

Virginia Viewpoint

October 2001 • No. 2001-9

The Case for Nuclear Power

By Mark Brandly, Ph.D.

Summary

Nuclear power is a safe, environmentally friendly, economically viable source of energy. The government should eliminate the red tape and political maneuvering that is blocking the development of nuclear power.

Main text word count: 816

One uranium fuel pellet, 0.3-inch diameter by 0.5-inch long, produces the equivalent energy of 17,000 cubic feet of natural gas, 1,780 pounds of coal, or 149 gallons of oil.

There are many lessons to be gleaned from the recent acts of terrorism in New York and Washington. In the coming days one expects policy adjustments to be submitted on topics ranging from human intelligence gathering, to immigration policy, to how we prevent and/or react to future acts of domestic terror. One major concern that must be answered is America's need to dramatically reduce or eliminate our dependence on foreign energy suppliers.

Our current energy situation is easily explained: government intervention in energy markets is limiting production and driving up prices. Fortunately, the energy plan already submitted by President Bush addresses this issue. He understands the need to increase domestic energy production. Part of Bush's energy plan is to allow the development of power plants. The administration has not set a specific goal, but has agreed that some of the needed plants should be nuclear. This is a step in the right direction.

The nuclear industry has been a favorite target of politicians for decades. No new construction permits have been issued since 1979. The last year that a nuclear plant came online was 1996 and five nuclear plants have shut down since then. Dozens of unfinished plants have been abandoned due to political roadblocks. Still, the U.S. currently has 104 nuclear plants meeting 20% of our electrical needs.

Misunderstandings about nuclear energy have made the industry a political target. A nuclear plant functions much the same as other electricity producing plants. Heat is used to produce steam that then powers turbines. The difference in a nuclear plant is that the heat is produced by the fission of uranium. When fissionable uranium is bombarded with neutrons, the uranium nucleus splits in two, releasing a large amount of heat.

The main benefit of generating power in this method is that fissionable uranium is abundant and a very small amount of uranium generates a tremendous amount of energy. One uranium fuel pellet, 0.3-inch diameter by 0.5-inch long, produces the equivalent energy of 17,000 cubic feet of natural gas, 1,780 pounds of coal, or 149 gallons of oil. Since relatively little fuel is needed to power nuclear plants, nuclear energy is safer than the other alternatives for generating large amounts of electricity. The waste that is generated in a nuclear plant is contained within the plant or eventually

removed for long-term storage. With fossil fuel plants, tons of pollutants are emitted into the atmosphere. Nuclear plants release no gaseous pollutants and the amount of radioactivity is miniscule. Those living near a nuclear plant face less radioactivity per capita than is encountered in many normal daily activities.

Spent fuel from the fission process presently needs to be stored in shielded vaults at nuclear plants. A proposed central storage site in Nevada has been blocked by political machinations.

Early nuclear scientists predicted tremendous benefits of nuclear power due to the possibility of recycling fissionable waste products into new fuel. Recycling nuclear fuel, as France does, increases the power generating potential of the industry and nearly eliminates the waste problem. According to the Nuclear Energy Institute, only 3% of spent fuel is actual fission byproduct waste. Most of the spent fuel, 96%, is unused uranium, which can be recycled to generate more electricity. In 1977, President Carter banned the recycling of commercial reactor fuel, crippling the nuclear power industry. Lifting this ban would increase efficiency in the industry and alleviate the waste storage problem. In short, politics, not science, is preventing the industry from responsibly handling spent nuclear fuel.

Nuclear power is safer than alternative methods of electricity generation. The famous Three Mile Island accident is often cited as proof of the danger of nuclear power. In that incident, the reactor core was compromised, but the safety devices worked as they were designed to. The radiation was safely contained and not one person was injured with the possible exception of Dr. Edward Teller, a physicist, who worked himself into a heart attack refuting the anti-nuclear propaganda that took place after the accident.

We should also acknowledge the Chernobyl accident in the Ukraine. The Chernobyl plant explosion released radiation into the surrounding area. Such an explosion would have been contained in a U.S. plant. The Chernobyl plant lacked a fundamental safety structure found in western plants, a steel-reinforced concrete shell that completely encapsulates the nuclear reactor vessel. The Chernobyl tragedy exhibits the failure of government planners, not an inherent danger of nuclear power.

On the economic side, while costs are competitive in existing nuclear plants, government regulations, political delays, and public relations problems increase those costs substantially, making new plants less economically feasible.

Nuclear energy is an abundant, affordable, safe, and clean energy alternative. As the demand for energy increases in the U.S., we must cut regulatory burdens and permit the recycling of spent fuel thereby enabling market forces to determine the contribution that nuclear power will make to our overall energy supply.

#####

(Mark Brandly teaches economics at Patrick Henry College and is a member of the Board of Scholars of the Virginia Institute of Public Policy, an education and research organization headquartered in Potomac Falls, Virginia. He can be reached at mlbrandly@phc.edu. **Permission to reprint in whole or in part is hereby granted, provided the author and his affiliations are cited.**)

Recycling nuclear fuel, as France does, increases the power generating potential of the industry and nearly eliminates the waste problem. According to the Nuclear Energy Institute, only 3% of spent fuel is actual fission byproduct waste. Most of the spent fuel, 96%, is unused uranium, which can be recycled to generate more electricity.

Attention Editors and Producers

Virginia Viewpoint commentaries are provided for reprint in newspapers and other publications. Authors are available for print or broadcast interviews. Electronic text is available at www.VirginiaInstitute.org or on disk. Please contact:

John Taylor
Virginia Institute for Public Policy
20461 Tappahannock Place
Potomac Falls, Virginia
20165-4791

Phone: (703) 421-8635
Fax: (703) 421-8631

www.VirginiaInstitute.org
JTaylor@VirginiaInstitute.org

**Virginia
Institute**
for Public Policy