US carbon regulations: inevitable and far-reaching

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Aggressive anti-carbon regulations have loomed since the first day of Barack Obama's presidency. Obama prioritised climate change in his 2009 inaugural address, and has been steadfast since, if not prior. Only the scope, rollout and timeframe of the regulations remained unclear.

On 2 June 2014, the US Environmental Protection Agency (EPA) decreed that carbon emissions must be slashed up to 30% by 2030 from 2005 levels. The decree didn’t startle the electrical industry. Owners of coal-fired generators have long braced for it, and lobbied against it even longer. More recently, utilities and independent power producers – resigned to the inevitability of the regulations – pushed for emissions standards at 2012 levels, and noted that emissions have already fallen 15% since 2005.

The EPA has proposed two options – either a 30% cut by 2030 or a 24% cut by 2025. Under the alternatives, the EPA would stipulate a specific per-state reduction. The EPA’s preferred option would require a 6% improvement in average plant heat rate, discourage coal-fired generators in favour of gas-fired, prompt the completion of pending nuclear plants and reduce energy demand by 1.5% annually between 2020 and 2029, according to law firm Akin Gump.

The impact of closed coal-fired plants

The regulations, if they survive almost certain legal challenges, will most inconvenience existing coal-fired plants, especially older and smaller assets. Such assets are among the dirtiest in the US, and would face the highest (relative) costs to install scrubbing technology to limit emissions. They are thus the most likely to be closed, and are disproportionately located in a band stretching south from Appalachia and the upper mid-west. Natural gas is the most likely beneficiary of closed coal-fired plants in Appalachia, which, incidentally, is home to strong shale reserves.

Unregulated power companies, including Dynegy and NRG Energy, are most at risk among owners of coal-fired plants, predicts Moody’s Investors Service. NRG’s assets, at least, largely operate in coal-friendly Texas. Dynegy’s assets sit in the weaker Midcontinent Independent Operator (MISO) market.

Utilities in regulated states, such as Southern Company, will suffer less, as they could recoup compliance costs through their rate bases. States reliant on coal production may also back compliance (ultimately anyway). “Kentucky and the mid-west don’t want to shut the mines,” says AJ Sabatelle, associate managing director at Moody’s in New York. “Regulated power is more likely to become compliant.”

Renewables will benefit from coal’s decline. The Obama administration has coaxed a sharp rise in renewables generation – principally wind and solar – via federal subsidies, including cash grants and loan guarantees. But while the amount of MWh generated from US wind farms nearly doubled from 2009 to 2013, the fuel constituted just 4.1% of the country's generation in 2013, according to the EPA. Wind and solar are also variable fuels; they're not dependable round-the-clock resources like gas-fired generators.

The proposed carbon emissions likely will prompt a re-think of nuclear. Obama has long promoted the notion of new nuclear generation, but the tsunami-prompted disaster at Japan's Fukushima plant in 2011 ceased domestic enthusiasm for the fuel. New York state quickly began efforts to close the Indian Point plant, located near a fault line north of New York City.

Such resistance to new nuclear may be waning. In February 2014, the DOE finalised $8.3 billion in federal loan guarantees to support new units at the Vogtle nuclear plant in Georgia. But gas-fired generation will be favoured, given low domestic gas prices and simpler permitting.

The end of new US coal

Obama's election in 2008 appeared to signal the end of new coal-fired generation – or at least the end of new traditional coal-fired generation.

By Obama's inauguration, gas prices had collapsed in the US, making the fuel competitive against coal, and the prospect of new regulations of old generators cooled lender enthusiasm for new coal. Longview Power in West Virginia and Sandy Creek in Texas were the last prominent new coal-fired projects to close construction financings – and both did so in 2007. Longview and Sandy Creek both suffered notable construction delays, and Longview found itself in bankruptcy protection in late 2013.

Owners of the few new coal-fired projects before Obama's presidency appear to have anticipated today's regulations, or at least the nature of them. Some offtake agreements passed the potential burdens of environmental compliance from assets to utilities, and most feature scrubbing units and efficient supercritical coal technology, which should limit the shock of compliance. Sandy Creek's offtake agreements with Brazos Electric Power Cooperative and the Lower Colorado River Authority, for instance, pass all costs related to environmental changes – specifically involving carbon or mercury – to the buyers of the plant's output. (Half of Sandy Creek sells power in merchant markets).

But developers of older plants weren't as prescient. The 112MW Northampton Generating, a Pennsylvania plant in the Cogentrix portfolio (today owned by Energy Investors Funds), filed for chapter 11 bankruptcy protection in 2011 in part due to unfavourable offtake agreements with Metropolitan Edison and PPL.

The US Department of Energy (DoE) under Obama has tried to propel so-called clean coal – via carbon capture technology – but has little to show for it. The DoE in 2010 awarded a $450 million grant to Summit Power's billion 400MW integrated gasification combined-cycle/polygen project, under the agency's Clean Coal Power Initiative. But financial close of Summit's Texas-based project has been anticipated for about two years, and cost projections reportedly have increased to $3.5 billion from $2.2 billion.