

# A “Bottom Up” Approach to Reducing U.S. Carbon Emissions



BY DERRICK FREEMAN

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The Clean Power Plan (CPP) rule would cut U.S. carbon dioxide emissions 30 percent below 2005 levels by 2030. About 40% of U.S. carbon dioxide emissions are from electricity generation.

With last year’s landmark U.S.-China agreement on climate change, the Obama administration has raised the bar for America when it comes to reducing greenhouse gas emissions (GHG). That deal set new targets for reducing emissions by 26–28 percent (from 2005) levels by 2025, well above the previous pledge of 17 percent by 2020. Given implacable Republican opposition to taking action against global warming, how can the United States deliver on this ambitious promise?

Congress has tried, and failed repeatedly, to pass legislation that would cap greenhouse gas emissions. In June of 2009, the House of Representatives, then controlled by Democrats, narrowly passed a bill that placed an economy-wide cap on greenhouse gas emissions. Attempts to move a Senate bill floundered in the summer of 2010 on Democratic defections; monolithic Republican opposition and, some environmentalists complained, tepid White House support. That fall, Republicans took back the House and narrowed the Democrat majority in the Senate, killing any prospect of national legislation to reduce greenhouse gas emissions.

The impasse led President Obama to reach for the only policy lever he had left—executive action. In a landmark 2007 decision, the Supreme Court gave the Environmental Protection Agency the green light to regulate greenhouse gases as pollutants under the Clean Air Act.

Now, nearly five years after cap-and-trade crashed and burned in Congress, the Environmental Protection Agency (EPA) is finalizing a rule regulating greenhouse gas emissions from power plants. Commonly referred to as the Clean Power Plan (CPP), the rule would cut U.S. carbon dioxide emissions 30 percent below 2005 levels by 2030. About 40% of U.S. carbon dioxide emissions are from electricity generation. However, it sets stringent interim goals—50 to 75 percent of the target must be met by 2020. Under the CPP, states must submit plans to meet emissions targets set by the EPA. Those plans may include state or regional emissions trading programs similar to ones already established in California and nine northeastern states.

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PPI has long supported a national emissions trading program or carbon tax as the most efficient tools for achieving GHG reductions. Unfortunately, there is little chance of either happening as long as Republicans can block national action to protect the earth's climate.

For nearly two decades federal lawmakers have debated policy options for reducing greenhouse gas emissions, to no avail. Yet, in one year, EPA has proposed a rule that has the potential to accomplish what the U.S. Congress failed to do—spur the development of trading markets for greenhouse gas emissions in the United States. Although a resort to command-and-control regulation would not be our first option, in this case it could be a catalyst for a bottom-up approach to cap and trade or a simple carbon tax. The proposed CPP is likely to receive substantial revision before finalized, and still has to run a long judicial gauntlet. Furthermore, Congress could try to intervene in the process. But EPA now has a chance to craft a rule that is workable, conducive to innovation, and respectful of states' ability to choose their own path toward carbon reduction.

In addition to the four building blocks, states could also set up their own carbon trading markets, join with other states in creating regional markets, or collaborate with states and submit a joint plan.

At the same time, the EPA must take into account the difficulties and costs a transition to a cleaner generating fleet will entail. The states need time to plan, to develop new electricity infrastructure, and to prepare electricity consumers for the coming changes. Above all, they should adopt the methods for meeting their emissions targets that are least likely to cause price shocks and economic disruptions.

## Background

The authority for CPP comes from an obscure provision of the Clean Air Act — Section 111(d). It requires states to submit to EPA a plan for reducing greenhouse gas reductions from power plants under their jurisdiction. The CPP would set state-specific carbon dioxide emission rate targets based upon EPA's calculation of the emission rates that it believes are achievable in each state. It asserts that the emission guidelines are based on the best system of emission reduction (BSER), which the agency says is a combination of four strategies or "building blocks" states can adopt in pursuit of their targets. These include heat rate improvement at coal-fired units (which burns up more carbon, leaving less to emit); switching from coal-fired power plants to Natural Gas Combined Cycle (NGCC) units; more electricity generation from renewables and nuclear; and, increases in energy efficiency. Rather than prescribe how the states achieve the mandated reductions, EPA will allow states flexibility to choose a combination of approaches. Maximum flexibility is the key, because each state has varying electricity generation portfolios, different emission rates, electricity demand, utility regulatory structures, and different sizes, types and classes of power plants.

In addition to the four building blocks, states could also set up their own carbon trading markets, join with other states in creating regional markets, or collaborate with states and submit a joint plan. While the EPA initially set targets that are emission rate-based (forecasts dependent on the amount of electricity generation)

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The Regional Greenhouse Gas Initiative (RGGI), the nation's first mandatory cap and trade program for greenhouse gas emissions started in 2009, covers nine northeastern states.

it allows for conversion of the rate-based targets to mass-based (limits on the quantity of carbon dioxide measured in tons). The significance here is that only mass-based targets can be the foundation for a cap and trade system. The EPA specifically highlights the Regional Greenhouse Gas Initiative (RGGI) started in 2009. RGGI, the nation's first mandatory cap and trade program for greenhouse gas emissions, covers nine northeastern states (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont). It applies only to carbon dioxide emissions from power plants with capacities to generate 25 megawatts or more. California has a cap and trade program as well but it covers a wider variety of sectors than RGGI.

For all its flexibility, the rule is controversial. A coalition of 13 states already has sued EPA over the CPP. They claim the EPA can't regulate carbon dioxide emissions from existing power plants under Section 111(d) of the Clean Air Act, because power plant emissions of hazardous air pollutants are already regulated under Section 112, and that Section 111(d) has limited reach since it was amended in 1990. In addition, some legal analysts question EPA's authority to tell the states how to generate electricity—decisions they believe were left to the states by the Federal Power Act of 1920. Using a similar argument, Senate Majority Leader Mitch McConnell (R-Ky.) in a recent op-ed published in the Lexington Herald-Leader urged state governors to refuse to submit compliance plans to the EPA, citing that the EPA was asserting executive power beyond constitutional limits. Also controversial is EPA's use of language ("system of emission reduction") which critics say reaches beyond power plants ("beyond the fence") to any activity that leads to emission reductions such as energy efficiency. In any event, the CPP is by far the most important environmental rulemaking to be imposed on the electric utility sector in its history, setting up the stage for many court and Congressional battles.

## A Flexible Approach

EPA has computed state emission reduction targets based on their using some or all of the four building blocks. In addition, states may submit a carbon trading plan of their own, partner with other states to create a regional plan, or join an existing one. Although the CPP doesn't mention state carbon taxes as an option, some analysts and policymakers are urging EPA to add them to the list. For example, Rep. John Delaney (D-Md.) has proposed legislation that would give states the option of using a carbon tax to meet the CPP requirements.

Fourteen countries have some form of carbon tax on fossil fuels. An early adopter, for example, was Sweden, which introduced a carbon tax on natural gas, coal, and oil in 1991. The tax is widely hailed as a success because it has produced steep emissions reductions while spurring biomass and biofuels consumption. The classic economic argument for carbon taxes is based on the fact that market prices for carbon-based fuels do not reflect the full social and environmental costs associated with producing and consuming them. Artificially low prices, in turn, lead to more consumption and carbon emissions. By making fuels with higher carbon

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content relatively expensive to burn, carbon taxes encourage energy efficiency and steer investment toward cleaner fuels and renewable energy.

## Emissions Trading Systems

While a carbon tax raises fossil fuel prices, it does not ensure that carbon emissions will be reduced to any specific level. A cap and trade system, in contrast, provides that environmental certainty. Typically, such a system sets a declining cap on greenhouse gas emissions, creating strong incentives for companies to invest in energy-saving technologies or cleaner fuels.

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By allowing companies to buy and sell emissions allowances, a cap and trade system allocates the cost of complying with environmental rules more efficiently than a classic, command-and-control regulation that prescribes “one-size-fits-all” solutions for companies. Cap and trade was originally proposed in the 1980s during the leaded-gasoline phasedown, and used in the 1990s to combat acid rain by capping emissions of sulfur dioxide in the United States, and proved itself relatively quickly by spreading costs across a range of utilities that led to significant reductions in particulate matter and mortality risk. The EPA estimates reductions in particulate matter and other health effects under the CPP will account for approximately 60% of the plan’s gross benefits.

Because it covers only the electric utility sector, RGGI is the cap and trade program most likely to serve as a model for new regional programs that might be catalyzed by CPP. California’s cap and trade system has a much wider reach, covering 85% of the state’s carbon dioxide emissions including industrial plants and utilities, and is set to expand in 2015 to include the transportation sector as well.

Both the California and RGGI cap and trade programs allow offsets to meet their emissions reductions goals. An offset is an emission reduction made by an unregulated entity; say, for example, a nonprofit engaged in energy efficiency projects. Power plant operators can meet their emissions reductions targets by purchasing offsets, if they deem that more cost-efficient than the retrofits necessary to curb their own emissions. RGGI limits offsets to 3.3 percent of a power plant’s emissions allowance, while California allows regulated entities to use offsets to cover up to 8 percent of their allowances. It’s unclear whether the CPP will allow offsets. They have come under scrutiny because they are hard to measure and verify. Such concerns feed calls for establishing more rigorous criteria for determining what types of projects produce measurable emissions reductions, and therefore qualify as a true offset. However, California’s offset criteria are extremely strong, possibly too strong.

The National Association of Regulatory Utility Commissioners (NARUC) is on record as supporting a “well designed economy-wide federal program to limit greenhouse gas emissions,”<sup>1</sup> and could lead the way in states adopting regional trading platforms. What constitutes a “well designed” program, however, is debatable. For sake of simplicity, consider RGGI as an example. Since the RGGI cap

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and trade program took effect in 2009, covered power plants have not been forced to make emission reductions and therefore did not have reason to purchase emissions credits from other sources. This was primarily due to RGGI's initial carbon cap being set too high, a recession-induced drop in energy demand, and substantial fuel-switching from coal to natural gas inside the pact. On the other hand, RGGI has been successful in auctioning emissions permits and generating revenue. More than 70 percent of auction revenues have been plowed into utilities' efforts to promote energy efficiency and renewable energy, and helping consumers pay their electricity bills.<sup>2</sup>

## Other Cap and Trade Systems

The European Union (EU) launched its flagship emissions trading scheme (ETS) in 2005. Since then, more than a dozen countries have followed suit. The largest cap and trade program in the world, the ETS covers 31 countries and roughly half of the EU's total carbon emissions. Nonetheless, the ETS has gotten mixed reviews. At the beginning the scheme set carbon caps too high and gave away too many allowances to encourage participation. Thus, companies paid almost rock bottom prices to pollute. Anemic growth in Europe also has led to falling energy consumption, which in turn has led to a surplus of carbon permits. When this happens, caps need to be adjusted downward to keep the price of emissions permits from falling.

Also putting downward pressure on the price of emission permits are “complementary measures” some governments have adopted to reduce their carbon output. For example, the EU's 2020 targets include getting 20% energy from renewable resources as well as a 20% improvement in energy efficiency.<sup>3</sup> California estimates it will achieve 80% of its carbon emissions reductions through the use of such measures as a Low Carbon Fuel Standard, Advanced Clean Car Standards, and a Renewable Electricity Standard.<sup>4</sup>

In short, “complementary measures” introduce price distortions into carbon trading markets, making them less effective in curbing emissions. Moreover, trading markets will allocate the costs of emissions reductions more efficiently than bureaucratic mandates, and spur greater technological change.

A 2014 UN Intergovernmental Panel on Climate Change (IPCC) report on cap and trade programs said the short-run environmental effect “has been limited” because the caps on carbon are too “loose” or have “not proved constraining.” The EU is considering whether to stop allocating permits for free to certain industries.

In 2013, RGGI states agreed to lower their emissions cap by 45 percent because the original cap was set much too high. The emissions cap will decrease each year by 2.5 percent between 2015 and 2020, and could be adjusted further to keep states on track to meeting emissions targets. The declining cap already has resulted in a surge in price per ton of carbon dioxide emitted. Auction clearing prices have begun to exceed the reserve price of \$2/ton, where they hovered for several

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years, to approximately \$5/ton in the last auction—raising more money for energy efficiency programs and renewable energy projects which lead to greater emissions reductions. California set a price floor of \$10 on its emissions permits in response to the EU ETS market problem of wildly fluctuating prices, and their permits are now trading above \$12 showing signs of stability.

If many states choose this approach, the EPA's top-down carbon reduction mandate could become the catalyst for constructing a cap and trade market in the United States from the bottom up. If successful, the demonstration effect of these state and regional efforts might eventually filter up to Washington and induce Congress to create a national carbon trading market.

That would be the best outcome from both an environmental and economic standpoint. A national cap and trade system would cover all greenhouse gas emissions, and it would allocate the cost of reducing those emissions in the most efficient way. An unlinked set of state and regional trading systems will make it difficult to establish a consistent price on carbon emissions. Power companies could decamp from regions with high emissions permit prices to those with more relaxed carbon caps. It is possible under a CPP cap and trade scheme that we will have several carbon prices among the states or regions, but until we implement a national program that links to a global carbon market, domestic carbon price disparities will reign.

## The Carbon Tax Option

While many environmentalists are attracted to cap and trade because it guarantees a certain level of carbon reduction, economists gravitate toward a carbon tax as the simplest solution to global warming. Yet, a carbon tax is very much akin to cap and trade (1) both employ “price signals;” (2) both can generate revenue (auction) to use to cut distortionary taxes; (3) but carbon tax does not have the problems as cap and trade with “complementary policies.” A tax would harness the power of the market's “price signal” to discourage consumption of fossil fuels and steer investment toward alternatives. And it would do so without all the complexities of setting up markets for trading emissions permits, which economists think could be easily “gamed.” What's more, the revenues from the tax could be rebated to consumers, mitigating the adverse distributional impacts of a carbon tax.

On the other hand, a carbon tax faces a seemingly insurmountable political obstacle: the Republican Party's dogmatic opposition to tax increases of any kind. In fact, many progressives (and some moderate Republicans) supported cap and trade before 2010 because it seemed like the more politically feasible route to cutting carbon emissions.

Both carbon taxes and cap and trade systems set a price for emissions of greenhouse gases, but each sets the price in a different way. A carbon tax is set directly by the regulating authority, whereas a pure cap and trade system permits the regulator to stipulate the overall quantity of emissions allowable which then yields a

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price of carbon through a market for allowances. In today's politically charged climate, the indirect approach is preferable for policymakers, as no one wants to be tagged as the person who raised energy prices regardless of the merits of the policy.

There are some advantages to a simple carbon tax, for example, a state would not have to administer auctions, allocate allowances and other administrative burdens that accompany cap and trade programs. Also, just like a regional cap and trade program a carbon tax can be adopted by a group of states at a specified rate to jointly achieve their collective emissions targets. This approach may reduce distortions in economic and investment activity across state borders. States would have a direct revenue source that they may use however they wish while also gaining environmental benefits. Carbon tax supporters have recently endorsed using carbon tax revenue to eliminate inefficient tax programs, and for offering relief to low-income earners to offset the impacts of higher fossil fuel prices.

Rather than try to resolve the long-running argument between cap and trade and carbon taxes, progressives should be open to whichever has the best chance of advancing in today's political climate. We urge the EPA to explicitly allow states to meet their carbon reduction commitments under CPP by adopting carbon taxes as well as cap and trade systems.

Carbon tax legislation was introduced in the last Congress, and a bill (H.R. 5796) filed by Rep. Delaney directly responds to the EPA's proposed rule by allowing a state the option to impose a carbon tax to meet its emission reduction goals. The bill sets a \$20 per metric ton price on any greenhouse gas resulting from the use of fossil fuels, and increases by 4% above inflation, as measured by the Consumer Price Index, in each subsequent year. Progressives should support this proposal, since it would give states another market-based tool to meet their targets.

Rather than try to resolve the long-running argument between cap and trade and carbon taxes, we believe progressives ought to be open to whichever has the best chance of advancing in today's political climate.

There is uncertainty as to whether states are allowed to implement a carbon tax for compliance with the CPP. That is why Rep. Delany introduced his bill, and several commenters have asked for its inclusion as a compliance mechanism. Legal analysts suggest that the CPP proposal may include the flexibility of a state carbon tax because of previous EPA commitments and a Supreme Court decision that upheld an EPA program that set emissions limits based on the power sectors simulated response to cost thresholds, championing the program as a cost effective way to solve a complex problem. Using this Court decision as a guide for states to comply under the law, a state may employ economic modeling to demonstrate a taxation trajectory that results in carbon dioxide reductions within the given time frame for compliance. Or simply, EPA can make it clear in its final rule that a carbon excise tax may be implemented by the states for CPP compliance.

## Conclusion

As President Obama understands—and his political opponents do not—America should be a leader rather than a laggard in slowing global warming. This is a mat-

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ter of self-interest, since whatever happens to the climate will affect future generations of Americans. And because the United States is a major energy consumer and the world's second-largest greenhouse gas emitter, we owe it to the people with whom we share this planet to protect the global commons.

The best way to discharge this responsibility is through national action—either cap-and-trade or a carbon tax—to cut U.S. greenhouse gas emissions. Unfortunately, the Republican Party's rejection of climate science makes that impossible, at least for now. So the Obama administration has chosen the only lever it has to make progress: administrative rulemaking by the EPA. While a second-best solution, the Clean Power Plan could allow us to use the flexibility of U.S. federalism to put the states in charge of slowing climate change. The key is to encourage them to start building a modern, market-based approach to cutting carbon from the bottom up.

## Endnotes

<sup>1</sup> NARUC, "State Clean Energy Policies: The Foundation for an Electric Sector Cap-and-Trade Program," July 2009, [http://www.naruc.org/Publications/ClimateIssueBrief4\\_Jul2009.pdf](http://www.naruc.org/Publications/ClimateIssueBrief4_Jul2009.pdf).

<sup>2</sup> Congressional Research Service, "The Regional Greenhouse Gas Initiative: Lessons Learned and Issues for Policy Makers," November 14, 2014, <http://fas.org/sgp/crs/misc/R41836.pdf>.

<sup>3</sup> Simon Skillings, "Carbon Pricing and Complementary Mechanisms," From Roadmaps to Reality, <http://www.roadmap2050.eu/attachments/files/Carbonpricingandcomplementarymeasures-final.pdf>.

<sup>4</sup> EPRI, "Exploring the Interaction Between California's Greenhouse Gas Emissions Cap and Trade Program and Complementary Emissions Reductions Policies," March 14, 2013, <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=00000003002000298>.

## About the Author

*Derrick Freeman is a PPI senior fellow and director of the Energy Innovation Project.*

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