

Clearing the path toward a nuclear renaissance

By Richard K. Lester | October 21, 2008

THIS YEAR'S presidential debates featured the unfamiliar spectacle of America's two leading politicians competing with each other to declare their support for nuclear power. How times have changed.

The so-called nuclear renaissance reflects one underappreciated reality and one misconception.

The reality is that the world has little chance of avoiding the worst risks of global climate change unless we build many more nuclear power plants. Nuclear power has a unique place in the global climate-change debate. It is the only carbon-free energy source that is already contributing on a large scale and that is also expandable with few inherent limits.

The misconception is that nuclear power would reduce our dependence on oil imports. In fact, not even a major nuclear expansion could help solve that problem for decades.

If the nuclear renaissance is actually to happen, several formidable obstacles must be overcome. One of the biggest is nuclear waste. Although public opinion has been shifting in favor of nuclear power, the failure to demonstrate high-level waste disposal remains a major barrier to public acceptance.

Federal regulators will spend the next four years trying to determine whether the proposed waste repository at Yucca Mountain can satisfy the stringent regulatory standards that have been set for it. Challenging technical issues make the outcome far from a sure thing. The intense political opposition in Nevada only adds to the uncertainty.

The next president should order a top-to-bottom review of our nation's nuclear-waste management strategy.

The licensing review at Yucca Mountain should be allowed to run its course. Much useful knowledge will be gained, regardless of the outcome.

But we must also do other things. First, we must acknowledge that spent nuclear fuel can be stored safely in dry casks for many decades, and transfer the fuel from most reactor sites to one or two central locations for storage. Nothing further would need to be done to the fuel on either safety or economic grounds until much later in the century. At that point we might decide to dispose of it directly, or we might choose to recover the unused uranium and plutonium it contains.

In the meantime, we should abandon the Bush administration's ill-advised rush to full-scale fuel reprocessing and replace it with a modest-scale research program to develop new recycling technologies.

On the other hand, it is long past time for a broad-based, high-quality scientific and engineering program to develop new approaches to nuclear-waste disposal. The technology in use today was frozen 25 years ago. But since then, tremendous advances in subsurface science and technology have been made - many by the oil and gas industry. Some are directly relevant to the waste-disposal problem.

In an era of global terror, much more must be done to make the world safe for activities like nuclear power. But more should also be done to make nuclear power safe for the world, and the United States should lead the way. Instead of following the stale examples of Britain, France, and Japan - whose decisions to reprocess, made more than 30 years ago, have brought mixed results - the next US administration should recognize a simple fact: Achieving the deep reductions in greenhouse gas emissions needed to avoid the worst effects of global climate change is likely to require nuclear expansion not only in North America, Europe and Japan, but also in many other countries, big and small, and at various stages of economic and political development.

Making nuclear power safe for this world of diversity means devising the safest, simplest, most economically competitive version of the open nuclear fuel cycle. The United States should be leading in the development of new spent fuel-disposal technologies. It should also be developing smaller, less expensive power plants relying on modular construction techniques, as well as innovative reactors and fuel cycles designed for proliferation resistance and direct disposal. Let's get on with it.

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