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Mitigating Natural Gas Use in the Electricity Sector

Renewable Energy, Energy Efficiency, and the Role of States in Implementing the Clean Power Plan

By Alison Cassady December 2014

Introduction and summary

Climate change poses a real and present danger to people in countries all over the world. Scientists agree that we need to move swiftly and aggressively to decarbonize the global economy—that is, to reduce the amount of carbon released per unit of gross domestic product—by deploying clean energy technologies and making energy systems more efficient.

In the United States, electric utilities are the largest source of carbon pollution. Therefore, the reduction of power-sector emissions needs to be a central component of any meaningful climate mitigation strategy. In June, the Environmental Protection Agency, or EPA, released a landmark proposal to establish the first-ever carbon-pollution standards for the nation's power plants.

This proposal, the Clean Power Plan,[1] establishes a "best system of emissions reduction" based on four building blocks that combine to make the nation's electricity system more efficient and less reliant on carbon-heavy coal-burning power plants. The EPA also proposed carbon-pollution reduction targets for each state, including an interim carbon-pollution reduction goal—calculated as an average over the 10-year period from 2020 to 2029—and a final goal in 2030.

One of the Clean Power Plan's central elements is increasing the use of lower-carbon natural gas combined cycle, or NGCC, units to generate some of the electricity now produced by higher-carbon coal-fired power plants. States can use this approach to achieve relatively quick carbon-pollution reductions starting in 2020 while ramping up the deployment of programs that promote renewable energy and energy efficiency.

The EPA modeled two compliance scenarios to understand the costs, benefits, and potential energy-related impacts of the Clean Power Plan. This modeling suggests that the electricity sector's natural gas consumption will increase sharply at the beginning of the Clean Power Plan's implementation period as states shift power generation from dirtier coal-fired plants to cleaner-burning NGCC plants. The EPA also predicts that states will build new NGCC plants to replace retiring coal plants and to help meet their carbon-reduction targets.

By 2030, however, the EPA's models forecast that more renewable energy and energy-efficiency programs will come online as states continue to implement the Clean Power Plan. Electricity generation from renewable sources will displace some generation from NGCC and coal-fired power plants. Energy-efficiency programs, meanwhile, will reduce electricity demand, slowing generation and curbing carbon pollution from the power sector as a whole. By the end of the Clean Power Plan's compliance period in 2030, the EPA predicts that the electricity sector's natural gas consumption will be higher than it is today but lower than it would have been without the plan.

From a climate perspective, successful deployment of renewable energy technologies and energy-efficiency programs will be critical. While natural gas burns cleaner than coal, it is still a fossil fuel that releases carbon pollution. In addition, methane, a potent greenhouse gas, can escape throughout the natural gas production and supply cycle. For these reasons, several recent studies by prominent researchers have questioned whether natural gas can form the core of an effective climate mitigation strategy.

The Clean Power Plan's renewable energy and energy-efficiency components serve the important purpose of mitigating the electricity sector's natural gas use over time. But states have the potential to do even more than the plan envisions. Recent studies by the Union of Concerned Scientists and the American Council for an Energy-Efficient Economy suggest that the EPA may be underestimating states' capacity to generate more electricity from renewable sources and achieve more significant energy savings.

By acting decisively to implement ambitious renewable energy and energy-efficiency programs, states can help ensure that the United States does not overcommit to natural gas and that it continues on a path toward decarbonization of the economy. States do not need to wait for the EPA to finalize the Clean Power Plan to get started. The Center for American Progress offers the following recommendations to state policymakers:

- States should strengthen existing—or enact new—renewable energy standards to deploy additional renewable energy generating capacity as quickly and as aggressively as possible.

- States should enact the strongest possible Energy Efficiency Resource Standards to set clear energy-savings targets for electric utilities. States also should adopt and implement stringent building efficiency codes and other product and equipment efficiency standards to cut customer demand for electricity.

- States should enact policies to cut methane pollution from the oil and gas sector. This will achieve important reductions in greenhouse gas emissions and maximize the climate benefit of generating electricity from natural gas rather than coal.

- States should consider innovative financing approaches, such as green banks, to attract private investment in new, low-carbon clean energy projects.

Without question, switching from coal to natural gas for power generation can reduce carbon pollution from the power sector. But fuel switching does not go far enough to achieve the deep reductions necessary to avert catastrophic climate change. States should make renewable energy and energy efficiency a cornerstone of their Clean Power Plan implementation and climate mitigation strategies.

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