

The Impact of Fukushima on the US Nuclear Power Industry

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Good afternoon and thank you for having me.

Since its founding in 1969, the Union of Concerned Scientists (UCS) has worked to make nuclear power plants safer and more secure. We have also long sought to minimize the risk that nations and terrorists would acquire nuclear weapons materials from nuclear power facilities.

As the events unfolding in Japan have made starkly clear once again, nuclear power poses serious risks that are unique among the energy options being considered to reduce global warming emissions. The future risks of nuclear energy will depend in large part on whether governments, industry, and international bodies undertake a serious effort to address these risks before plunging headlong into a rapid expansion of nuclear energy worldwide.

The risks posed by climate change are so grave that we cannot afford to rule out nuclear power as a major contributor to address global warming. Prudence dictates that we develop as many options to reduce global warming emissions as possible, and that we take into account their impact on public health, safety, and security, the time required for large scale deployment, and their costs. We should begin by deploying those technologies that achieve the largest reductions most quickly and with the lowest costs and risk. Nuclear power does not meet these criteria today.

Any expansion of nuclear power must occur under effective regulations and an appropriate level of oversight while new research and development should focus on enhancing safety, security, and waste disposal. However, until long-standing problems regarding the safety and security of nuclear plants are fixed—whether due to accidents, acts of terrorism or acts of God— the potential for nuclear power to play a significant

role in addressing global warming will be held hostage both to the industry's worst performers and to our own worst nightmares.

So, how will the events in Japan affect the construction of new reactors in the United States? I'm not smart enough to know the answer to that, or stupid enough to make exact predictions; but it would be naïve to think that this ongoing catastrophe will have no impact on the nuclear industry in this country.

The first impact will be on existing reactors. A thorough assessment is needed to ensure that those reactors are being operated as safely and securely as possible, that existing NRC regulations and standards governing nuclear plant safety and security are fully enforced, and that any necessary improvements to NRC requirements are identified and implemented quickly.

The impact on new reactors is less clear. The nuclear renaissance in the US was in trouble long before last week's earthquake and tsunami. Spiraling construction cost estimates, declining energy demand, low natural gas costs and the failure to place a price on carbon already spelled trouble for the industry. Just a few days before the earthquake and tsunami in Japan, the CEO of the largest nuclear company in the country told the American Enterprise Institute that he would not invest in new reactors because they are uneconomic compared to other low carbon alternatives like energy efficiency, natural gas, and power uprates at existing reactors. He expects this to remain the case for the next decade, maybe two. I concur, although I would add cost-effective wind and other renewable energy technologies to his list.

In terms of new reactors, we need to hit the pause button until we've dealt with the problems with the current reactor fleet. The crisis underway at the Fukushima Daiichi nuclear plant has revealed serious nuclear safety shortcomings that have major implications for nuclear power plants in the United States and around the world.

Although the events are still unfolding in Japan, it is not too soon to begin to learn lessons from the evidence available so far. The Nuclear Regulatory Commission is initiating comprehensive internal reviews of its regulations and practices, but stringent external oversight will be required to ensure that these reviews effectively challenge prior assumptions that the Fukushima crisis has called into question, and that any weaknesses identified by the reviews are promptly corrected.

Just yesterday, Dr. Edwin Lyman gave testimony on behalf of UCS before the House Subcommittee on Oversight and Investigations during a hearing titled "The US government Response to the Nuclear Power Plant Incident in Japan." In his testimony,

Dr. Lyman made the following recommendations on steps that the NRC should take in the near term to reduce the risks to the nations existing reactor fleet:

- o The NRC should strengthen requirements to cope with prolonged losses of electric power (station blackouts) in order to prevent damage to reactor cores and spent fuel.

- o The NRC should require the accelerated transfer of spent fuel from densely packed wet pools to dry casks.

- o The NRC should strengthen requirements for management of severe events that cause damage to reactor cores and spent fuel, and ensure such plans are realistic and workable.

- o The NRC should revise emergency planning requirements in the vicinity of U.S. nuclear plants to ensure that all populations at risk from excessive radiation exposure will be protected.

These are our initial and most critical recommendations. I expect that more will be forthcoming.

The biggest lesson we can all draw from the unfolding disaster in Japan is that no matter how technologically advanced a society is – and Japan is certainly advanced – it is impossible to fully plan for every curve ball Mother Nature can throw, or to prevent catastrophic events from affecting a nation's critical infrastructure, including roads, bridges, power plants and telecommunications systems. In Japan these events also wiped out the capability of many first responders to respond to the catastrophe. I'm pretty sure they didn't plan for that. Any more than New Orleans planned for that to happen as Katrina was bearing down on it.

This does not mean, however, that we should not put in place all practical mechanisms to protect our citizens and environment from known hazards that could occur if nuclear reactors are not planned, built and operated in a safe and secure manner.

From a global warming perspective, we clearly need a profound transformation of the ways in which we generate and consume energy in this country and throughout the world. The urgency of this situation demands that we be willing to consider all possible options for coping with climate change. But in examining each option we must take into account its impact on public health, safety, and security, the time required for large scale deployment, and its costs. It should go without saying that expansion of nuclear power would also produce large amounts of radioactive waste that would pose a serious hazard as long as there remain no facilities for safe long-term storage and disposal, but I'll say it anyway.

Unfortunately, we have just been reminded that a large-scale expansion of nuclear power in the United States under existing conditions would be accompanied by an increased risk of catastrophic events—a risk not associated with any of the non-nuclear means for reducing global warming. You know what those risks are so I won't repeat them here today. Thanks to a 24/7 news cycle, we are watching one of these events unfold in real time with all of its attendant hazards.

I wouldn't want to be a nuclear industry CEO right now. They've just seen their highly depreciated, high load factor, low cost, low carbon assets turned into very large liabilities.

According to a just released analysis by UBS, Fukushima is worse for the nuclear industry than Chernobyl. In a 140 page report looking at the future of the global nuclear industry, UBS analysts say (and I quote):

“While the 1986 Chernobyl accident, at least to date, had a significantly greater environmental impact, we would argue that Fukushima raises even larger credibility issues for the nuclear industry than previous accidents.”

They say this for two reasons:

- Fukushima is happening in an advanced economy using American/Japanese reactor technology. It is not happening in a totalitarian state with substandard technology and no safety culture.
- The size and duration of the accident is unprecedented. Four reactors are facing significant damage and it has already lasted more than three weeks without engineers getting the situation under control.

The report predictably forecasts that safety regulations will be tightened, and that reactor life extensions will likely be legally limited with many plants forced to shut down in a bid to appease public concerns – the report names 30 plants the authors believe are particularly vulnerable.

Even more significantly – especially for investors in nuclear providers – UBS argues there could be an entire re-evaluation of the risk of nuclear companies, both by governments and insurers. This could mean not just higher operating costs for operators, but a greater chance that if the worst should happen, procedures will have been put in place to make sure there is no taxpayer bailout. Again from the report:

“If the government takes the risk, then it needs to take into account this risk when deciding future energy policy. But if liability will be wholly or partly with the operators, we think discount rates will likely need to be higher.”

In other words, investors will need to adjust to the reality of nuclear operators being significantly more risky than other utilities. Up until now, nuclear operators and investors have been living in a world where Price Anderson protects them from intolerable losses in the event of a catastrophic accident. Given that no one at this time can possibly put a price tag on the eventual cost of the Fukushima disaster, I can easily surmise that it will run into the many tens of billions of dollars, and that does not include the cost of replacing the power that was produced by the now disabled plants. Therefore, the current industry liability limits under Price Anderson can be expected to receive serious scrutiny in this country. I do not believe they will hold, although I will again not try to predict what the future will bring.

In summary, the UBS report states that the big winners from Fukushima will be gas first and foremost, followed by coal and renewables. The big loser, of course, will be nuclear power.

With every crisis comes opportunity. The crisis in Japan gives us the opportunity to ensure that nothing like this ever happens here. We can start by not saying that it can't happen here. The Russians came to Three Mile Island and said it couldn't happen there. The Japanese went to Chernobyl and said it couldn't happen there. Over the past month, I have heard US nuclear executives, politicians and industry supporters say it can't happen here. I wish I could say that, but I can't, and neither should they.

Thank you and I look forward to your questions.