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Natural Gas Demand: Rhetoric and Reality under the Final Clean Power Plan

Executive Summary

The Clean Power Plan (CPP) is the centerpiece of President Obama's strategy to address what the Administration calls "carbon pollution" and meet internationally-agreed U.S. targets to reduce greenhouse gas emissions.[1] The CPP, promulgated under the Clean Air Act (CAA), requires deep reductions in CO2 emissions from power plants, which account for roughly one-third of total U.S. greenhouse gas emissions. It is designed to achieve these reductions largely by further shrinking US reliance on high-emitting coal-fired power plants, many of which have already been retired, and by replacing electricity generated from coal with electricity generated from lower-emitting natural gas and renewables.[2]

This briefing paper examines the extent to which the final CPP adopted by EPA on 3 August 2015 favors renewables over natural gas as a replacement for coal. We conclude that the CPP reflects a largely rhetorical shift by the Obama Administration from its earlier support for natural gas as expressed in the 2014 proposed CPP and elsewhere.For example, EPA increased its estimate for the future market share of renewables in power, while decreasing its estimate for natural gas, in the final CPP versus EPA's original proposal. These estimates, however, are not binding on the states. Beyond the rhetoric designed to appeal to environmental groups, the final CPP also includes some provisions that favor renewables and could distort fuel choices in the market. These provisions could perhaps lead to a larger role for renewables in the generation mix than under a strictly neutral approach, especially in the out-years.

Most observers believe that over the next 15 years, the influence of the CPP on the generation mix will be outweighed by other forces, including

[1] On February 9, 2016, implementation of the CPP was stayed by the U.S. Supreme Court pending resolution of legal issues raised in litigation filed by utility companies, coal companies and more than half the States. A Federal Court of Appeals is scheduled to hear oral arguments in June with a ruling likely in late 2016. That ruling will be followed by an appeal to the Supreme Court which is expected could resolve the matter in 2017 or 2018. The Supreme Court could in its final decision extend the compliance deadlines. However, it is not clear how the Courts will rule or how, assuming the CPP is finally upheld, the delay would impact implementation of the Plan.

[2] Unless otherwise noted, "renewables" excludes hydropower.

(i) improvements in the cost and reliability of wind and solar technologies, (ii) the price competiveness of gas, (iii) the state of the U.S. economy, and (iv) other new regulations and policies to implement the ambitious greenhouse gas emission reduction commitments made by the US under the recent COP-21 agreement in Paris.

Design of the CPP. The CPP is designed, above all else, to drive a shift from coal to natural gas and renewables. Specifically, the CPP is intended to reduce power sector emissions of CO2 by 32 percent below 2005 levels by 2030. The CPP set compliance dates beginning in 2022, with emissions progressively declining toward the final goal over the following 8 years.

To reach the overall target, EPA has assigned emission reduction targets (expressed as an emission rate reduction for coal and gas-fired plants) to each of the states based on its generation mix. The states must develop state implementation plans (SIPs) to achieve their EPA-imposed targets, but have broad discretion in selecting the mix of strategies by which they will reduce emissions. For example, they can choose greater reliance on natural gas, nuclear, renewables or hydropower; increased energy efficiency and reduced electricity use; lower coal plant emissions; and/or more reliance on Combined Heat and Power (CHP) facilities.

Even though the CPP will not be implemented for years, the shift away from coal is already well underway with gas so far filling most of the gap created by the retirement of coal plants. In the near term, this shift is expected to accelerate under the CPP and states and utilities will continue to turn to gas as a reliable, low-cost compliance option.

As time goes on, however, renewables may gain greater traction. This will largely be determined by market conditions but the final CPP also contains provisions that could cause a tilt toward renewables. For example, EPA may not approve a state implementation plan that allows shifting of emissions from existing to new fossil-fuel plants. This may lead states to adopt plans that rely on renewables for out-year demand growth. In addition, the EPA cost modeling assumes an unrealistic constraint on domestic gas supply and thereby assigns a relative cost advantage to renewables. Finally, the CPP includes a program of incentives for early renewables development. These provisions may help renewables fill some portion of electricity demand that would otherwise have been filled by natural gas.

EPA Projections of the Future Fuel Mix. Although the CPP itself does not dictate generation choices by states and utilities, EPA made projections of the future mix of fuel sources in the power sector that it thought would result from full implementation of the CPP in order to inform the setting of its national and state emission reduction targets. Changes in these projections from the proposed to the final rule reflected a more bullish outlook for renewables and greater caution about the growth prospects for natural gas.

To set the national and state emission targets, EPA identified a set of "building blocks"— i.e. cost-effective, proven strategies to reduce the carbon footprint of the power plant fleet – and then analyzed the level of reductions each building block could be expected to deliver. The building blocks in the final CPP were:

1. Improving the thermal efficiency of coal-fired units (EGUs) so their emissions per unit of electricity output are lower;
2. Increasing the utilization of natural gas-fired units to replace power production from higher-emitting coal-fired units, which would then be retired or operated at lower capacity factors; and
3. Replacing power from coal units with increased generation from renewable sources (mainly wind and solar).

EPA had included a fourth building block – end-use energy efficiency – in the proposed CPP but dropped it from the final rule for legal reasons.[3] Since the Obama Administration did not want to reduce the overall stringency of the CPP, this change required a recalculation of the projected benefits of the three remaining building blocks so they would predict the same or a greater aggregate amount of emission reductions as the proposed rule.

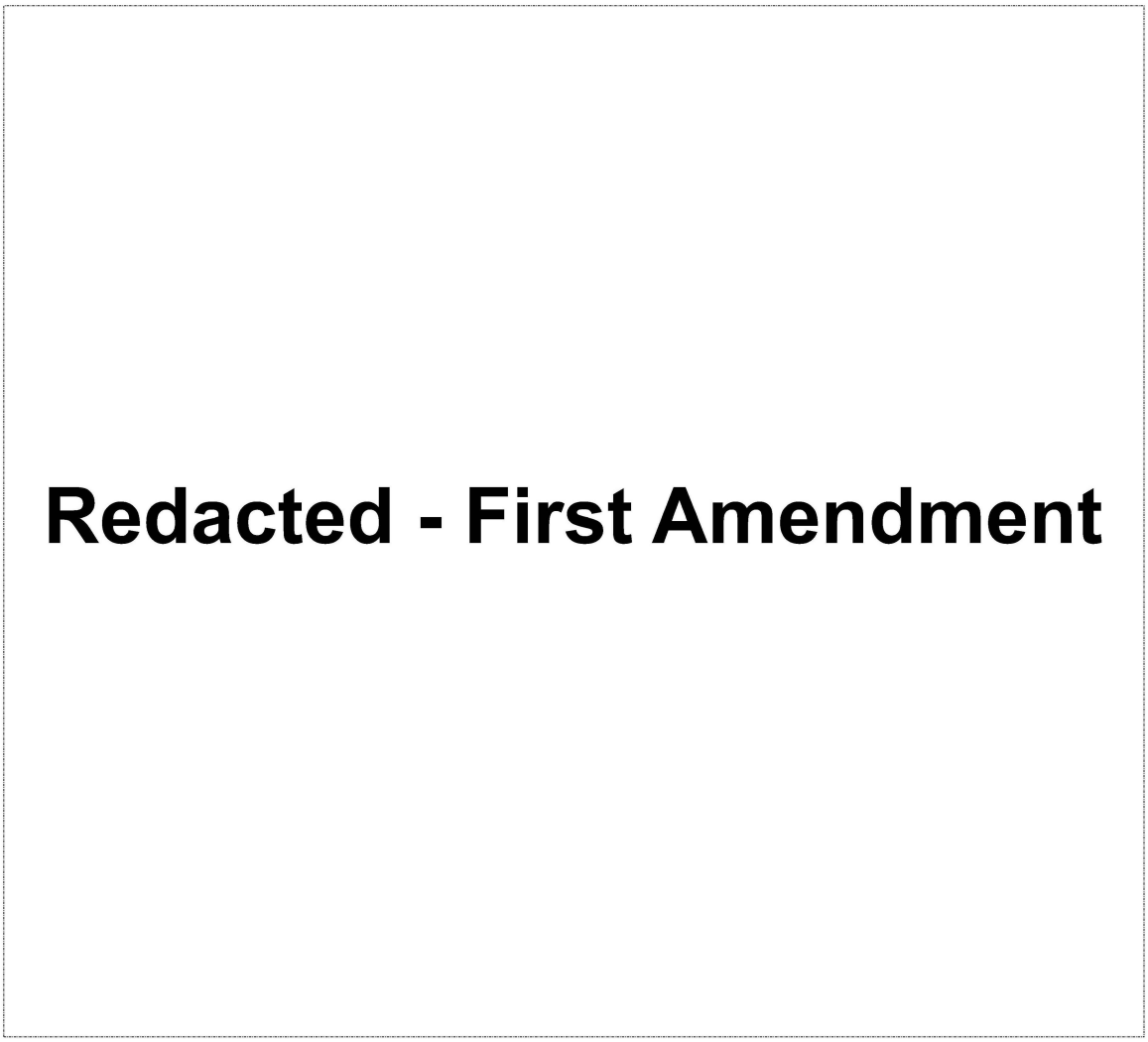
In making this recalculation, EPA projected a significantly larger role for renewables and a smaller role for natural gas than under its proposal. Specifically, the recalculation predicted that, by 2030, the CPP would:

- Increase the natural gas share of total power generation to 32 to 33 percent versus the 33 to 40 percent predicted in the proposed CPP;
- Increase the renewable share (including hydropower) to 28 percent, as compared to 22 percent under the proposal; and

[3] While EPA has allowed energy-efficiency (EE) measures to count as part of compliance plans under previous air-pollution rules, it had never used demand-side measures to set the stringency of a regulation. Building block 4 was therefore legally controversial.

- Reduce the coal share to 27 percent, as against 31 percent in the proposal.

This recalculation, which still shows a significant shift toward natural gas as coal use declines, has contributed to the perception that the Obama Administration has reduced its support for natural gas and embraced renewables.[4] Adding to this perception is a change in tone by senior Administration officials. For example, the President's press conference announcing the CPP touted the potential of renewables but was conspicuously silent about the enhanced role of natural gas. We believe this election year change in tone has occurred as part of an effort to address environmental NGO concerns over a "rush to gas." De[site its clear emissions advantage over coal, some E-NGOs have opposed it based upon implacable opposition to all fossil fuels, a strong preference for a prompt transition to renewables, and concerns about methane emissions that occur in the natural gas production and distribution chain.



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Attachment A

U.S. Energy Information Agency

Short-Term Energy and Summer Fuels Outlook

April 12, 2016

	Share of Total Electricity Generation						
	Coal	Natural Gas	Petroleum	Nuclear	Hydro Power	Nonhydro-Renewables	Other
2008	48.2%	21.4%	1.1%	19.6%	6.0%	3.1%	0.6%
2009	44.4%	23.3%	1.0%	20.2%	6.8%	3.7%	0.6%
2010	44.8%	23.9%	0.9%	19.6%	6.2%	4.1%	0.6%
2011	42.3%	24.7%	0.7%	19.3%	7.6%	4.7%	0.6%
2012	37.4%	30.3%	0.6%	19.0%	6.7%	5.4%	0.6%
2013	38.9%	27.7%	0.7%	19.4%	6.5%	6.2%	0.7%
2014	38.6%	27.5%	0.7%	19.5%	6.2%	6.8%	0.6%
2015	33.2%	32.7%	0.7%	19.5%	6.0%	7.3%	0.6%
2016	31.0%	33.9%	0.6%	19.2%	6.6%	8.1%	0.6%
2017	31.4%	32.9%	0.7%	19.2%	6.5%	8.7%	0.6%