Regulation of POWER PLANT CO₂ EMISSIONS

Using CAA Section 111

by John D. Kinsman, Edison Electric Institute

In 2014, the U.S. Environmental Protection Agency (EPA) proposed to use U.S. Clean Air Act (CAA) Section 111 to regulate carbon dioxide (CO₂) emissions from power plants. Accordingly, on January 8, performance standards for new fossil fuel-based units were proposed under CAA Section 111(b) and published in the Federal Register, with comments due on May 9. Draft emission guidelines for existing plants were proposed under CAA Section 111(d) and published in the Federal Register on June 18, with comments due on December 1. EPA also proposed on June 18 draft standards for modified and reconstructed plants under CAA Section 111(b), with comments due October 16. This issue of EM focuses primarily on the existing source regulation, and features articles from EPA, a power company, a state utility regulator, and an environmental nongovernmental organization. This introduction provides some background, brief summaries of the contributor articles, and some of my own perspective.

Background

The proposed guidelines for existing fossil fuel-based electric generating units set interim (2020–2029) and final (2030) rate-based (CO₂ lb/MW-hr)
emission rate goals for each state. The goals were calculated from a 2012 baseline and based on the use of the best system of emission reduction (BSER), which EPA determined to be a combination of four “building blocks.” This approach results in more stringent standards than the traditional approach to Section 111(d) regulations that focuses on technologies implemented at the generating unit level. The proposed guidelines will be finalized in summer 2015. States must submit compliance plans to EPA a year later (or request an additional year to submit their plan). Additional time is available if states pursue a multi-state approach.

Some of the key issues that the affected industry stakeholders have commented on include the legality of various aspects of the proposal; appropriateness of the assumptions underlying, and interplay among, the four building blocks; the pace and timing of reductions during an “interim” 2020–2029 period; the treatment of nonemitting resources (particularly nuclear, hydro, and biomass) and new natural gas combined cycle units; the movement and trading of electricity and renewable energy credits across state and international borders; and the policy implications of the interplay between states and federal authority.

As of 2013, the power sector had reduced CO₂ emissions 15% below 2005 levels. Even as the sector continues its transition to cleaner forms of generation, the proposed CAA Section 111(d) guidelines would require dramatic and accelerated changes to the ways in which electricity is produced, transmitted, and consumed. According to the North American Electric Reliability Corporation (NERC), the entity charged with maintaining reliability of the power grid, implementing the proposed BSER building blocks will require significant changes in the way that the interconnected power system currently is planned and operated. These changes will require more time than is provided in the proposed guidelines.

This Month’s Feature Articles
First, Janet McCabe, Acting Assistant Administrator for EPA’s Office of Air and Radiation, writes about EPA’s extensive public outreach in developing the new power sector standards. Both the proposed Carbon Pollution Standards for new power plants and the Clean Power Plan for existing fossil fuel-fired power plants were designed to provide power with less carbon pollution and also cut other harmful emissions. The Carbon Pollution Standards under CAA Section 111(b) limit carbon pollution from new power plants by requiring reliance on advanced technologies like efficient natural gas units and efficient coal units that implement partial carbon capture and storage (CCS).

The Clean Power Plan using CAA Section 111(d) requires EPA to identify the best ways—taking into account costs—to reduce pollution from a given type of source. EPA determined that a set of four
EPA projects that in 2030 the increased efficiency and reduced carbon intensity will result in 30% less carbon pollution nationwide for the power sector when compared with 2005 levels.

Next, Warner Baxter, CEO of Ameren Corp., a Fortune 500 energy company in St. Louis, MO, describes his company’s plan to reduce CO2. Ameren has been working for years on a 20-year Integrated Resource Plan, developed with many stakeholders and filed with the Missouri Public Service Commission in October 2014, that will transition its generation fleet to a cleaner, more fuel-diverse portfolio that benefits customers, shareholders, its communities, and the environment by retiring approximately one-third of its coal-fired fleet, adding renewable generation and a large natural gas combined-cycle unit, extending the license of its Callaway Nuclear Energy Center, and offering extensive energy efficiency programs to its customers. However, the Clean Power Plan’s aggressive interim targets beginning in 2020 will require major modifications to the plan, significantly increase compliance costs to consumers, and raise reliability risks.

Ameren believes EPA can greatly enhance its proposal with some common-sense modifications—dropping its interim 2020 target goals and providing states greater leeway in determining the proper glide path to achieve EPA’s final goals in 2030; offering states the flexibility to extend the 2030 deadline if a clear path to meaningful reductions is evident in a reasonable time frame; and revising its compliance formula to provide proper credit under EPA’s rate-based method for retiring and not replacing existing coal-fired power plants with fossil generation. Under the interim target requirements, the state of Missouri would be required to meet more than 62% of the final 2030 targets by 2020, essentially making this a 2020 compliance rule. The interim targets would cause a “regulatory cliff,” threatening grid operators’ ability to ensure reliable service to customers. Complying with the Clean Power Plan’s rate-based approach as originally proposed is estimated to cost the company’s Missouri customers $4 billion more than under the company plan, which achieves the same greenhouse gas emission rate as the EPA rule, albeit over a slightly longer timeframe.

Next, Joshua B. Epel, Chairman of Colorado’s Public Utilities Commission, presents his personal views on the 111(d) guidelines, observing that the proposed BSER requires a complete “re-wiring” of how electricity is generated and distributed. One of the fundamental challenges of the 111(d) guidelines is changing how electricity is generated without interfering with the requirement that electricity is safe, reliable, and affordable. The solutions to improving the proposed guidelines rest on a few key principles.

First, EPA must alter its traditional relationship with states. It is the state Public Utility Commissions (PUCs) and the Federal Energy Regulatory Commission (FERC) that have direct responsibility for ensuring that the electric grid works. Therefore, 111(d) plans must be developed primarily by PUCs, utilizing PUC planning processes. Only the state PUCs, which authorize generation, transmission, and distribution resources, have the statutory responsibility to evaluate and approve additional generation and decommissioning of existing power plants. A successful program will also require that air regulation agencies and utility commissions collaborate within the defined roles of these agencies.

The second fundamental principle that must be addressed in the final guidelines is providing each state with the flexibility to determine the timing of achieving prescribed emission reductions. The state PUCs, in consultation with respective air agencies must be given deference in determining the timing
for implementation of strategies developed through resource planning, including those plans involving energy efficiency, demand response, and renewable energy. However, it may take states significantly longer to conduct the analysis and develop a strategy that will not adversely impact the reliability and affordability of the electric system.

The final, fundamental adjustment to the draft guidelines is recognition of the uniqueness of each state. Many states, including Colorado, implemented renewable energy standards, energy efficiency, and fuel switching, and those CO₂ reduction measures are not given credit. EPA must allow states the opportunity to revise individual state goals.

Finally, Vickie Patton, Environmental Defense Fund General Counsel, writes about the importance of protecting human health from the nation’s “largest source of carbon pollution.” She notes that progress in addressing adverse impacts has required the establishment of far-reaching emission limits on sulfur dioxide and mercury, while protecting public health and the environment warrants taking similar action to address the “massive volume of carbon pollution from power plants.” The Clean Power Plan specifically relies on long-standing authorities under Section 111(d) of the CAA to address the CO₂ emissions from existing fossil fuel power plants. Under the CAA, EPA has a broad delegation of authority, and a clear obligation to carry out this responsibility deploying BSER. Patton writes that EPA is moving forward consistent with other proven clean air protections, while carefully considering “energy requirements” and costs. And that by utilizing statewide emissions performance standards for power plants similar to other major power sector CAA programs, states have broad flexibility in achieving the emissions reductions.

**Some Final Thoughts**

I conclude with some final thoughts, consistent with the comments submitted by the Edison Electric Institute (EEI).

EPA has been directed by the President to finalize its January 2014 reproposed performance standards for new fossil fuel-based units under CAA Section 111(b) “in a timely fashion.” Many affected industry stakeholders, including EEI, urged EPA to: set an achievable standard for new coal-based power plants that did not require partial CCS; raise the emissions standard for natural gas combined cycle units; and exempt simple-cycle units or take other steps to address concerns about these units, which provide important grid support services. In addition, EPA’s “other” CAA Section 111(b) proposal—for modified and reconstructed plants—drew many comments, but is not addressed in this issue. More can be found at http://www2.epa.gov/carbon-pollution-standards/regulatory-actions and in the regulatory docket.

Regarding the proposed 111(d) existing source guidelines, and consistent with the article by Warner Baxter, the leading issue of concern for many power sector stakeholders, and states, is EPA’s proposed interim goal that starts in 2020. In order to satisfy the 10-year average goal, many states must achieve more than 50% of their 2030 emission reduction goals by 2020. States and utilities lack sufficient time between now and 2020 to develop and receive approval for plans, design and complete the infrastructure required to accomplish changes in dispatch between coal-based and natural gas-based units, and increase deployment of renewable generation or other zero-emitting resources. The interim compliance goals also are inconsistent with state and regional planning processes, market schedules and utility investment decision-making, which generally have much longer planning cycles and asset lives. Eliminating the interim compliance goals would not eliminate the need for states to submit and implement plans to reduce emissions on a reasonable glide path, as the proposed guidelines already require.

Many other important perspectives could not be provided in this issue of *EM* due to space limitations, which I will briefly mention below. Many industry stakeholders have raised issues with the four building blocks that comprise EPA’s proposed BSER. EPA has not addressed the interactions among the building blocks and state-specific constraints when assessing the reduction potential of each building block and, consequently, proposed state emission rate goals may not be achievable. For example, the addition of large amounts of variable wind and solar resources under building block #3 likely will require increased use of...
natural gas-based units to provide back-up and ramping services. However, units cannot run continuously at high utilization rates under building block #2 and also simultaneously be available to support renewable generation, which requires frequent increases and decreases in generation in response to variable renewable output under building block #3. EPA has not demonstrated that states can increase utilization of existing natural gas combined cycle units to 70% by 2020; EPA’s assumption that current natural gas infrastructure is sufficient to support this dramatic increase is questioned by many.

A significant compliance challenge is that the proposed guidelines fail to recognize the critical role of nuclear and hydropower in reducing CO₂ emissions, and do not incent their continued operation and development. Another key issue is that the design of the proposed guidelines penalizes states and companies that took action before 2012 to reduce emissions by giving these states more stringent goals. In addition, states need guidance as to how to account for the interstate impacts of renewable energy and end-use efficiency. EPA should work with the states to set achievable state goals that reflect in-state conditions, using the most accurate data.

EPA should provide greater clarity on some compliance issues. For example, EPA should take steps to ensure that New Source Review (NSR) concerns do not create disincentives or impede efforts to improve heat rates at existing coal-based units, by clarifying that these actions do not trigger NSR.

Finally, the proposed guidelines are predicated on an unprecedented and expansive approach to BSER that encompasses the potential to reduce emissions at both affected EGUs and throughout the entire interconnected power system. The implications of this approach for the power sector, the states, and all other source categories regulated under Section 111(d) are significant, and EPA’s approach raises many legal issues and concerns.