



The White House's Climate Assessment Heats Up The Discussion About Nuclear Power

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Last week, the Obama Administration unveiled the enormous [Third National Climate Assessment](#), *Climate Change Impacts in the United States* (the “Assessment”). The Assessment has received some modest criticisms from libertarian think tank [Cato Institute](#), and others. And of course, [energy](#) interests across the spectrum—coal, gas, oil, biofuel, wind, solar, etc.—are puzzling over what the report means for the future of energy policy.

But I think there’s an energy sector that will be more affected than any of them—the nuclear power industry.

I’ll explain, but let me back up and tell you about the report first. This isn’t something that was cooked up by a couple of Obama politicians in the West Wing. The 800-plus-page Assessment is the product of a prodigious and significant scientific exercise. A 60-person Federal Advisory Committee of distinguished scientists and other experts oversaw its development; additionally, it underwent an intense peer and public review process.

The Assessment contained a genuine shocker: The impacts of climate change are occurring here and now, in every region of the country and in key sectors of the American economy.

Here are some examples of our current problems:

- We are seeing more instances of heavy precipitation than ever before.
- It is warmer everywhere.
- Extreme-heat days—those with 100-degree-plus high temps—are more frequent.
- There are more droughts in more places across the country.
- Sea level rise is causing America to lose some territory in coastal areas.
- It’s getting harder to grow food.
- There’s an increased risk of contamination to water supplies from higher seas, as well as more flooding and air pollution aggravated by higher atmospheric temperatures.

Most Americans—both people and [businesses](#)—are ready to do something about climate change. I have already discussed how the support [crosses party and geographical lines](#). It's likely that many will accept White House Science Advisor John Holdren's characterization of the Assessment, which he called the "loudest alarm bell to date" on the need for climate action change. Susan Hassol, the head scientist for the Assessment, wrote that she thinks "this report will be the turning point when people finally realize that this is about them."

So what do we do and what can we do now? Wind and solar power generation plants have made big strides, but they are not the immediate answer. First, they don't produce enough energy. And they can't ever be but a minor and incomplete answer anyway. They are, by nature's own constraints, an intermittent power source. (Don't just take my word on it, see for yourself: The sun goes down every day and sometimes the wind just doesn't blow.)

Enter the nation's nuclear generating fleet. Nuclear power has compelling advantages: 1) it's a zero-carbon power source; 2) it's extraordinary reliable, both in terms of the plants themselves and the supply of energy they can put on the grid; and 3) moreover, it's an economic engine of direct and indirect employment.

I've previously written about the White House [warming to nuclear power](#). Our existing nuclear fleet is the workhorse of zero-carbon electricity generation. Nukes generate about 20 percent of the electricity in the United States and 64 percent of all the carbon-free generation. Nuclear is the only carbon-free source of power that can run 24/7/365. The existing U.S. nuke fleet prevented 569 million metric tons of carbon dioxide emissions in 2012—the equivalent CO2 savings of pulling 110 million automobiles off the road. By allowing us to operate fewer coal plants, the nuke plants also prevent us from spilling millions of tons of sulphur dioxide and nitrogen oxide into the air.

Critics sometimes crow that nuke plants do have a carbon footprint if you consider the carbon released during their construction and so on. Well, on that "life-cycle" basis, their carbon emissions are still among the lowest of all electricity sources, at 17 tons per billion watts. Here in Pennsylvania, where I live, the nitrogen oxide emissions prevented by nuclear energy facilities in Pennsylvania equal what would be released in a year by 3.5 million passenger cars.

If you want proof of just how much carbon nuke plants save, consider the problems that Germany is having reducing its carbon footprint while shutting down nuke plants. For purely political reasons, Germany suddenly announced that nuclear energy was *persona non grata* in Deutschland. The result: carbon emissions there are rising quickly. And virtually overnight, Germany has gone from an electricity exporter to an electricity importer—with much of the power pouring in from nuke-friendly France. The French nuclear power sector, which has a stellar safety record, is happy to export power to the Germans.

It's hard to overstate how important energy reliability is when you're hunting around for new sources of electricity. Experts report that nuclear power maintains what they call a "capacity factor"—the measure of actual output to potential output—of 85 to 90 percent. (Some plants hit levels as high 95 percent.)

Without rock-solid reliability, the polar vortex of January 2014 would have led to more blackouts and deaths. During the cold snap, U.S. nukes, with weeks or months of solid fuel supply at hand, maintained a capacity factor of more than 95 percent. In the Northeast, nuclear supplied more electricity than natural gas plants did. Wind power production also dropped by around 9 GW between the 6th and 7th of January during the cold snap.

Here's another compelling factor: nuke plants are "firm fuel" plants, which means they have enough fuel on hand at all times to keep running for months. In other words, they are the Energizer Bunny of power plants. They are not susceptible like natural gas plants are to sudden fuel supply interruptions or an inability to start sometimes in cold weather. FERC is worried about this problem and convened a conference about it in April. During the height of last winter's polar vortex, plenty of natural gas plants couldn't answer the call of the grid because they couldn't get fuel, fuel was too expensive for them, or they couldn't start in the cold weather.

Politicians looking for an economic and jobs driver may be intrigued by the notion of uprates at existing nuclear plants or expanding the nuke fleet. The economic value of nuclear-powered electricity is about \$40 to \$50 billion. And those electrons produce 100,000 direct-employment jobs and the domestic procurement of goods and services worth about \$14 billion from 22,500 vendors. Each new nuke plant built creates 1,400 to 3,500 construction jobs and 400 to 700 permanent jobs. Along the way, all that activity generates local, state, and federal tax payments of more than \$8 billion.

Here in Pennsylvania, nukes command an annual payroll of about \$40 million, and contributions of \$470 million to local economies each year, according to the Nuclear Energy Institute. Pennsylvania's nuclear energy plants pay more than \$45 million in state and local taxes. Finally, more than \$1.8 billion of materials, services, and fuel for the nuclear energy industry are purchased annually from more than 4,150 Pennsylvania companies.

The rub on nuclear power is on the radioactive waste that the plants generate and the potential for a meltdown in extreme conditions. But there's good news: The newest nuclear plants are way safer than the very safe plants that the U.S. already has. And if the federal government would get off the political dime and do its job—and perform its legal obligation—to provide for waste disposal in the proven-safe Yucca Mountain repository, we would not have the waste issue.

So what's the bottom line at the intersection of the National Climate Assessment and nuclear power? The Assessment reinforces what some of the world's most distinguished climate scientists wrote in an [open letter](#) to the public last year: "[I]n the real world there is no credible path to climate stabilization that does not include a substantial role for nuclear power." The Assessment's call for action on climate change is "now" and we have an immediate operating solution. Finally, there is no economic "train wreck" by taking action on climate change now. In fact, preserving our existing nuclear fleet and even adding to it would strengthen an extraordinary reliable source of energy, keep the carbon portion of our fuel mix in balance, and create a ton of new jobs at a time when the economy could use them.