

Remarks on the Clean Power Plan

Jason Furman
Chairman, Council of Economic Advisers

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The United States is in the midst of an energy revolution. We have led the world in combined oil and natural gas production for three years running, pushing ahead of energy exporters like Russia and Saudi Arabia. Electricity generation from renewables is soaring as well: wind generation has tripled since 2008 and generation from solar is up more than tenfold. Meanwhile, U.S. gasoline consumption—which as recently as 2005 was projected to rise steadily into the future—has actually *fallen* 5 percent since that time. This has contributed to cutting our oil imports nearly in half, helping to narrow the U.S. trade deficit to its smallest share of GDP since the 1990s.

Much of this revolution has been driven by a dynamic private energy sector which has furnished the new innovations and the entrepreneurial risk-taking necessary for these historic increases in American energy production. But it has been supported and advanced by the three prongs of the Administration's All-of-the-Above energy strategy: supporting economic growth and job creation; enhancing U.S. energy security, and laying the foundation for a clean energy future.

This All-of-the-Above energy strategy is not merely compatible with reduced greenhouse gas emissions, it is an essential part of how we achieve that goal. At the same time that we have seen this energy boom, we have also seen a 10 percent reduction in carbon emissions from 2007 to 2013—the largest absolute emissions reductions of any country in the world. While the recession was responsible for about half of these emissions reductions, the other half—which is still a large amount—is the result of the changing ways in which we produce and consume energy.

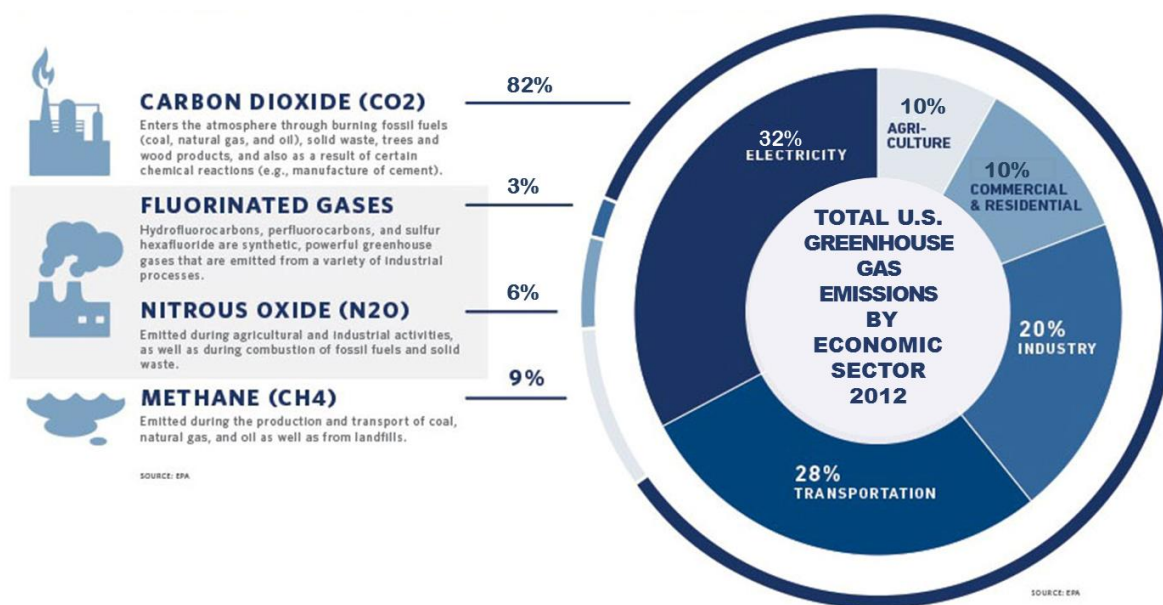
But there is no doubt that we need to make more progress. In 2010 as part of the Cancun agreements, the United States formalized the goal of cutting greenhouse gas emissions in the range of 17 percent below 2005 levels by 2020. This was part of a broader agreement in which more than a hundred other countries, including key emerging economies like China, offered emissions-reduction targets of their own.

Achieving this target will require doing more than just riding the wave of changes that are already underway in the private sector. As we all know, a product's carbon emissions impose greater costs than simply those paid by its producers and consumers. The impact these carbon emissions have on climate change and the economy more broadly are what economists call an externality. As a result, both producers and consumers will not have sufficient incentives to invest in an economically efficient manner both in the way they act today and, perhaps more importantly, in the way they innovate for the future. The result is a classic economic inefficiency where carbon is overproduced, and technologies or practices that would cost effectively reduce

carbon emissions are underproduced or underused. And this opens up the possibility of substantial net benefits to steps that internalize this externality.

The President has repeatedly asked Congress to take advantage of this opportunity through the legislative process. But in the face of inaction the President put forward a comprehensive Climate Action Plan in June 2013. One of the key elements of that plan was directing the Environmental Protection Agency (EPA) to address the largest source of carbon emissions—the 32 percent of U.S. greenhouse gas emissions that come from the power sector, mostly from coal-fired power plants (see Figure 1).

Figure 1: The electric power sector accounted for more than 30 percent of U.S. greenhouse gas emissions in 2012.



Source: Environmental Protection Agency

In June of this year, the EPA put forward its proposed Clean Power Plan. Under the EPA’s proposal, power sector emissions would be reduced 30 percent from their 2005 levels. Moreover, the Clean Power Plan provides States with the flexibility to use a variety of ways to achieve this goal, including price mechanisms that offer an economically efficient way to ensure that the emissions reductions are being done as inexpensively and efficiently as possible.

Taken together with new vehicle efficiency standards that will improve the fuel efficiency of the nation’s automotive fleet and other efforts like yesterday’s announced agreements from several large U.S. companies to reduce hydrofluorocarbon emissions, this new proposed rule is a key part of the Administration’s broader Climate Action Plan designed to confront the challenge of climate change.

An Overview of the Clean Power Plan

The most important thing to understand about the Clean Power Plan is that it does not directly regulate the behavior of power plants. Rather, it directs *States* to reduce the rate of carbon emissions in their power sector, in terms of tons of carbon emitted per megawatt-hour of power produced or in terms of the total amount of carbon emitted. Let me note that throughout this speech I will be focusing on the EPA's preferred option from the proposed rule, which would reduce emissions 30 percent from 2005 levels by 2030.

Under Section 111(d) of the Clean Air Act, the EPA sets a target for each State by identifying the "best system of emission reductions." This is based on analysis of what leading States and businesses across the country are *already doing* to reduce carbon pollution. In developing the proposed rule so, the EPA looked at measures that are commonly used, technically sound, affordable, and result in significant reductions. States are not being asked to do the impossible, nor rely on technology that does not yet exist. Instead, the EPA projects how much each State could reduce the carbon intensity of its power sector if it caught up to what the most efficient States and plants are already doing today, in 2014. Of course, if the regulation leads to the development of newer and cheaper ways of reducing emissions than we are undertaking today that would be even better.

More specifically, the EPA's draft standards take account of each State's present energy situation and what potential exists in each State to reduce power sector emissions by applying four approaches:

- improving energy efficiency at existing coal-fired power plants;
- increasing utilization of existing natural gas plants;
- adding new low-emission power sources like wind and nuclear; and
- increased energy efficiency.

These four approaches, or building blocks, form the basis of each State's targets.

Flexibility in the Clean Power Plan

These building blocks, however, do not determine the strategy that States, businesses or consumers must use to reduce their emissions. Instead States have considerable flexibility to develop a strategy that makes sense for their circumstances.

States can choose to work on their own or in coordination with other States to design policies that hit their target, potentially putting more or less emphasis on any particular building block than in the EPA's analysis. For instance, States can push to expand zero-emission energy generation sources like wind, solar, and nuclear, or focus on upgrading existing coal-fired power plants to reduce carbon emissions there. They can choose to assist low-income families in paying

the modest increases in electricity prices that may result, or they can aggressively pursue energy efficiency and weatherization programs that reduce demand and lower electricity bills for everyone.

Moreover, States also have considerable flexibility on the timing of these emissions reductions. Specifically, States are also allowed to back-load their emissions reductions during the ten-year implementation window between 2020 and 2030, as long as emissions averages over time stay in an acceptable range. Once the rule is finalized next year, States will have up to three years to formulate their plans and pass appropriate legislation to begin implementing the plan.

By allowing States to design their own systems to implement emissions reductions, the plan creates opportunities for businesses and consumers to find the most cost effective ways to reduce their emissions. The Plan is not command-and-control regulation. It is not based on the premise that the Federal government knows best. Instead it is in the tradition of recent environmental policies, like the Acid Rain Program and the NOx Budget Trading Program, that have succeeded in cutting pollution while embracing market-based solutions. Indeed, the Clean Power Plan might be the EPA's most flexible initiative ever.

What is the significance of all this flexibility? In some sense, most of the Clean Power Plan has not been written yet. That will happen over the next few years in States capitals around the country, from Augusta to Honolulu and everywhere in between. Citizens have the opportunity and responsibility to advocate for smart, market-based implementation plans at the State level, where the key implementation decisions will be made.

While the proposed rules do not mandate a specific approach or set up any kind of federal marketplace, some States may find that the most efficient way to achieve their required reductions is through market-based mechanisms like a cap-and-trade system where statewide carbon emissions are capped and a fixed number of pollution allowances are issued to firms. Such a system ensures that firms face the right incentives to reduce emissions, and simultaneously that emissions reductions find their way to the cheapest place. Under a market-based system like cap-and-trade, a plant whose most efficient way of reducing emissions would involve costly upgrades would have the option to buy permits instead to offset its pollution, while other plants able to sharply curb emissions at modest cost can do so and can get rewarded in the marketplace.

States may also explore other market-based alternatives like a tradable carbon emissions standard or the inclusion of a carbon emissions factor in electricity dispatching decisions, and those options are worthy of further study as well. And of course, States are free to explore any and all options—so if a State finds another solution better suited to its needs, it can pursue that instead.

What all of these solutions have in common is that they understand that both government and the private sector have a critical role to play. The private sector knows better how to innovate, invest and shift its practices to reduce emissions. The choices and innovation of consumers and businesses across the country are critical to any solution. But regulation is essential to make sure that these choices are taking into account the externality that they impose in the form of carbon emissions and air pollution.

Benefits of the Clean Power Plan

The estimated benefits of the Clean Power Plan are large. Much of those benefits come in the form of climate damages averted as we sharply decrease the amount of greenhouse gases emitted into the atmosphere. The EPA estimates that climate and weather disasters like storms and droughts cost Americans more than \$100 billion in 2012, and these costs are only projected to grow. To cite just one example, a report released by the Risky Business Project notes that between \$66 and \$106 billion worth of U.S. coastal property may be below sea level by 2050 if we remain on our current greenhouse gas emissions trajectory.

In its Regulatory Impact Analysis for the rule, the EPA estimates that yearly climate and health benefits from the reductions in the Clean Power Plan could range from \$55 billion to \$93 billion (in 2011 dollars).

The first element of this calculation uses the EPA's value for the social cost of carbon, which is an estimate of the future economic damage—in the form of ruined crops, coastal flooding, disaster relief, extra air conditioning bills, and much more—that can be attributed to each additional ton of carbon gas emitted into the atmosphere. This calculation indicates that we will be sparing ourselves and our descendants billions in climate change-related costs when we meet the emission reduction targets set out in this plan.

Some have questioned the decision to include international costs of climate change in our cost-benefit estimates. But we must keep in mind that our goal is to convince other countries to reciprocate with rules that will limit their own greenhouse gas emissions. And when other countries act we want them to account for the costs that their emissions impose on us, as well.

The tragedy of the commons is that individuals will always do too little for the common good if they focus narrowly on their own interests, and in the aggregate those decisions leave everybody worse off. Imagine if Brazil only accounted for its own costs when deciding how much to reduce emissions, if Germany only accounted for its own costs when deciding how much to reduce emissions, and if Thailand and South Africa and Canada and every other nation did as well. Then carbon emission levels would remain at an unsustainable level worldwide because everyone would be systemically undervaluing the gains from cutting emissions. The result would not just be greater harm to the globe, it would be greater harm to the United States itself. Setting an example for the world increase the United States' leverage in global negotiations—and results in a better outcome for Americans.

In addition to the progress we will make toward reducing greenhouse gas emissions and preventing climate disaster, the second element of the total benefits comes from the reductions in the amount of *other* pollutants being released into our communities. In the course of generating electricity, coal-fired power plants release not only carbon dioxide but also sulfur dioxide, nitrogen dioxide, and particulate matter into the air. All told, the changes induced by the Clean Power Plan will cut these pollutants over 25 percent by 2030. The EPA estimates that this will reduce asthma attacks, heart attacks, hospital admissions, and prevent about 5,000 premature deaths nationwide each year.

Finally, the Clean Power Plan will have benefits lasting far beyond 2030 as it helps the power sector chart a path toward a clean energy future. Firms will have newfound incentive to invest in infrastructure such as high-voltage transmission lines that support new forms of clean power generation like wind and solar. Investments in the power sector are so substantial and so long-lived that decisions made today will affect the course of American power generation for decades to come.

Costs of the Clean Power Plan

While the substantial benefits of the Clean Power Plan are clear, there is no question that we should also take into account any potential costs the plan would have. The flexibility I described is critical to keeping these costs low.

It is important to understand that to the degree there are any compliance costs they will not translate dollar-for-dollar into higher electricity bills for consumers, as energy efficiency programs and technological innovation would lead to reduced electricity demand. The EPA estimates that while there will be a small increase in electricity *prices*, final bills themselves will decline by 8 percent in 2030 as customers reduce their electricity usage and scale up investment in energy-efficiency.

These modest price effects, which can be offset by improvements in energy efficiency, and the fact that electricity costs account for only about 1 to 3 percent of total production costs in most manufacturing industries, should alleviate any concerns that the Clean Power Plan will reduce the competitiveness of the industrial sector.

Overall, the annual costs of this transition are estimated to range from \$7.3 to \$8.8 billion in today's dollars once the plan is fully implemented in 2030, or less than \$30 per person per year. These costs are small relative to the benefits of the plan—even the most conservative estimates of climate and health benefits—and are a small price to pay for dramatically cleaner air and a slowdown in harmful carbon pollution that has benefits more than six times as large as these costs.

The Urgency of Acting Now

Some have said that we should wait to develop the perfect plan to deal with carbon emissions instead of acting now. But I do not think we should delay in order to let the perfect become the enemy of the very good. The Council of Economic Advisers recently released a report entitled *The Cost of Delaying Action to Stem Climate Change*. We estimated that delaying plans to achieve a given climate change goal by just one decade increases the costs of achieving that same goal by 40 percent. That is because, if we delay action in achieving a fixed set of climate goals, then we have to incur greater upfront costs to make up for the years in which additional carbon pollution was released into the atmosphere. Meanwhile, we will have lost years of research in effective carbon-reducing technologies, and made bigger investments in older, carbon-intensive technologies.

Additionally, delay could result in a larger increase in global average surface temperatures—which itself would be costly. Our report notes that if delay led to stabilizing global temperatures at 3° Celsius above pre-industrial levels instead of 2° Celsius, global output would decline by nearly 1 percent. This is analogous to the United States losing approximately \$150 billion of economic output each year.

Moreover, delaying would not just affect U.S. emissions—it would also substantially reduce our leverage in the global arena, undermining our ability to secure emissions reductions from other countries that would benefit the United States and the world.

Some say that we should wait until we are sure that climate change is happening and have determined how costly it will be. First of all the basic premise of this argument is wrong—we know climate change is already happening and already imposing costs on communities across the United States. And while it is true that we are uncertain about the exact magnitude of the changes and the costs, this uncertainty is actually an argument for doing more and sooner as a form of insurance, not for doing less and later.

This is because carbon emissions and subsequent higher temperatures also increase our risk of hitting climatological “tipping points,” like the potential thawing of Arctic permafrost and the subsequent release of huge amounts of methane—a particularly potent greenhouse gas—which would accelerate global warming. The very worst climatological consequences include the possible melting of the Western Antarctic and Greenland ice sheets, large rises in sea levels, extinction events, and widespread disruption of food and water supplies that could spur a global refugee crisis.

Since the exact temperatures associated with this tipping points are unknown, continuing to emit greenhouse gases and drive up temperatures is an exceedingly risky proposition. The more we can do to reduce emissions now, the less likely we are to trigger irreversible climatic disasters. And because conventional models of the cost of carbon have difficulty incorporating all of these contingencies, the climate benefits of the Clean Power Plan may be substantially higher than even the EPA’s estimates suggest.

Conclusion

The ideal approach to climate change would be a market-based program that addresses greenhouse gas emissions from *all* sectors, including transportation, manufacturing, and agriculture. By spreading emissions reductions across sectors, we could take advantage of the lowest-hanging fruit—and ensure that we are not making relatively costly reductions in one sector when cheap reductions are available in another. In fact, the President has repeatedly asked Congress to create pass such a law, but so far Congress has not delivered. Given the imperative to act *now* to confront this problem, the Clean Power Plan is the best way forward.

This rule will not reverse global temperature increases all on its own, but the fact remains that the power sector is the biggest source of greenhouse gas emissions in the U.S. economy. The

Clean Power Plan is an important start that will deliver large climate and health benefits while being cost effective by maintaining maximum flexibility for States and businesses.

The EPA's Clean Power Plan is a strong proposal. But we are eager to make it even stronger and yesterday the EPA announced an extension of the comment period to ensure that the Administration benefits from the full range of ideas for improving it. After the EPA finalizes the proposal next June, the focus will turn to States, who will be developing implementation plans. This presents an opportunity to advocate for smart, market-based rules at the State level that will minimize compliance costs and reward versatile, innovative firms and consumers. In parallel, the Administration will continue to work to reduce other U.S. greenhouse gas emissions as we engage other countries to match these ambitious cuts to greenhouse gas emissions with cuts of their own.

If we fail, we will face an increasingly dire climate outlook and increased urgency to do something, anything, to fix the problem. But if we succeed, the Clean Power Plan will be remembered as a significant stepping stone on the path to a healthier climate and a twenty-first-century power sector.