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A Letter in Support of the Nuclear Energy Research Initiative Improvement Act to Senator Scott Brown

Date: March 4, 2010
To: Senator Scott Brown
From: Erin Mellett and Kimmy White
Student Leader for Proposal: Erin Mellett

The Honorable Scott Brown
United States Senate
Washington, D.C. 20510

Dear Senator Brown,

I am writing to you as a constituent to urge you to support the Nuclear Energy Research Initiative Improvement Act, which would authorize $250 million over five years to support the emergence of small and modular nuclear reactors. These small modular reactors, such as those being designed by the Babcock and Wilcox Company,[1] provide an economical avenue for alternative energy that could bring power to people living in remote regions, protect the environment, and ease concerns about lethal nuclear material falling into the wrong hands.

In a world where globalization has made economic stability and trade essential to a nation's sustainability, an over-reliance on any one fuel source is economically detrimental. In the past five years, more than 90 percent of all new electric generating capacity has been fueled by natural gas (Easton, 2010, p. 224). Although natural gas has many desirable characteristics and should be kept a part of our fuel resources, such an over-reliance on any one fuel source leaves consumers vulnerable to price spikes and supply disruptions. An alternative and economically-promising source of energy resides in the development of small, modular nuclear reactors. These reactors are designed so that entire nuclear plants can be factory-built and mass-produced, resulting in significantly lowered production costs. Likewise, the plants can be built on site, providing power locally to meet nearby energy demands (Modular Nuclear Reactors, 2009).

Nations around the world are developing at faster rates each year, and the supplies of fossil fuels will eventually be exhausted (Bodansky, 2004, p. 2). As the basic tenets of conflict theory state, individual groups are destined to fight over scarce resources, and the dominant groups will employ strategies to protect the social arrangements that give them an advantage over subordinate groups (Ferrante, 2008, p. 32). Thus, the high concentration of natural resources (like oil) in certain regions of the world has led to the development of natural resource monopolies. Conflict over these resources has subsequently perpetuated tensions between nations and has led to numerous wars and unnecessary bloodshed in recent years. The development of modular nuclear power plants would make access to power more widely available and would significantly reduce the need for fossil fuels, subsequently diminishing conflict worldwide.

[1] For more information on the Babcock & Wilcox Company's mPower reactor design see http://www.babcock.com/products/modular_nuclear/

The expansion of nuclear power plants would also greatly benefit environmental efforts. The largest source of carbon dioxide emissions comes from the combustion of fossil fuels, and the process of generating electricity is the single largest source of carbon dioxide emissions in the United States—about 41 percent of all carbon dioxide emissions (EPA, 2009). Unless these carbon dioxide emissions can be captured or sequestered, the carbon dioxide levels in our atmosphere will continue to increase and global warming will continue to destroy the environment. Nuclear power generates no carbon dioxide while in operation, and nuclear plants provide about 20% of our electrical supply without any greenhouse gas emissions. Thus, expanding the nuclear industry through the development of modular nuclear reactor power plants would cap greenhouse gas emissions from electrical generation.

Even with increasing public support, there are still a number of obstacles that need to be overcome before nuclear energy technology can be expanded in our country. Although the manifest function of nuclear technology—the production of energy—is seemingly benign, the latent functions (the unintended effects that part of a society has on order and stability) have raised concerns among the American public (Ferrante, 2008, p. 29).

There has been increased concern lately regarding the misuse of nuclear power. There have been fears, especially with regards to Iran's nuclear energy programs, that nuclear material is being misused to create nuclear weaponry. An advantage of small modular reactors is that they can be filled with nuclear material before being transported to their customers. Then, when the nuclear fuel is spent in an estimated 10 to 20 years, the reactors can be shipped back for refueling. (Modular Nuclear Reactors, 2009). Therefore, this system insures that nuclear material is used solely for the for the purpose of creating energy.

Nuclear catastrophes like Chernobyl and Three Mile Island have created a powerful negative stigma that now surrounds nuclear technology. But, both of these incidents were the result of human error, not faulty science. The disaster at Chernobyl involved an unsafe reactor design that used solid graphite as a means of slowing neutrons. Similarly, the Three Mile Island accident in the United States—although causing a lot of fear—was caused largely by human error, and the numerous safety and containment systems at the sight prevented a serious release of radioactivity (Cipiti, 2007, p. 103). It is important to recognize that all of our most important energy sources have risks associated with them. Coal mining accidents and gas explosions are more common occurrences than nuclear explosions. In fact, based on historical data, nuclear energy is the safest among all of these fuel sources. In recent years, nuclear power has experienced dramatic improvements in reliability, safety, productivity, and management of nuclear plants. For commercial reactors in the non-Soviet world, the safety record is phenomenal. There has been no accident, including the Three Mile Island accident, that has caused the death of any nuclear plant worker from radiation exposures or that has exposed any member of the general public to a substantial radiation dose (Cipiti, 2007, p. 103).

There have also been considerable concerns about the treatment of nuclear waste. Currently, when used fuel rods are removed from the reactor, they are stored underwater, where the water absorbs and dissipates any residual heat. After approximately five years in underwater storage, the fuel rods can be moved for reprocessing or for long term storage. The United States does not practice reprocessing. Instead, the government proposed to create a deep geological repository storage facility for nuclear waste in the Nevada Test Site at Yucca Mountain. The idea was approved under the Presidency of George W. Bush, but in 2009 the Obama Administration stated

that the site is not longer an option and proposed to eliminate all funding in the 2009 United States budget (U.S. Department of Energy). The design of modular nuclear reactors provides a solution to this issue of nuclear waste storage. The reactors will be housed in containment structures big enough to store all of the waste generated by the plant during its 60 year life span, eliminating the need for a separate storage facility. Thus, the plants can store their own waste while they wait for the government to provide a permanent storage facility or to develop reprocessing technologies (Modular Nuclear Reactors, 2009). Such reprocessing technologies would allow nuclear waste to be recycled and used to produce even more power (McCarthy, 1995).

Overall, the benefits of supporting the Nuclear Energy Research Initiative Improvement Act are numerous and I would appreciate if you let me know of your action in this matter. Thank you for your time.

Sincerely,

Erin Mellett
Kimmy White

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