Considerations in the Design of a Program to Reduce Carbon Pollution from Existing Power Plants

The EPA recently released an overview presentation entitled "Building a Common Understanding: The Clean Air Act and Upcoming Carbon Pollution Guidelines for Existing Power Plants," (available at: http://epa.gov/airquality/cps/webinar.html) which describes President Obama's Climate Action Plan and the Clean Air Act provisions for addressing carbon emissions from power plants. As follow up to that presentation, this document provides additional materials about issues that should be considered in designing a program to reduce carbon pollution from existing power plants. These materials are intended to provide states and stakeholders with information to plan for open and interactive dialogue with EPA in the fall of 2013[1].

Background

On June 25, 2013, President Obama issued a Presidential Memorandum directing the EPA to work expeditiously to complete carbon pollution standards for the power sector. EPA is using its authority under section 111 of the Clean Air Act to issue requirements that address carbon pollution from existing power plants and modifications of those plants. The Presidential Memorandum specifically directs EPA to build upon state leadership, provide flexibility, and take advantage of a wide range of energy sources and technologies toward building a cleaner power sector that provides reliable and affordable power to meet our energy needs.

The Presidential Memorandum directs EPA to issue proposed carbon pollution standards and guidelines, as appropriate, for modified and existing power plants by no later than June 1, 2014, and to issue final standards and guidelines, as appropriate, by no later than June 1, 2015. In addition, it directs EPA to include a requirement for state submittal of the implementation plans required under section 111(d) of the Clean Air Act by no later than June 1, 2016.

Section 111 of the Clean Air Act calls for different types of programs to cut pollution from new and existing emissions sources. Under section 111(b), EPA issues national emissions standards that apply to new sources in a category of similar sources. By contrast, for certain pollutants, section 111(d) provides that EPA shall establish a procedure for states to submit plans containing performance standards for existing sources in a source category. Under section 111(d) EPA issues guidelines for states to use in developing plans implementing standards of performance for the affected sources. These state plans are submitted to EPA for approval. Congress recognized that the opportunity to build emissions controls into a source's design is greater for new sources than for existing sources. Partly for that reason, section 111 allows for new source standards and existing source standards to be quite different.

As the overview presentation describes, section 111(d) of the Clean Air Act is broad and allows for collaboration between EPA and states to address pollutants that endanger the public health and welfare. Moving forward, there are different options available for addressing carbon pollution from existing power plants such as a "source-based approach" and a "system-based approach." A source-based approach evaluates emission reduction measures that could be taken directly at the affected sources—in this case, the power plants. A system-based approach evaluates a broader portfolio of

[1] We anticipate this document will be periodically updated and revised as we receive feedback from stakeholders during the interactive dialogue at meetings in the fall of 2013.

measures including those that could be taken beyond the affected sources but still reduce emissions at the source.

In the following pages, we provide brief synopses of key topics for discussion between EPA and a wide variety of stakeholders. The topics cover a number of issues relevant to the consideration of potential design of a program under section 111(d) for existing power plants. We describe why the topic is important to the design of a carbon pollution program for existing power plants, and provide specific questions to spark further discussion and exploration with the agency in the coming months. This document is not intended to portray all potential topics in the design of the program, but is intended to spark a conversation about new ideas and concepts. A robust discussion among states, stakeholders, and the EPA will inform the design of a program that ensures cost-effective solutions, provides flexibility, and builds upon the leadership of states over the past decade.

1. **What is state and stakeholder experience with programs that reduce CO_2 emissions in the electric power sector?**

Over the past decade, a variety of strategies have been employed that reduce CO_2 emissions from the electric power sector. Some of these have specifically focused on CO_2 emissions while others have had other purposes but still result in CO_2 emissions reductions as a co-benefit. Some have been required by state statute, others initiated by state utility commissions under existing statutory authorities, while others have been undertaken at the initiative of utilities or independent owners of power generation facilities. Examples include greenhouse gas (GHG) emissions performance standards, emissions budget trading programs, resource planning requirements, end-use energy efficiency resource standards, renewable energy portfolio standards, and appliance and building code energy standards.

It is important for EPA to understand and consider the full range of existing state programs and the progress states have made to date. Many states and other stakeholders have advocated that states should be provided with flexibility in developing their state plans under CAA section 111(d), including the ability to use a range of existing or future state programs. Consequently, EPA is exploring how it could provide a framework for state plans that recognizes and builds off efforts already underway to reduce CO_2 emissions from the power sector, provides flexibility for states to adopt measures that meet the reduction goals, and accommodates the diverse needs of states.

Questions for further discussion

- What actions are states, utilities, and power plants taking today that reduce CO_2 emissions from the electric power system? How might these be relevant under section 111(d)?
- What systems do states and power plants have in place to measure and verify CO_2emissions and reductions?
- How do state programs and measures affect electricity generation and emissions at a regional level? How are interstate effects accounted for when measuring the progress of a state program? For example, are the multi-state effects of state renewable portfolio standards, end-use energy efficiency resource standards, emissions performance standards, and emissions budget trading programs currently accounted for by the state, and if so, how?

2. How should EPA set the performance standard for state plans?

A key question in designing a program under CAA section 111(d) to limit CO_2 emissions from power plants is: What levels of emission performance are required? CAA Section 111(d) calls for EPA to issue guidelines for state plans. States are to submit plans that contain standards of performance for existing sources. EPA is to approve or disapprove those plans. As with previous section 111(d) rules, EPA believes that its guidelines should identify for sources and states the required level(s) of performance prior to plan submittal. Under section 111:

> *"Standard of performance" means "a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."*

There are a number of ways to reduce CO_2 emissions from existing power plants that might be included in an evaluation of the best system of emission reduction (BSER), including:

- Onsite actions at individual affected section 111(d) sources.
  - Supply-side energy efficiency improvements ("heat rate improvements").
  - Fuel switching or co-firing of lower-carbon fuel.
- Shifts in electricity generation among sources regulated under section 111(d) (e.g., shifts from higher- to lower-emitting affected fossil units).
- Offsite actions that reduce or avoid emissions at affected section 111(d) sources.
  - Shifts from fossil generation to non-emitting generation.
  - Reduction in fossil generation due to increases in end-use energy efficiency and demand-side management.

Questions for further discussion

- Which approaches to reducing CO_2 emissions from power plants should be included in the evaluation of the "best system of emission reduction" that is used to determine the performance level(s) that state plans must achieve? Should the reduction requirement be source- or system-based?
- How does the amount of flexibility that states are given to include different types of programs in their state plans relate to the "best system of emissions reduction" that is used to set the performance bar for state plans? For example, if state standards to improve end-use energy efficiency were included in state plans, should EPA consider potential improvements in end-use energy efficiency in setting the performance target for states?
- What should be the form and specificity of the performance level(s) in EPA guidelines? (Rate-based or mass-based? Separate levels for each subcategory of sources, or one level for the covered sources in the state? A uniform national level, or different levels by state/region based on an established evaluation process?)

- When can emission reductions from existing power plants be achieved, considering different reduction strategies?
- How should a state, in applying a standard of performance to any particular source, consider a facility's "remaining useful life" and other factors?

3. What requirements should state plans meet, and what flexibility should be provided to states in developing their plans?

Many states and stakeholders have voiced support for state flexibility to include different types of program designs in their state plans. There are numerous and varied means for reducing or avoiding carbon pollution from existing electric generating units (EGUs), including options that target electricity supply and those that target electricity demand. States have been leaders in exploring these options, and many states have developed a portfolio of programs and measures that reduce electricity sector CO_2 emissions while providing significant economic, consumer and reliability benefits.

Under CAA section 111(d), state standards for existing sources must reflect the level of emissions performance achievable through the application of the "best system of emission reduction" (BSER), but states have significant flexibility in the design of their plans. In considering criteria for approvability of state plans, relevant questions include the breadth of that flexibility, who is responsible for achieving the required level of emissions performance, and how performance would be measured and verified under different state program designs.

Questions for further discussion

- What level of flexibility should be provided to states in meeting the required level of performance for affected EGUs contained in the emission guidelines?
- Can a state plan include requirements that apply to entities other than the affected EGUs? For example, must states place all of the responsibility to meet the emission performance requirements on the owners or operators of affected EGUs, or do states have flexibility to take on some (or all) of the responsibility to achieve the required level of emissions performance themselves or assign it to others (e.g., to require an increase in the use of renewable energy or require end-use energy efficiency improvements, which will result in emissions reductions from affected EGUs)?
- What components should a state plan have, and what should be the criteria for approvability?
- Can a state plan include programs that rely on a different mix of emission reduction methods than assumed in EPA's analysis of the "best system of emission reduction" that is used to set the performance standard for state plans?
- What should be the process for demonstrating that a state plan will achieve a level of emissions performance comparable to the level of performance in the EPA emission guidelines?
- What enforceability, measurement, and verification issues might arise, depending on the types of state measures and programs that states include in their plans? For example, what issues are raised by actions that have indirect affects on EGU emissions, such as end-use energy efficiency resource standards, renewable portfolio standards, financial assistance programs to encourage end-use energy efficiency, building energy codes, etc.)?

- Do different CO_2 reduction methods under different state plan approaches necessitate different timelines for the achievement of emission reductions?
- What issues arise from the fact that operation and planning of the electricity system is often regional, but CAA section 111(d) calls for state plans? How should interstate issues be addressed, where actions in one state may affect EGU emissions in another state? For example, where actions have interstate impacts, which state would receive credit for the emission reductions in its state plan? Could EPA provide for coordinated submittal of state plans that demonstrate performance on a regional basis?

4. What can EPA do to facilitate state plan development and implementation?

Under CAA section 111(d), states are able to determine the combination of measures that will achieve an equivalent or better level of emission performance as those specified by EPA's emissions guidelines. To help states develop their plans, EPA has historically issued a model rule under section 111(d). However, many states are deploying a range of policies, programs, and measures that reduce electricity sector CO_2 emissions. In these circumstances, the potential role of a model rule is less clear, and any such model rule would need to consider the unique regional and sometimes integrated nature of these existing programs. In addition, states without current programs may be better informed by the experiences of their sister states in finding the appropriate mix of measures and programs.

EPA is exploring whether and how to develop a "toolbox" of decision-making and implementation resources for states that might include information about state programs and measures that reduce electricity sector CO_2 emissions. Examples of information in the decision-making toolbox might include criteria for demonstrating how system-wide actions can meet the level of performance in the emission guidelines; a compendium of existing state energy and GHG policies, programs, and measures that includes information about key design attributes and how the states are estimating energy savings and emission reductions; and links to tools that help quantify energy savings and emissions reductions from state programs and measures.

Questions for further discussion

- What types and amount of guidance and implementation support should be provided to states?
- Are there benefits for coordination among neighboring states in the development and submittal of state plans? Should EPA facilitate the coordination of multi-state plan submittals?
- Would certain types of measures that might be included in state plans increase the need for coordination among states?
- Are there model rules that EPA could develop that would assist states, and what would those rules cover?

There are many other questions that deserve consideration in the development of the section 111(d) guidelines, and EPA encourages the suggestion of other topics. EPA welcomes input on these and any other questions.