

Nuclear's Comeback: Still No Energy Panacea

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Nuclear power is on the verge of a remarkable comeback. It's been three decades since an American utility ordered a nuclear plant, but 35 new reactors are now in the planning stage. The byzantine regulatory process that helped paralyze the industry for a generation has been streamlined. There hasn't been a serious nuclear accident in the U.S. since the Three Mile Island meltdown in 1979. And no-nukes politics has become a distant memory. It was a sign of the times when John McCain ridiculed Barack Obama for opposing nuclear energy--and the allegation wasn't even true. "There's only a very small minority in Congress that still opposes nuclear power," says Alex Flint, the top lobbyist at the Nuclear Energy Institute (NEI). "That's quite a change."

The most powerful change agents have been the surge in U.S. electricity demand--forecast to grow another 30% by 2030--and the threat of global warming. Atomic reactors produce no carbon emissions, so energy analysts, politicians and even some environmentalists have embraced them as a clean power source for a wired world, an alternative to fossil fuels that can generate electricity when the sun isn't shining and the wind isn't blowing. The specter of a carbon-pricing scheme to address climate change has transformed nuclear economics. Originally touted as "too cheap to meter," nuclear energy turned out to be extremely expensive, but advocates say it will look much cheaper once coal and gas plants have to pay for their emissions. And unlike clean coal and other speculative technologies, nuclear energy already provides 20% of our power. "We're sitting on a ham sandwich, starving to death," says Georgia Republican Senator Johnny Isakson.

But some little-noticed rain has fallen on the nuclear parade. It turns out that new plants would be not just extremely expensive but **spectacularly expensive**. The first detailed cost estimate, filed by Florida Power & Light (FPL) for a large plant off the Keys, came in at a shocking \$12 billion to \$18 billion. Progress Energy announced a \$17 billion plan for a similar Florida plant, tripling its estimate in just a year. "Completely mind-boggling," says Charlie Beck, who represents ratepayers for Florida's Office of Public Counsel. "A real wake-up call," says Dale Klein, President Bush's chairman of the Nuclear Regulatory Commission (NRC). "I'll admit, the costs are daunting," says Richard Myers, NEI's vice president for policy development.

The math gets ugly in a hurry. McCain called for 45 new plants by 2030; given the nuclear industry's **history of 250% cost overruns**, that could rise to well over \$1 trillion. Ratepayers would take the main hit, but taxpayers could be on the hook for billions in loan guarantees, tax breaks, insurance benefits and direct subsidies--not to mention the problem of storing radioactive waste, if Congress can ever figure out where to put it. And those 45 new plants would **barely replace** the existing plants scheduled for decommissioning before 2030.

This sticker shock has unnerved Wall Street. A Warren Buffett--owned company has scrapped plans for an Idaho nuclear plant; banks and bond-rating agencies are skeptical as well. In fact, renewables attracted \$71 billion globally in private capital during 2007 while nukes got zero. The reactors under construction around the world are all government-financed. "I have to keep explaining: France and China are not capitalist countries!" says Congressman Ed Markey, an antinuclear Massachusetts Democrat. "Nobody wants to put their own money into this so-called renaissance--just ours."

A nuclear renaissance still might make sense if it could save the planet. America's existing nuclear plants already prevent the release of nearly as much carbon as America's passenger cars actually release every year. But more plants simply can't reduce emissions quickly enough to address our climate crisis. **We need serious cuts within a decade**, and the first new plant won't come on line before 2016.

The nuclear renaissance, in truth, has yet to be born. No one has broken ground or made any irrevocable investment decisions. "There's been some excessive exuberance," the NRC's Klein says. Still, license applications are cascading into the commission. Bush's full-throated support for the industry has been echoed by Democrats as well as greener Republicans like Governors Charlie Crist of Florida and Arnold Schwarzenegger of California. "Nuclear is expensive, no doubt about it," says former EPA head Christine Todd Whitman, now a paid spokeswoman for the industry. "But we can't keep saying no to everything."

The nuclear industry has learned from the mistakes it made in its first go-round, when timelines doubled, costs exploded, and half its orders for new reactors were canceled. It ran at a **record 92% capacity last year, virtually trouble-free**. The not-in-my-backyard fear that was a factor in shuttering so many plants has faded; one industry poll found that new reactors are supported by most Americans, including four-fifths of those who live near one. And regulators have worked with the industry to standardize reactor designs, which should enhance safety margins--Klein jokes that France has **104 varieties of cheese but only one standard reactor**, while the U.S. has one cheese but 104 different reactors. The NRC is fast-tracking applications, combining construction and operating licenses into a single permit and taking other steps to, as Myers puts it, "strip the risk out of the regulatory process." Congress has even approved "risk insurance" to reimburse the industry for regulatory delays; that's in addition to the government-issued liability insurance it already enjoys. And the industry often has more clout at the state level; Florida has guaranteed utilities collect-as-you-go cost recovery for nuclear investments even if they never complete any reactors. "We have a very positive political and regulatory environment," says FPL president Armando Olivera, whose company spent \$2.3 million on six Washington lobbying firms in 2007. "We wouldn't be comfortable building new reactors if we didn't."

The rest of the case for nukes relies on the unattractive alternatives. Coal is filthy. Natural gas isn't exactly clean, and its price is volatile. Solar and wind are intermittent. Crist, who has blocked several coal plants for environmental reasons, explains his support for nukes in three words: "We need juice!" Industry officials argue that if you disregard capital costs, nuclear plants are the cheapest source of power.

But you can't disregard capital costs--they're out of control. **The world's only steelworks capable of forging containment vessels is in Japan**, and it has a three-year waiting list. The specialized workforce required for manufacturing reactors has atrophied in the U.S., along with the industrial base. Steel, cement and other commodity prices have stabilized, but the credit crunch has jacked up the cost of borrowing. FPL's application concedes that new reactors present "unique risks and uncertainties," with **every six-month delay adding as much as \$500 million in interest costs**. Meanwhile, radioactive waste languishes in temporary storage pools and casks at plants around the country. Energy maven Amory Lovins has calculated that, overall, new nuclear wattage would cost more than twice as much as coal or gas and nearly three times as much as wind--and that calculation was made before nuclear-construction costs exploded.

So how should we produce our juice? The answer may sound a bit unsatisfying: more wind, less coal but mostly the same electricity sources we're using, until something better comes along. The key will be reducing demand through energy efficiency and conservation. Most efficiency improvements have been priced at 1¢ to 3¢ per kilowatt-hour, while new nuclear energy is on track to cost 15¢ to 20¢ per kilowatt-hour. And no nuclear plant has ever been completed on budget.

Now that's an unsatisfying answer--especially since we'll be paying the bills.

