PJM capacity markets through the 2014 auction has gone to new resources, demand response, or energy efficiency.[27]
- Financing of newer units at a reasonable capital cost requires a long-term steady stream of revenue, such as that provided by a long-term contract or similar take-away obligation.
- The capacity auctions do not distinguish between technology types or all of the specific locations on the grid. As a result, critical needs can go unaddressed, including adequate flexible ramping capability to match the variability of renewable resources, the reliability gaps created by retiring coal plants, and the coordination of natural gas infrastructure and delivery with the significant expansion of natural gas generation. The RTOs often must create systems of side payments to ensure reliability, such as reliability-must-run agreements to existing plants to remain in place to ensure reliability.
- Capacity auctions use zonal price differentials on the theory that higher prices will act as a "signal" for the development of new generation or transmission in a constrained zone. But such higher prices are often not effective signals because owners of existing generation have no financial interest in building new resources and lowering prices for their existing units. In fact, they have an incentive to hinder new entrants, and have an established track record of using RTO regulatory processes and litigation to do so. Moreover, the zonal prices (and the zones themselves) can differ very substantially from year to year based on unpredictable factors, reducing their efficacy as an indicator of where generators should build.
- Investors seek steady and predictable revenue flows, not fluctuating auction prices, and many other factors influence the decision to build, including land and transmission availability, local acceptance, and environmental rules.

The ineffectiveness of the capacity auctions as a tool in resource development was confirmed by a recent study by Christensen Associates commissioned by the Electric Markets Research Foundation. The study's authors concluded that RTO markets "do not and cannot address long-term capacity needs." The study also found that "[b]ilateral forward contracting remains key under any market design for locking in revenues and facilitating financing of new resources.

[26] *Id.* at 1.
[27] Monitoring Analytics, 2014 Quarterly State of the Market Report for PJM: January – September, Table 5-12, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2014/2014q3-som-pjm-sec5.pdf

Contrary to this key necessity, however, RTO markets include some design elements that impede long-term investments and long-term bilateral contracts."[28]

Not only are mandatory capacity auctions generally ineffective in new resource development, but the markets can actually serve as barriers to new capacity development. These markets all have some type of "minimum offer price rule" or "buyer-side mitigation" that imposes a floor price on offers to sell from new resources, making it more difficult for these new plants to clear the auctions and thus more likely that LSEs would pay twice for new capacity (once for the new plant and a second time through the capacity auction). This risk makes financing for such new plants more difficult to obtain, which raises the cost of capital. These rules adversely affect the ability of state utility commissions to ensure reliable service in their states, but they also raise barriers to resource development by public power utilities, because they increase the financial risk in constructing or procuring new resources. These rules are therefore impediments to the development of new, cleaner resources, potentially including renewable energy.

In addition to the buyer-side mitigation rules, APPA members that have invested in emission-free or lower-emission resources now find that the multiple and significant changes being proposed to the capacity and energy markets have created uncertainties about the financial viability of those investments. These changes could be a deterrent to future investments in these technologies.

Not only do the mandatory capacity markets impede implementation of the Proposed Rule by erecting barriers to new resource development, but further jurisdictional complications exist where the utilities were restructured at the retail level and therefore no longer own the generation. Such "retail access states" tend to be located in RTOs with mandatory capacity markets. These difficulties are summed up in the Navigant Paper (at page 2):

> Even without consideration of CO_2 emission reduction objectives, the combination of RTO-run energy markets and domination of merchant generators has led to significant difficulties in providing longer-term investment incentives to maintain proper levels of generating capacity.

VIII. APPA Recommends Changes to the EPA Proposal, Including Establishment of a Reliability Safety Valve, to Address Reliability Concerns

As mentioned at the outset, APPA believes the EPA proposal aims to do too much too quickly. Thus, if not modified, serious adverse consequences could result, including threats to reliability. APPA has recommended that EPA make several changes to the proposal that would substantially improve its workability and affordability while maintaining reliable operation of the electric system. APPA believes that EPA should:

[28] *Ensuring Adequate Power Supplies for Tomorrow's Electricity Needs*, Christensen Associates Energy Consulting LLC, June 16, 2014, http://www.emrf.net/uploads/3/1/7/1/3171840/ensuring_adequate_power_supplies_for_emrf_final.pdf

- Fix the errors and revise the assumptions in the computation of the four building blocks to reflect what the states can realistically accomplish and ensure more equity among the states. This will result in state goals that are more achievable in the time allowed and better facilitate multi-state implementation by lessening the significant disparity in state goals that acts as a disincentive to multi-state cooperation.
- Provide states with more time to develop and submit state compliance plans. Even the maximum three years allowed in the Proposal is not enough time to accomplish the myriad and integrated steps, including the likelihood of required new state legislation, necessary to complete state plans.
- Provide more guidance on multi-state plans and interstate agreements.
- Eliminate the interim reduction requirement and allow states to determine their own emission reduction trajectory (glide path) to reach their final reduction goal. For most states, their 2030 goal is heavily front-loaded by requiring that a large percentage of that goal be met starting in 2020. This one feature in the Proposal is the source of many concerns. EPA should instead allow states to set a glide path to compliance with their 2030 goal that reflects each state's individual circumstances.
- Allow a state's final reduction goal, the year to achieve that goal, and/or the glide path to be adjusted if a state can demonstrate that circumstances have materially changed. Given the complexity inherent in any state's compliance plan, the vagaries and uncertainties associated with constructing necessary new infrastructure, the inability of states and utilities to control certain actions of third-parties (such as with energy efficiency programs) that are important elements of a state's plan, and other factors, not everything will happen as planned or needed. Thus, if a state can demonstrate that it cannot meet its compliance plan due to changes in such material circumstances that are beyond the state's control, a state should be allowed to work with EPA to modify its compliance plan without penalty.
- Provide for the establishment of a "reliability safety valve" to ensure that compliance with mandated emission-reduction requirements does not inadvertently impair system reliability or conflict with NERC standards. The RTO/ISO Council has stated that such a reliability safety valve could provide for "a reliability review conducted by the relevant system operator, working with the states and relevant reliability regulators, prior to finalization and approval of the [state plan]."[29] This review would identify reliability issues and solutions, which would be subject to appropriate regulatory review and approval. Next, it would accommodate the reliability solution under the CO_2 rule and/or [state plan] by providing for appropriate compliance and/or enforcement flexibility while a long-term reliability solution is developed and implemented. APPA has not endorsed a specific reliability safety-valve mechanism. APPA would like to cooperate with the Commission on development of such a mechanism.

[29] ISO/RTO Council, EPA CO_s Rule – ISO/RTO Council Reliability Safety Valve and Regional Compliance Measurement and Proposals, p. 2 (Jan. 28, 2014) (footnotes removed).

IX. Attachment

For further background on APPA's positions, attached is the executive summary of APPA's comments to EPA on its proposed rule under CAA Section 111(d), as filed on December 1, 2014. It includes a link to APPA's full set of comments and attachments.

American
Public Power
Association

2451 Crystal Drive
Suite 1000
Arlington, VA 22202-4801

Ph: 202.467.2900
Fax: 202.467.2910
www.PublicPower.org

Executive Summary

Comments of the American Public Power Association (APPA) on EPA's Section 111(d) Proposed Rule for Carbon Dioxide Emissions from Existing EGUs EPA-HQ-OAR-2013-0602

The American Public Power Association (APPA) submits these comments to the Environmental Protection Agency (EPA or the Agency) on the Proposed Rule (or Proposal) under section 111(d) of the Clean Air Act (CAA)[1] to reduce emissions of carbon dioxide (CO_2) from fossil fuel-fired electric generating units (EGUs).[2] EPA's stated goal is to reduce CO_2 emissions by 30 percent in 2030 from 2005 levels. APPA and its members believe the Proposed Rule aims to do too much too quickly. As a result, it will create economic inefficiency; impose inequitably distributed additional costs on consumers; threaten the reliability of the electricity system; and force a risky over-reliance on a single fuel—natural gas—to generate electricity.

APPA agrees that the electricity sector needs to reduce CO_2 emissions to address the adverse impacts of climate change. APPA greatly prefers congressional action to address the issue, given the inherent limitations of the current Clean Air Act, the fact that this issue needs to be addressed on an economy-wide basis, and the ubiquitous nature of CO_2 and other greenhouse gas (GHG) emissions. At the same time, APPA recognizes that congressional action is unlikely in the foreseeable future and that the President has directed EPA to issue a final rule to reduce CO_2 emissions in June 2015 under its existing authority. Thus, APPA's comments emphasize a number of recommendations to improve the Proposed Rule that, if incorporated, would make it more workable for industry and more affordable for consumers, while still allowing substantial progress towards the Agency's ultimate goal.

The electric utility industry generally, and public power utilities in particular, have already made good progress in reducing CO_2 emissions. In 2012, the industry's CO_2 emissions were at their lowest level since 1994. Between 2007 and 2012, those emissions fell by 12 percent, though

[1] 42 U.S.C. § 7411 (2012).
[2] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (June 18, 2014) (Proposed Rule or Proposal).

recently there has been a slight increase. The overall decrease that has occurred is mainly the result of investments in renewable energy (RE) and energy efficiency (EE), an increase in the use of natural gas to generate electricity, and the retirements of coal-fired generation units. Public power utilities are consistently recognized as leaders in renewable energy and energy efficiency. These utilities are also making new investments in nuclear and hydro energy, key non-emitting sources of baseload generation. All indications are that these CO_2-reducing activities would continue and increase, even in the absence of new EPA regulation.

APPA has multiple concerns with the Proposed Rule. Its requirements go beyond what is legally permissible under Section 111(d) and conflict substantially with the authority of other federal, state, and local governmental entities. The Proposal envisions compliance measures far beyond those that can be implemented at the affected sources of emissions, creating uncertain and legally untested compliance obligations for non-utility entities and the potential for enforcement actions against them.

EPA asserts that, while electricity costs will rise due to compliance with the Proposal, consumers will see only "negligible" increases in their actual bills after 2020, and could see decrease in the long term as a result of the expected energy efficiency gains. APPA is highly skeptical of that assertion. APPA believes the Agency has relied too heavily on optimistic assumptions on a number of key elements, such as the price of natural gas; the ability of utilities and system operators to dispatch natural-gas units at significantly higher capacity factors; the availability in some states of viable, economic, renewable energy resource; and the rate at which new energy efficiency programs can be implemented. APPA also believes that EPA has underestimated or ignored other critical factors, such as the likelihood of stranded costs and economic value due to the forced early retirement of many coal-fired units, the availability of natural gas infrastructure necessary to support its projections of natural gas use, and the barriers to new resource development posed by the mandatory capacity markets in the eastern regional transmission organizations (RTOs). Thus, APPA believes it is more likely that costs and consumers' bills will increase for years to come unless EPA modifies its Proposed Rule as recommended in these comments. For EPA to assert that the electric utility industry can achieve a 30 percent reduction in CO_2 emissions and also lower consumers' electricity bills by 2030 recalls the adage that "if it sounds too good to be true, it probably isn't true."

APPA is also concerned about the Proposed Rule's potential negative impact on electric service reliability. It essentially requires a rapid transition in the composition of the nation's electricity generating fleet and end-use efficiencies that, if not implemented precisely as envisioned, can create gaps between supply and demand and other reliability problems. APPA notes the strong comments and recommendations on this issue of the Southwest Power Pool (SPP), the North American Electric Reliability Corporation (NERC), and other entities responsible for ensuring the reliability of the system, as well as individual APPA members.

Other concerns noted in these comments and by APPA members include:

- The lack of sufficient credit for investments and other actions to reduce CO_2 emissions taken before 2012.
- The use of a single year (2012) as the baseline.
- The lack of sufficient time for states to develop and gain approval for their compliance plans.
- The imposition of an interim goal starting in 2020 that comes a mere two years after approval of state plans and that, for many states, constitutes the majority of their final reduction requirement due in 2030.
- The inappropriate treatment of new nuclear units currently under construction in both the calculation of the relevant states' required reduction and those units' use for compliance.

For all these reasons, APPA believes EPA should withdraw and re-propose its Proposal. If EPA moves forward with this Proposal, however, then APPA strongly recommends certain changes that, taken together, would improve its workability and affordability, while still continuing to reduce CO_2 emissions.

APPA's recommendations generally are intended to address our overarching concern noted earlier that the Proposal tries to do too much too fast. Our recommendations also provide states and utilities with the flexibility to address their individual circumstances and to accommodate unanticipated and/or uncontrollable events. Lastly, the recommendations incorporate into the Proposal a greater level of state authority and discretion that hews much more closely to the model of cooperative federalism Congress intended when it enacted Title I of the Clean Air Act.

APPA urges EPA to modify the Proposed Rule to:

- Allow states to choose a baseline that accurately reflects their unique circumstances.
- Provide full credit for investments already made that reduce or offset CO_2 emissions.
- Fix the errors and revise the assumptions in the computations of the four building blocks to reflect what the states can realistically accomplish and ensure more equity among the states.
- Provide a streamlined process for new source review determinations and stipulate that an EGU's energy efficiency upgrade under a state compliance plan should be considered greenhouse gas Best Available Control Technology (BACT) for Prevention of Significant Deterioration (PSD) determinations.
- Remove nuclear units under construction from the relevant state baselines.
- Allow all generating resources that emit no CO_2 to be used for compliance.
- Provide states with more time to develop state compliance plans.

- Provide more guidance on the development of multi-state plans and interstate agreements.
- Eliminate the interim reduction requirement and allow states to determine their own emission reduction trajectory (glide path) to reach their final reduction goal.
- Allow a state's final reduction goal, the year to achieve that goal, and/or the glide path to be adjusted if a state can demonstrate that circumstances have materially changed.
- Include and allow mechanisms to ensure that entities with a compliance obligation under a state plan have the maximum degree of flexibility to comply at reasonable cost, including through reduction or avoidance measures from non-electricity portions of the broader energy sector.
- Provide for the establishment of a reliability "safety valve" to ensure that compliance with mandated emission reduction requirements does not inadvertently impair system reliability or conflict with NERC standards.

APPA very much appreciates the Agency's decision to extend the comment deadline to allow a fuller opportunity to analyze the myriad details of the Proposal. APPA also appreciates the positive and constructive attitude that the Agency and its staff have displayed during the extended comment period on the Proposed Rule, especially their willingness to listen to APPA's and its members' concerns. APPA stands ready to continue to work with the Agency after the close of the comment period to help craft a Final Rule that further reduces CO_2 emissions, while assuring electric system reliability, keeping associated cost increases to reasonable levels, and avoiding the stranding of significant utility assets.

APPA's complete comments can be found online at :
http://www.publicpower.org/files/PDFs/[FINAL]111(d)EPAExistingPlantsComments12.01.2014.pdf