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Bush Administration Advocates for Clean, Affordable Nuclear Energy

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The Bush Administration deserves praise for voicing support for nuclear power in recent weeks at major international meetings. President Bush recently spoke of the value of nuclear energy at the Asian Pacific Economic Council forum. Shortly after, Secretary of Energy Samuel Bodman delivered pro-nuclear remarks at the International Atomic Energy Agency General Conference in Austria. Such statements are vital as nations continue to grapple with transforming their energy profiles to better reflect economic, security, and environmental concerns while also striving to meet energy demand, which is projected to skyrocket in the coming years.

The United States government predicts that domestic demand for electricity will increase by 40 percent over the next 25 years.¹ This general increase must be met in an economically rational and environmentally friendly way that does not increase America's exposure to foreign vulnerabilities. Nuclear power can help do exactly that.

Affordability. The price of electricity produced by nuclear power plants is both stable and affordable. Although the price of uranium has increased in recent years,² the monthly cost of producing electricity from uranium-based fuel remains slightly less than coal and substantially less than natural gas or oil.³ Electricity produced by nuclear energy is minimally sensitive to uranium price swings, because uranium accounts for only 5 to 13 percent of operating costs for nuclear power plants.⁴ However, the increase in uranium price does drive industry to invest in developing additional natural

uranium supplies. This is beneficial because it lowers the demand for secondary uranium supplies, which include national stockpiles and down-blended uranium (obtained by turning highly enriched, weapons-grade uranium into low-enriched, power plant uranium). These supplies can then be set aside for other activities.

The wider nuclear industry, like the uranium fuel market, is currently in a transition period as nuclear power continues its reemergence. One result is the spike in the value of some nuclear goods and services. Demand has outstripped the ability of a largely atrophied nuclear supplier base to respond. While some investments are occurring, the nuclear industry must ultimately respond to ensure adequate capability. Nonetheless, prices for nuclear-produced electricity remain stable, and all indications are that market forces will ensure that uranium supplies and other nuclear services will meet demand.

These costs, however, are only associated with the current fleet of power plants. The real question that remains about the long-term affordability of nuclear power is the cost of new construction. Industry leaders have assured the public that

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advances in technology, streamlined regulation, and applying lessons learned from the past will yield affordable nuclear power plants.

Environmental Considerations. Environmental controls present perhaps the greatest regulatory hurdle facing future energy supplies. Ironically, the push for restrictions on CO₂ presents an opportunity for nuclear power.

Carbon dioxide emissions are the latest anxiety driving environmental activists. Their sophisticated public relations campaign has convinced much of the world that CO₂ and other naturally occurring gases, such as methane, cause global warming and must therefore be drastically reduced. The result is a plethora of federal and international legislation under consideration to restrict their release. States are also responding to CO₂ fears. In addition to numerous multi-state regional commitments, California has enacted CO₂ caps; seven other states are working on similar mandates. Twenty other states are pursuing voluntary restrictions.⁵ The likelihood is that some sort of CO₂ caps will be put in place.

To avoid drastic consequences for the economy and for Americans' lifestyles, an affordable energy source must be leveraged that can meet their CO₂ objectives. Because nuclear energy emits no atmospheric pollutants, it is the best way to meet these objectives. Ohio Governor Ted Strickland (D)

recently acknowledged the role for nuclear power by proposing that it be included as part of its renewable energy portfolio.⁶

Nuclear power is often maligned for its association with "nuclear waste." This reputation is unfounded. In reality, nuclear energy is extremely friendly to the environment because its byproducts remain contained. Much of the byproduct, unlike that of other power sources, is manageable and can be harnessed for future use.

While the anti-power environmentalists like to suggest that wind, solar, biomass, and conservation are the answers to meeting future energy demands, these sources are not as environmentally friendly as they are often portrayed. Each option, even if it were affordable and capable (which is questionable at best), would require the development of huge swaths of land to accommodate production. In addition to the unused cornfields of the Midwest, using wind, solar, and biomass to meet future energy demand would devour rainforests, mountain tops, and shorelines. According to a 1996 Nuclear Regulatory Commission document, producing 1000 MW (electricity) would require up to 150,000 acres using wind and 14,000 acres using solar, as opposed to 500–1000 acres using nuclear.⁷ Brazil's reliance on biofuels is already leading to fears of deforestation of the Amazon and other biodiverse regions.⁸ However, it is worth noting

1. U.S. Department of Energy, Energy Information Agency, *Annual Energy Outlook 2007 with Projections to 2030*, February 2007, p. 82.
2. U.S. Department of Energy, Energy Information Agency, *Uranium Marketing Annual Report*, Table S1b, "Weighted-Average Price of Uranium purchased by Owners and Operators of U.S. Civilian Nuclear Power Reactors, 1994–2006," at www.eia.doe.gov/cneaf/nuclear/umar/summarytable1.html (September 19, 2007).
3. "Uranium Fuel Supply Adequate to Meet Present and Future Nuclear Energy Demand," *Nuclear Energy Institute Policy Brief*, January 2007, p. 3.
4. Estimates vary depending on source.
5. The U.S. Environmental Protection Agency, "State Targets and Caps," at www.epa.gov/climatechange/wycd/stateandlocalgov/state_target_cap.html (September 18, 2007).
6. Tom Henry, "Strickland's Energy Plan Receives a Warm Welcome," *The Toledo Blade*, September 18, 2007, at <http://toledoblade.com/apps/pbcs.dll/article?Date=20070918&Category=BUSINESS01&ArtNo=709180339&SectionCat=BUSINESS09&Template=printart> (September 19, 2007).
7. U.S. Nuclear Regulatory Commission, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*, Division of Regulatory Applications, (NUREG-1437 Vol. 1), May 1996. Other sources estimate the acreage required for wind power can be substantially less (but far more than other sources) under optimal conditions.
8. Kelly Hearn, "Ethanol Production Could be Eco-Disaster, Brazil's Critics Say," *National Geographic News*, February 8, 2007, at <http://news.nationalgeographic.com/news/pf/35586109.html> (September 18, 2007).

that although substantial terrain is required, activities such as farming can coexist with wind turbines.

Foreign Dependence. Decreasing American dependence on foreign energy has been at the heart of the energy debate in recent years. However, dependence on foreign sources of energy, per se, is not the problem. The problem is that the United States has created economic and strategic vulnerabilities by exposing itself to over-dependence on unstable foreign energy sources. Expanding nuclear power in the United States can help reduce this vulnerability.

Although America's current energy dependence is largely a function of the petroleum-based transportation sector, trends indicate that the larger energy sector is following suit. Most new power plants brought online in recent years have been gas-fired. While the United States is not currently dependent on natural gas imports, greater mobility of natural gas in liquid form (LNG) makes importing this resource in much higher quantities increasingly likely. Indeed, America's imports of LNG have increased approximately five-fold over the past decade.⁹ This

trend will likely accelerate, as most power plants now being planned will be gas-fired as well.

While this should not deter the United States from developing foreign sources of liquid natural gas and the domestic infrastructure to support those imports, Americans should be alert to the potential problems that these additional imports could cause. Natural gas comes from many of the same regions where oil is found, and public opposition to placing LNG terminals near population centers has made infrastructure development difficult. The potential result of greater reliance on natural gas will be an expansion of America's economic and strategic vulnerabilities.

Conclusion. The President is right to continue to promote the important role for nuclear energy in meeting future energy demand. While nuclear power may not be an energy panacea, it has the potential to alleviate many future concerns.

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9. U.S. Department of Energy, Energy Information Agency, *U.S. Natural Gas Liquefied Natural Gas Imports*, September 7, 2007 at <http://tonto.eia.doe.gov/dnav/ng/hist/n9103us2m.htm> (September 18, 2007).