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#### Advantage one is Yucca Mountain

#### Only an unconditional federal commitment sends the signal necessary to revitalize interest in nuclear engineering

Unistar, 10

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The decades-long hiatus in construction of new nuclear energy facilities has contributed to this workforce decline, of course. As the marketplace became less interested in nuclear energy, fewer students entered the discipline, reducing enrollment and forcing the closure of university and skills-based programs. **Reversing this trend will require building confidence among individuals in the target demographic that the nuclear renaissance is real and long term.** Washington Must take a stand The nuclear energy industry can only go so far in making critical workforce investments **without a clear signal from the Federal government**. Spurred by both industry and political considerations, President Obama and Secretary of Energy Steven Chu have begun the task of promoting green and high-tech jobs in the U.S. In August 2008, while still the director of the Lawrence Berkeley National Laboratory, Dr. Chu and other National Laboratory Directors signed a statement calling for a federal commitment. “For example, the government should establish and fund a nuclear energy workforce development program at universities and colleges to meet the expected [workforce] need.” 11 As the American Nuclear Society stated, “America’s university-based [nuclear science and engineering] programs cannot continue to be leaders in the field without an active [NRC] university program.” Both the total number of nuclear engineering programs and the enrollment in those programs has fallen precipitously since the 1980s. 12 the tiMe is noW Increasing the use of nuclear energy—building new facilities and expanding or relicensing existing ones—will maintain or create tens of thousands of high-paying jobs for American workers. But two key ingredients for a true nuclear energy renaissance are missing. First, the federal government **must demonstrate a long term commitment to a resurgent nuclear energy industry. This means** expanding the NRC university program, funding and issuing loan guarantees, and other **concrete actions.** If we want people to stake their education and career choices on nuclear expansion, **they deserve a clear signal that the government supports the industry** with **more than just words**. Second, companies must commit to a continued investment in their own workforces, through research to understand the laborsupply environment, through training, and through partnerships with organized labor. Ultimately, the government and industry must act together to both provide career opportunities and also ensure that a trained workforce will be available to fill the demand.

#### New US nuclear power demand causes nuclear expertise revival

APS 8

APS (American Physical Society), Report from the APS Panel on Public Affairs Committee on Energy and Environment, June 2008, Readiness of the U.S. Nuclear Workforce for 21st Century Challenges, http://www.aps.org/policy/reports/popa-reports/upload/Nuclear-Readiness-Report-FINAL-2.pdf

The 21st century has brought a growing realization that it is time to reexamine the adequacy of the U.S. nuclear workforce and its ability to deal with many old and new challenges our nation faces. This report draws attention to critical shortages in the U.S. nuclear workforce and to problems in maintaining relevant educational modalities and facilities for training new people. This workforce comprises nuclear engineers, nuclear chemists, radiochemists, health physicists, nuclear physicists, nuclear technicians, and those from related disciplines. As a group they play critical roles in the nation’s nuclear power industry, in its nuclear weapons complex, in its defense against nuclear and other forms of terrorism, and in several aspects of healthcare, industrial processing, and occupational health and safety. Each of these areas presents significantly more dramatic challenges than it did not very many years ago. Each is an important aspect of our national security.

Nuclear Power: Past and Present

Workforce shortages in the arena of commercial nuclear power, and the problem of maintaining modernized training facilities, mainly stem from the 30-year stasis in U.S. demand for new civilian nuclear power plants1. The number of operating civilian nuclear reactors in the U.S. has remained at about 100 during this time. Thus, U.S. vendors have been forced to look abroad for sales. Some have either ceased construction of new reactors entirely or else significantly scaled back business in this area. Their continuing, largely static, nuclear engineering workforce needs have been met through a combination of hiring those trained in university nuclear engineering programs and retraining others whose original expertise was in some other field (usually mechanical engineering). Retirees from the nuclear Navy also have played an important role.

A natural result of this stasis was for many years a greatly reduced interest among undergraduates in nuclear science and engineering programs2. In turn, this put great pressure on U.S. universities to scale back in these areas. Recently, however, the Federal government, through the Department of Energy (DOE), dramatically increased funding for these educational efforts. This played a major role in increasing undergraduate student enrollments in nuclear engineering from a low point of 480 in 1999 to 1,933 in 2007. Declaring the problem to be solved, DOE called for the termination of its university nuclear science and engineering programs for FY 2007. Congress in turn provided reduced funding for FY 2007 and transferred all the programs except reactor fuel services to the Nuclear Regulatory Commission (NRC) for FY 2008. These “feast or famine” gyrations have led to significant instabilities: the number of university nuclear engineering departments has decreased from 66 in the early 1980s to 30 today, and the number of university reactors has dwindled from 63 to 25 during essentially the same period.

#### Revitalized nuclear expertise vital to stockpile stewardship, nuclear forensics, and revolutions in disease containment

Mtingwa, 9

(Chair of the POPA study on the Readiness of the U.S. Nuclear Workforce for 21st Century Challenges. He is an accelerator physicist and Senior Lecturer at MIT. “Readiness of the U.S. Nuclear Workforce for 21st Century Challenges,” January, http://www.aps.org/units/fps/newsletters/200901/mtingwa.cfm)

On another front, the tragedy of September 11, 2001, has brought an intense focus on the issue of national preparedness against terrorism. For emergencies involving a terrorist action or an accident at a nuclear reactor, experts must be ready to respond. Thus it is important to attend to the nuclear workforce needs of the Department of Homeland Security, the Department of Defense, the NRC, and specialized areas of the Department of Energy. An important example of the latter is the Nuclear Emergency Support Team from DOE’s National Nuclear Security Administration that travels to the site of a suspected nuclear or radiological weapon to mitigate the situation. Thus, the nation will need to expand its nuclear workforce to initiate new efforts in nuclear forensics and other parts of the Homeland Security portfolio, and to replace many retiring members of the weapons workforce.

For many years, funding for U.S. university nuclear science and engineering research and education has been heavily dependent upon a single source: previously DOE and now the NRC. Therefore, it is no accident that the vitality of the nation’s university nuclear science and engineering education and infrastructure program closely tracked funding support provided by DOE over the last 15 years. As shown in Fig. 1, as DOE’s funding increased in the decade 1997 through 2007, undergraduate student enrollment in nuclear engineering increased – from a low of 480 students in 1999 to a high of 1,933 in 2007. For nuclear engineering students at minority-serving institutions, DOE support created new opportunities. While other factors also contributed to the dramatic increase in undergraduate enrollments, university administrators indicate that increases in Federal funding were indeed an important factor. In the aftermath of the accidents at Three Mile Island in 1979 and Chernobyl in 1986, DOE support for nuclear science and engineering education declined precipitously as industry construction of new plants ceased and student interest and career opportunities declined. In 1997, the President’s Committee of Advisors on Science and Technology issued a report that urged President Clinton to reinvest in university nuclear science and engineering research and education . PCAST also urged him to establish the Nuclear Energy Research Advisory Committee to provide advice to DOE on this reinvestment. In the mid-1990s, the Clinton Administration recognized the potential for a resurgence in nuclear technology, and constituted NERAC in 1998 to advise DOE as it began reinvesting both funds and management attention to rebuilding the educational infrastructure for nuclear science and engineering. This support was implemented by creating a suite of eleven targeted programs, among which perhaps the most influential was the Innovations in Nuclear Infrastructure and Education (INIE) program, which encouraged the development of strategic consortia among universities, DOE national laboratories, and industry.

When DOE released its FY2007 budget request, it announced that it had completed its mission in the area of nuclear science and engineering education and made plans to terminate the program. DOE proposed essentially zero funding for nuclear science and engineering education for both FY2007 and FY2008. This signaled a significant reversal of fortune not seen since the early 1990s. DOE proposed to return to the practice of those years by providing only basic fuel services for university research reactors under a new infrastructure program. In FY2007, Congress rejected DOE’s proposal to terminate the program and instead provided $16.5 million – far less than the $27 million the program received in FY2006. In FY2008, Congress again rejected ending the program and allocated $17.9 million in the FY2008 Consolidated Appropriations Act. Of this amount, $2.9 million remained at DOE for university reactor fuel services, and Congress transferred to the NRC $15 million for the rest of the programs. While these funds would defer to some extent the erosion of nuclear science and engineering education in the U.S., they are not sufficient to maintain vital elements of the nation’s programs, particularly the highly successful INIE program. It was last funded in FY2006. As for nuclear chemistry and radiochemistry, these are two fields that overlap in many ways. Simply put, radiochemistry is the study of radioactive elements using chemical techniques, focusing on their radioactive characteristics. Nuclear chemistry is the study of the fundamental properties of nuclei, both radioactive and non-radioactive, using chemical techniques. It is quite close to the field of nuclear physics.

There has been a continuing dramatic decrease in the number of Ph.D.s earned annually in nuclear chemistry, as shown in Fig. 2. It reflects the fact that only a handful of U.S. university chemistry departments currently have professors with active research programs in nuclear chemistry. Thus, advanced education in nuclear chemistry education is all but extinct in the United States. If nuclear chemistry and radiochemistry education programs are not reinvigorated, the U.S. will lack the expertise required to pursue promising advanced R&D in a myriad of disciplines. In addition to processing both fresh and spent fuel for nuclear reactors, including basic research on spent fuel separations and transmutation technologies, nuclear chemistry and radiochemistry are also extremely important to the nation’s security and health in the following cross-cutting roles: (1) **nuclear weapons stockpile stewardship**, (2) **nuclear forensics and surveillance of clandestine nuclear activities**, (3) monitoring of radioactive elements in the environment, (4) production of radioisotopes, and (5) **preparation of radiopharmaceuticals for therapeutic and diagnostic medical applications.**

When considering the nuclear enterprise, the status of the health physics workforce and its training facilities must be considered. For occupational safety and the protection of the public, health physics professionals are employed in many sectors, including the commercial nuclear power industry, DOE’s national laboratories, homeland security, the NRC, the military and medical facilities.

The nation’s health physics capabilities will be impacted negatively over the next decade due to the number of expected retirements, coupled with inadequate numbers of graduates entering the field. Fig. 3 provides data on health physics graduates. Considering that the retirement rate of health physicists in the U.S. is roughly 200 per year , the number of health physics graduates does not allow for much increase in the demand for their services.

Turning to university research and training reactors, their number has decreased from 63 in the late 1970’s to 25 today. Recently a number of them have been decommissioned, including those at Cornell University and the University of Michigan. During FY2006, DOE’s INIE Program provided $9.41 million to six consortia consisting of both the higher power (usually 1 MW and above) research reactors as well as the lower power (usually less than 1 MW) training reactors. Research reactors mainly perform state-of-the-art experiments and provide irradiation services for private industry and other researchers. Training reactors mainly provide hands-on experiences for students. The INIE program had numerous significant successes, including helping to increase the number of students studying nuclear science and engineering, stimulating the hiring of new tenure-track faculty, providing seed money for a number of major infrastructure and instrumentation purchases and upgrades, fostering collaborations among members of each consortium and with national laboratories, freeing a number of university reactors from threats of decommissioning, assisting with the establishment of a nuclear technology Associate’s degree program at Linn State Technical College in Missouri, and helping to establish a new undergraduate nuclear engineering program at South Carolina State University, one of the Historically Black Colleges and Universities . That program is the first to be created in over a quarter-century at any U.S. university and is the only undergraduate nuclear engineering program located at an HBCU . Nuclear physicists are an indispensable part of the workforce, since a wealth of high precision actinide fission and neutron capture cross section data is needed to support the design of future nuclear reactors, including advanced light water reactors and Generation IV systems . Without such data, simulation studies would not be accurate enough to lead to reliable designs and conclusions . From their systems analyses, DOE researchers have identified the cross sections of particular importance. The U.S. has neutron source facilities, such as the Los Alamos Neutron Science Center, that can be used for many of the cross section measurements, and capabilities not present in the U.S. usually can be found elsewhere . Many of the cross section measurements are extremely challenging and entirely new techniques need to be developed. Moreover, much more fundamental work is needed to understand the basic physics of nuclear isotopes and their various cross sections. A better theoretical understanding would reduce the uncertainties in many applications. All of these issues are fertile ground for Ph.D. research.

Next, to evaluate the supply of nuclear engineers with at least a Bachelor’s degree that is needed for nuclear power generation between now and 2050, it is useful to consider three scenarios: (1) maintaining the current number of nuclear reactors (about 100) without reprocessing, (2) doubling the number of reactors without reprocessing fuel, and (3) doubling the number of reactors while closing the fuel cycle by reprocessing and recycling spent fuel.

Due to the shortage of nuclear engineers over recent decades, reactor vendors have resorted to hiring far more mechanical engineers than nuclear engineers and providing them with nuclear-related training. With approximately 35% of nuclear workers reaching retirement age in the next five years , industry will likely see some increase in engineering hiring across the board. This will heighten demands for nuclear engineering education, whether supplied by university programs or by the employers themselves. Scenario 1 has a chance of being sustainable. On the other hand, **doubling the number of nuclear reactors to about 200 by 2050 will require a significant augmentation of the nuclear workforce**. Vendors, utilities, and the NRC will need to increase their ranks by about 300 engineers with some nuclear training per year, plus replace retirees. This **growth in manpower is a direct result of what would be an increasing demand for significantly improved reactor designs, increased reactor operations at the utilities**, and a much greater oversight burden at the NRC. On the other hand, the number of new nuclear engineering graduates at all degree levels entering nuclear employment is about 160. Hence, assuming that the supply of nuclear engineers coming from university training programs follows recent trends, employers will need to train significantly more non-nuclear engineers to do nuclear engineering tasks than they do now. It is doubtful that the massive reactor building campaigns necessary to double the number of reactors by 2050 could thrive under such a burden. The clear message is that **our capability for university-based training of nuclear scientists and engineers cannot be allowed to diminish further.** Scenario 3 is the most problematic. This scenario has all the workforce challenges of Scenario 2, plus the need for highly trained nuclear chemists and radiochemists who are indispensable for reprocessing. Unlike France, the U.S. has no governmental agency charged with educating nuclear chemists and radiochemists. Those wanting to pursue these fields are educated under faculty mentors at universities. The growing scarcity of such mentors has thus led to a crisis in the U.S. In the long haul, **the U.S. will lose ground in its R&D on many fronts,** including devising more efficient and safer methods of processing both fresh and spent fuels for all future nuclear energy scenarios. Nuclear chemists and radiochemists with Ph.D.s would be needed to train the large cadre of radiochemical technicians who would carry out most of this work, and they would be needed at universities and national laboratories to spearhead the research that leads to breakthrough radiochemical technologies. Thus, any venture into spent fuel reprocessing, and fulfilling nuclear chemists’ and radiochemists’ many other cross-cutting roles in such areas as homeland security and public health, **will not be possible unless expertise is imported from abroad**. This modality is made much more difficult by the requirement that **many of these workers must be U.S. citizens**. In the U.S., market-driven forces will not be able to produce additional domestically trained nuclear chemists and radiochemists if the educational infrastructure continues to disappear.Aside from nuclear power, the nation will continue to need a significant number of talented, well-trained nuclear scientists and engineers to maintain the strength of its homeland security and nuclear weapons programs. These complexes must be safeguarded, and this is a clear responsibility of the Federal government. To satisfy these and nuclear power’s demands on the nuclear workforce, the Federal government should stabilize the long-term funding and management of nuclear science and engineering education programs, in particular for the university research and training reactor facilities. The number of nuclear engineering departments and university reactors should not be allowed to diminish further. Also, existing reactors could be utilized more optimally by expanding distance-learning opportunities. As for nuclear chemistry and radiochemistry, there is a huge need for the Federal government to establish a cross-cutting workforce initiative that includes fellowships and scholarships for students, support for postdoctoral researchers, incentives that stimulate industrial support of faculty positions, effective means of outreach to the general public, and increased support for summer schools in these disciplines. For health physics, the Federal government should ensure that there is a sufficient number of faculty with nuclear reactor-related experience to train the necessary numbers of health physicists for the nuclear power and other industries. Finally, the Federal government should increase support for research on the fundamental physics and chemistry of actinide fission and neutron capture. There is also an educational role for private industry. Nuclear vendors and utilities should expand undergraduate student internships, graduate student traineeships, cooperative education opportunities, and training on reactor simulators at their facilities. To conclude, creating new reactor designs, revolutionary medical applications of radiation, and many other nuclear endeavors present exciting challenges. As such, the nuclear science and engineering community should develop programs to **encourage the general public to view these fields as exciting areas of research** that present intellectually and financially rewarding career paths.

#### Key to credible nuclear deterrence

Browne et al 8

John C. Browne, Los Alamos National Laboratory (retired), Clark Murdock, Center for Strategic and International Studies, Francis Slakey, American Physical Society, Benn Tannenbaum, American Association for the Advancement of Science, Jessica Yeats, Center for Strategic and International Studies, December 2008, Nuclear Weapons in 21st Century U.S. National Security, http://csis.org/files/media/csis/pubs/081208\_nuclear\_weapons\_report.pdf

To maintain a credible nuclear deterrent, the United States should sustain the necessary human capital: as much of the existing workforce ages, experience, expertise and competence will likely decline across the nuclear enterprise including the Department of Defense (DOD), Department of Energy (DOE), and the military services. A broader mission for the nuclear weapons labs that addresses energy security as well as nuclear security interests can help recruit, retain, and sustain highly skilled and motivated scientists and engineers.

#### Loss of U.S. nuclear primacy causes global nuclear war

Caves 10

(John P, Senior Research Fellow in the Center for the Study of Weapons of Mass Destruction at the National Defense University, January, Strategic Forum, No. 252, “Avoiding a Crisis of Confidence in the U.S. Nuclear Deterrent,”)

Perceptions of a compromised U.S. nuclear deterrent as described above would have profound policy implications, particularly if they emerge at a time when a nuclear-armed great power is pursuing a more aggressive strategy toward U.S. allies and partners in its region in a bid to enhance its regional and global clout. A dangerous period of vulnerability would open for the United States and those nations that depend on U.S. protection while the United States attempted to rectify the problems with its nuclear forces. As it would take more than a decade for the United States to produce new nuclear weapons, ensuing events could preclude a return to anything like the status quo ante. The assertive, nuclear-armed great power, and other major adversaries, could be willing to challenge U.S. interests more directly in the expectation that the United States would be less prepared to threaten or deliver a military response that could lead to direct conflict. They will want to keep the United States from reclaiming its earlier power position. Allies and partners who have relied upon explicit or implicit assurances of U.S. nuclear protection as a foundation of their security could lose faith in those assurances. They could compensate by accommodating U.S. rivals, especially in the short term, or acquiring their own nuclear deterrents, which in most cases could be accomplished only over the mid- to long term. A more nuclear world would likely ensue over a period of years. Important U.S. interests could be compromised or abandoned, or a major war could occur as adversaries and/or the United States miscalculate new boundaries of deterrence and provocation. At worst, war could lead to state-on-state employment of weapons of mass destruction (WMD) on a scale far more catastrophic than what nuclear-armed terrorists alone could inflict.

#### Effective nuclear forensics deters terrorism

Talmadge 7

(IR & Government Prof-George Washington, PhD-MIT, “Deterring a Nuclear 9/11, Spring, www.twq.com/07spring/docs/07spring\_talmadge.pdf)

Because terrorists lack return addresses, analysts have dismissed even more firmly the possibility of deterrence by punishment, or the threat to impose un­bearable costs on those who would do the United States harm. This disheart­ening conclusion stems from a failure to appreciate the many steps terrorists must take before committing an actual attack. Many of these steps depend on assistance from people and organizations that may not be as impervious to deterrence by punishment as individual terrorists are. If the United States can broaden the range of actors it seeks to deter and convince these other actors that cooperating with terrorists is not in their interests, it may be able to re­duce the likelihood of a terrorist attack substantially.13 Nowhere is this approach more plausible than in the case of nuclear terror­ism.14 Unlike other forms of terrorism in which terrorists are more or less self-sufficient, it is virtually impossible for terrorists to create their own nuclear material, regardless of which ingredient they use. Producing plutonium requires sophisticated, expensive reactors, as well as reprocessing facili­ties. Enriching uranium to a weapons-grade lev­el can be done through several techniques; all require relatively large buildings and advanced technologies.15 Both paths to nuclear material require a sizable and scientifically knowledge­able labor force, significant industrial resources, and time. Weapons design and delivery pose additional obstacles. States such as Argentina, Iran, Iraq, and Libya have tried to produce nuclear weapons and failed. Aum Shinrikyo, one of the best-funded terrorists groups in history and instigator of the 1995 sarin gas attacks in Tokyo, was also unable to create its own nuclear material and had to attempt to buy it from Russia.16 As such, it is extremely likely that states or substate military organizations would have to be involved in the tacit or overt provision of nuclear material to terrorists. A state could directly and deliberately transfer a weapon or materi­als to terrorists. It could refuse to halt or punish those in the military or sci­entific community who sell material or weapons to terrorists. It could willfully neglect nuclear security or choose not to alert the international community to suspected thefts of material or weapons. It could turn a blind eye to terrorist activities occurring on its territory. In all of these cases, the United States does have a target against which it can direct threats of retaliation: the governments or military and scientific establishments that actively or passively assist aspiring nuclear terrorists. Even if the United States cannot deter individual terrorists, it can create strong incentives for these other actors to block terrorist acquisition of the ingredi­ents required for a nuclear attack. They have addresses, lives, and property that the United States can hold hostage to their wholehearted cooperation. As Paul Davis and Brian Jenkins of RAND have argued, “The United States could announce credibly that … it would punish not only active supporters, but even those states and factions that merely tolerate the terrorists or indi­rectly facilitate their acquisition of [weapons of mass destruction (WMD)]. The purpose would be to so alarm heads of state and heads of substate organi zations that they would work actively to get rid of elements that might bring destruction down upon them.”17 Bush threatened as much after the North Korean test, warning that the Unit­ed States would hold the regime “fully accountable” if it passed nuclear materi­als or weapons to terrorists.18 The 2006 version of the U.S. National Security Strategy reflects a similar logic, suggesting a subtle shift from the 2002 docu­ment. In describing “a new deterrence calculus,” the current strategy declares, “States that harbor and assist terrorists are as guilty as the terrorists, and they will be held to account.” That document, along with analysts such as Gallucci who argue that a form of “expanded deterrence” against nuclear terrorism is possible, points to the crucial importance of being able to “define the nature and source of a terrorist-employed WMD. Should a WMD terrorist attack occur, the rapid identification of the source and perpetrator of an attack will enable our response efforts and may be critical in disrupting follow-on attacks.”19 In other words, nuclear forensics is the linchpin of any attempt at a deter­rence-by-punishment strategy against governments, militaries, or other orga­nizations that might actively or passively assist terrorists in a nuclear attack on the United States.20

#### Risks nuclear use

Us Russia Joint Threat Assessment May 11

http://belfercenter.ksg.harvard.edu/files/Joint-Threat-Assessment%20ENG%2027%20May%202011.pdf

 ABOUT THE U.S.-RUSSIA JOINT THREAT ASSESSMENT ON NUCLEAR TERRORISM The U.S.-Russia Joint Threat Assessment on Nuclear Terrorism is a collaborative project of Harvard University’s Belfer Center for Science and International Affairs and the U.S.A. and Canada Studies Institute of the Russian Academy of Sciences led by Rolf Mowatt-Larssen and Pavel Zolotarev. Authors: • Matthew Bunn. Associate Professor of Public Policy at Harvard Kennedy School and Co-Principal Investigator of Project on Managing the Atom at Harvard University’s Belfer Center for Science and International Affairs. • Colonel Yuri Morozov (retired Russian Armed Forces). Professor of the Russian Academy of Military Sciences and senior fellow at the U.S.A and Canada Studies Institute of the Russian Academy of Sciences, chief of department at the General Staff of the Russian Armed Forces, 1995–2000. • Rolf Mowatt-Larssen. Senior fellow at Harvard University’s Belfer Center for Science and International Affairs, director of Intelligence and Counterintelligence at the U.S. Department of Energy, 2005–2008. • Simon Saradzhyan. Fellow at Harvard University’s Belfer Center for Science and International Affairs, Moscow-based defense and security expert and writer, 1993–2008. • William Tobey. Senior fellow at Harvard University’s Belfer Center for Science and International Affairs and director of the U.S.-Russia Initiative to Prevent Nuclear Terrorism, deputy administrator for Defense Nuclear Nonproliferation at the U.S. National Nuclear Security Administration, 2006–2009. • Colonel General Viktor I. Yesin (retired Russian Armed Forces). Senior fellow at the U.S.A and Canada Studies Institute of the Russian Academy of Sciences and advisor to commander of the Strategic Missile Forces of Russia, chief of staff of the Strategic Missile Forces, 1994–1996. • Major General Pavel S. Zolotarev (retired Russian Armed Forces). Deputy director of the U.S.A and Canada Studies Institute of the Russian Academy of Sciences and head of the Information and Analysis Center of the Russian Ministry of Defense, 1993–1997, deputy chief of staff of the Defense Council of Russia, 1997–1998. Contributor: • Vladimir Lukov, director general of autonomous non-profit organization “Counter-Terrorism Center.”

The expert community distinguishes pathways terrorists might take to the bomb (discussed in detail in the next section of the report). One is the use of a nuclear weapon that has been either stolen or bought on the black market. The probability of such a development is very low, given the high levels of physical security (guards, barriers, and the like) and technical security (electronic locks and related measures) of modern nuclear warheads. But we cannot entirely rule out such a scenario, especially if we recall the political instability in Pakistan, where the situation could conceivably develop in a way that would increase the chance that terrorist groups might gain access to a Pakistani nuclear weapon A second pathway is the use of an improvised nuclear device built either by terrorists or by nuclear specialists that the terrorists have secretly recruited, with use of weapons-usable fissile material either stolen or bought on the black market.1 The probability of such an attack is higher than using stolen nuclear warheads, because the acceleration of technological progress and globalization of information space make nuclear weapons technologies more accessible while the existence of the nuclear black market eases access of terrorists to weapons-usable fissile materials. A third pathway is the use of an explosive nuclear device built by terrorists or their accomplices with fissile material that they produced themselves—either highly enriched uranium (HEU) they managed to enrich, or plutonium they managed to produce and reprocess. Al-Qaeda and associated groups appear to have decided that enriching uranium lies well beyond the capabilities that they would realistically be able to develop. A fourth pathway is that terrorists might receive a nuclear bomb or the materials needed to make one from a state. North Korea, for example, has been willing to sell its missile technology to many countries, and transferred its plutonium production reactor technology to Syria, suffering few consequences as a result. Transferring the means to make a nuclear bomb to a terrorist group, however, would be a dramatically different act, for the terrorists might use that capability in a way that could provoke retaliation that would result in the destruction of the regime. A far more worrisome transfer of capability from state to group could occur without the witting cooperation of the regime. A future A.Q. Khan-type rogue nuclear supplier network operating out of North Korea or out of a future nuclear-armed Iran could potentially transfer such a capability to a surrogate group and/or sell it for profit to the highest bidder. Global trends make nuclear terrorism a real threat. Although the international community has recognized the dangers of nuclear terrorism, it has yet to develop a comprehensive strategy to lower the risks of nuclear terrorism. Major barriers include complacency about the threat and the adequacy of existing nuclear security measures; secrecy that makes it difficult for states to share information and to cooperate; political disputes; competing priorities; lack of funds and technical expertise in some countries; bureaucratic obstacles; and the sheer difficulty of preventing a potentially small, hard-to-detect team of terrorists from acquiring a small, hard-to-detect chunk of nuclear material with which to manufacture a crude bomb. These barriers must not be allowed to stand in the way of the panhuman universal priority of preventing this grave threat from materializing. If current approaches toward eliminating the threat are not replaced with a sense of urgency and resolve, the question will become not if, but when, where, and on what scale the first act of nuclear terrorism occurs.

#### Extinction

**Ayson 10**, Robert Ayson, Professor of Strategic Studies and Director of the Centre for Strategic Studies: New Zealand at the Victoria University of Wellington, 2010 (“After a Terrorist Nuclear Attack: Envisaging Catalytic Effects,” Studies in Conflict & Terrorism, Volume 33, Issue 7, July, Available Online to Subscribing Institutions via InformaWorld)

But these two nuclear worlds—a non-state actor nuclear attack and a catastrophic interstate nuclear exchange—are not necessarily separable. It is just possible that some sort of terrorist attack, and especially an act of nuclear terrorism, could precipitate a chain of events leading to a massive exchange of nuclear weapons between two or more of the states that possess them. In this context, today’s and tomorrow’s terrorist groups might assume the place allotted during the early Cold War years to new state possessors of small nuclear arsenals who were seen as raising the risks of a catalytic nuclear war between the superpowers started by third parties. These risks were considered in the late 1950s and early 1960s as concerns grew about nuclear proliferation, the so-called n+1 problem. It may require a considerable amount of imagination to depict an especially plausible situation where an act of nuclear terrorism could lead to such a massive inter-state nuclear war. For example, in the event of a terrorist nuclear attack on the United States, it might well be wondered just how Russia and/or China could plausibly be brought into the picture, not least because they seem unlikely to be fingered as the most obvious state sponsors or encouragers of terrorist groups. They would seem far too responsible to be involved in supporting that sort of terrorist behavior that could just as easily threaten them as well. Some possibilities, however remote, do suggest themselves. For example, how might the United States react if it was thought or discovered that the fissile material used in the act of nuclear terrorism had come from Russian stocks,40 and if for some reason Moscow denied any responsibility for nuclear laxity? The correct attribution of that nuclear material to a particular country might not be a case of science fiction given the observation by Michael May et al. that while the debris resulting from a nuclear explosion would be “spread over a wide area in tiny fragments, its radioactivity makes it detectable, identifiable and collectable, and a wealth of information can be obtained from its analysis: the efficiency of the explosion, the materials used and, most important … some indication of where the nuclear material came from.”41 Alternatively, if the act of nuclear terrorism came as a complete surprise, and American officials refused to believe that a terrorist group was fully responsible (or responsible at all) suspicion would shift immediately to state possessors. Ruling out Western ally countries like the United Kingdom and France, and probably Israel and India as well, authorities in Washington would be left with a very short list consisting of North Korea, perhaps Iran if its program continues, and possibly Pakistan. But at what stage would Russia and China be definitely ruled out in this high stakes game of nuclear Cluedo? In particular, if the act of nuclear terrorism occurred against a backdrop of existing tension in Washington’s relations with Russia and/or China, and at a time when threats had already been traded between these major powers, would officials and political leaders not be tempted to assume the worst? Of course, the chances of this occurring would only seem to increase if the United States was already involved in some sort of limited armed conflict with Russia and/or China, or if they were confronting each other from a distance in a proxy war, as unlikely as these developments may seem at the present time. The reverse might well apply too: should a nuclear terrorist attack occur in Russia or China during a period of heightened tension or even limited conflict with the United States, could Moscow and Beijing resist the pressures that might rise domestically to consider the United States as a possible perpetrator or encourager of the attack? Washington’s early response to a terrorist nuclear attack on its own soil might also raise the possibility of an unwanted (and nuclear aided) confrontation with Russia and/or China. For example, in the noise and confusion during the immediate aftermath of the terrorist nuclear attack, the U.S. president might be expected to place the country’s armed forces, including its nuclear arsenal, on a higher stage of alert. In such a tense environment, when careful planning runs up against the friction of reality, it is just possible that Moscow and/or China might mistakenly read this as a sign of U.S. intentions to use force (and possibly nuclear force) against them. In that situation, the temptations to preempt such actions might grow, although it must be admitted that any preemption would probably still meet with a devastating response.

#### Yucca Mountain will make or break nuclear investment

Jack **Spencer 12**, nuclear energy fellow at Heritage, “Uncle Sam, Derelict Nuclear-Waste Disposer”, May 10, <http://www.heritage.org/research/commentary/2012/05/uncle-sam-derelict-nuclear-waste-disposer>

By blocking the Yucca project, the administration has imperiled the future of nuclear energy. The growing waste stockpiles must be safely disposed of somewhere, yet the president has offered no Plan B. Sure, he appointed a blue-ribbon commission to look into the matter, but its recommendations are simply gathering dust. Besides, even the commission acknowledged that the nation needs a geologic repository. The only reason it didn't address Yucca is because Energy Secretary Steven Chu explicitly told the commissioners not to. Yucca matters because the government's inability to fulfill its legal waste-disposal obligations creates a huge impediment to building additional nuclear-power plants. The federal government's refusal to take possession of the used fuel leaves itself (that is, the taxpayers) liable to the plant operators for an increasingly enormous amount. And it leaves plant owners in the tenuous position of having to store ever-increasing amounts of waste on site indefinitely. That creates a great deal of uncertainty for investors in nuclear energy. It's all quite sad. No scientific or technical data existed to merit ending the project. But, desiring to please the anti-nuclear crowd, the administration chose the backdoor route to kill Yucca. Without a solution to allow for the proper disposal of nuclear waste, the administration is slowly killing cheap, reliable and "green" nuclear energy.

#### Removing waste confidence expands investment in nuclear power and solves Yucca

Jack **Spencer and** Cornelius **Milmoe 12**, Jack is a Research Fellow in Nuclear Energy at Heritage, Cornelius is a lawyer and nuclear energy expert who owns Milmoe Consulting Services LLC, “Obama Administration: No Confidence in Nuclear Energy”, March 5, <http://www.heritage.org/research/reports/2012/03/obama-administration-no-confidence-in-nuclear-energy>

Abstract: A major public concern about nuclear reactors has been that the spent nuclear fuel could remain stranded at the reactor site indefinitely. In the 1970s, courts prohibited the Nuclear Regulatory Commission from licensing new reactors unless it assured the public that the waste would be removed—a requirement called the “waste confidence” rule. President Obama’s decision to abandon plans for removing the waste to the Yucca Mountain repository in Nevada creates an uncertainty that could be a barrier to the expansion of nuclear power. Two nuclear policy experts argue that the 1982 Nuclear Waste Policy Act provides sufficient confidence that spent nuclear fuel will be removed and, thus, that the waste confidence rule is unnecessary and should be abandoned. The Obama Administration and Senate Majority Leader Harry Reid (D–NV) scored a victory in their war against Nevada’s Yucca Mountain as a nuclear-waste repository when the Nuclear Regulatory Commission (NRC) voted in September to dispose of all pending matters in the Yucca licensing case without approving or disapproving the Department of Energy’s application to construct and operate the repository. By pushing the nation further from a solution for nuclear-waste disposal, the vote also damages the prospects for nuclear energy expansion. Under current practice, the NRC can license new reactors only if it expresses confidence that the spent nuclear fuel (SNF) from the reactors will be disposed at an off-site facility. This requirement is referred to as the “waste confidence” rule. Recognizing the link between new construction and waste disposal, the NRC’s chairman, Gregory Jaczko, persuaded the NRC to revise the waste confidence rule to reflect an assumption that no waste repository will be built in the foreseeable future. The problem is that this revision undermines the original purpose of the rule, which was to assure the public that nuclear waste would not remain at nuclear reactor sites indefinitely. Specifically, the revised rule: 1. Undermines the credibility of the 1982 Nuclear Waste Policy Act, as amended, and its mandate to complete the Yucca Mountain project; 2. Undermines confidence that any effective nuclear-waste-disposal plan will be implemented; 3. Provides the anti-nuclear movement with an opportunity to slow the expansion of nuclear energy through litigation; 4. Weakens investor and public confidence in nuclear power; and 5. Undermines incentives for government and industry to develop long-term waste-disposal solutions. Fortunately, there is a way forward. The courts first required the NRC to make a “waste confidence” determination for new reactor licenses in the 1970s, before the U.S. government chose Yucca Mountain as the national repository site. This determination was to provide the public with the NRC’s pre-licensing assurance that nuclear waste from new reactors would not be left at reactor sites indefinitely. When the Nuclear Waste Policy Act (NWPA) became law in 1982, a waste confidence determination became an unnecessary anachronism because the NWPA mandates that the Energy Department take responsibility for commercial nuclear-waste disposal. Given the confusion that the NRC’s rule revision will cause, Congress should simply acknowledge that the waste confidence rule is irrelevant and that the Nuclear Waste Policy Act alone meets the waste confidence requirements. History of the Waste Confidence Rule As is the case with so many agency regulations, the waste confidence rule was a response to the courts. In the 1960s, the nuclear industry and the U.S. government planned to recycle spent nuclear fuel, like France and the United Kingdom do today. But in the mid-1970s, U.S. government policy changed, banning commercial spent-fuel recycling. As a result, reactor owners had no choice but to store SNF on-site until it could be moved to a geologic repository. The problem is that no such repository was ever licensed or constructed. Nuclear opponents exploited the uncertainty caused by that policy change. They argued that because there was no program to remove the SNF from reactor sites, the NRC could not license new reactors without studying the environmental impact of perpetual on-site waste storage. They demanded that there be no new reactors until the “waste issue” was resolved. As a result, 13 states passed legislation banning new nuclear construction.[1] Federal courts ruled that the NRC could not issue a reactor license unless it either studied the long-term impact of on-site waste storage or expressed confidence as part of its regulatory determinations that SNF would not remain on-site for an extended period of time.[2] The NRC chose to adopt the waste confidence rule and avoid the long-term impact study for each individual site.[3] In adopting the rule, the NRC promised that it would not continue to license reactors if it did not have “reasonable confidence that the wastes can and will in due course be disposed of safely.”[4] Then, in 1982, Congress enacted the NWPA, which mandated that the Energy Department build a repository and move SNF from reactor sites to the repository. In 1987, Congress chose Yucca Mountain as the site for the repository, subject to an NRC safety review and license. The NWPA provided the Energy Department, the NRC, the courts, and the public with a predictable process for nuclear-waste disposal and the mechanisms to resolve any legal issues that emerge. In essence, the NWPA resolved the waste issue, thus making the waste confidence rule obsolete. Even so, the NRC kept the rule in place, updating it in 1990 to express its confidence that the repository would be available “within the first quarter of the twenty-first century.”[5] The NRC reviewed the availability date again in 1999 and made no changes. Its confidence was well grounded on the obligation of the Energy Department and NRC to implement the NWPA mandate to license and build a repository at Yucca. However, the waste confidence rule created a linkage between the Yucca license and new reactor license that nuclear opponents could use as a weapon. They could potentially stop the construction of new reactors by stopping Yucca. For 30 years this linkage was all but irrelevant because no utilities were interested in building new nuclear power plants. In 2007, a new wave of reactor license applications arrived at the NRC. Unfortunately, nuclear opponents and Senator Reid had been working for decades to delay the Yucca project. By the time interest had emerged to build new reactors, not only was there no repository, there was no license to build one, either. This lack of progress allows reactor opponents to use the waste confidence rule to block new reactors. Jaczko Guts Waste Confidence Rule After 25 years and $15 billion in pre-licensing activities, the Energy Department filed a license application with the NRC for the Yucca project in 2008. The NWPA required an NRC decision on the application within three years of filing. During the 2008 presidential campaign, Candidate Barack Obama promised Senator Reid that he would oppose the Yucca project and cut its funding, beginning with his fiscal year 2010 budget.[6] Despite the uncertainty about Yucca in 2009, Gregory Jaczko, named chairman by President Obama, urged the NRC to update the waste confidence rule. The NRC initially voted 2 to 1 against updating it.[7] Explaining the majority vote, Commissioner Dale Klein said that an update at that point could be “perceived as a rush to judgment in the midst of a dynamic environment that promises to affect the Nation’s approaches to storage and disposal of SNF.”[8] In January 2010, President Obama fulfilled his political promise to Senator Reid by announcing that he was terminating the Yucca project, because he considered the project “unworkable.” The President directed the Energy Department to withdraw the Yucca license application, which would prevent the NRC from fulfilling its NWPA obligation to approve or disapprove the license application. The Administration rationalized its defiance of the NWPA mandate by stating that the Yucca project does not have “social and political acceptance.” In June 2010, the NRC licensing board rejected this rationale and denied the Energy Department motion to withdraw. The denial was appealed and was pending until the NRC’s September 2011 order suspending all action on the license. In July 2011, the U.S. Court of Appeals ruled on the appeal, warning the NRC that it would intervene if the NRC did not make a final decision on Yucca within the three-year time frame set by the NWPA.[9] The NRC has not made the required final decision, and a group of petitioners, including the states of South Carolina and Washington, and the National Association of Regulated Utility Commissioners, supported by the Nuclear Energy Institute, have asked the court to force a decision by the NRC. The court’s decision is not expected until summer 2012. In the midst of legal uncertainty and political turmoil, Chairman Jaczko pushed the NRC, including three new members appointed by President Obama, to approve a revision to the rule that assumes that the Energy Department and the NRC will successfully defy the NWPA and that Yucca would not be licensed. On December 23, 2010, the NRC published its decision, making the following key revision to the waste confidence rule: 10 CFR §51.23(a). . .the Commission believes there is reasonable assurance that [at least one mined geologic repository will be available within the first quarter of the twenty-first century, and] sufficient repository capacity will be available to dispose of the commercial high-level waste and spent fuel [originating in such] generated in any reactor [and generated up to that time.] when necessary.[10] The revised rule is a radical change because it removes the assurance that the repository would be available by the “first quarter of the twenty-first century.” The revised rule does not provide a basis for confidence that SNF will be removed from reactor sites to a repository in due course. As consolation for the broken promise to remove SNF, the NRC expressed its belief that SNF can be safely stored for 60 years after the reactor license expires, and that a repository will be available, “when necessary.” The NRC does not state when removal is necessary. The possibility of indefinite on-site storage is precisely the uncertainty that the rule was supposed to end. The NRC has increased uncertainty by signaling the waste may not be moved from the reactor sites for a century or more.[11] The Problems with the Revised Rule The new waste confidence rule contains flaws that undermine current law and hinder future reactor construction: 1. It Ignores the NWPA. The NRC decision revising the waste confidence rule acknowledges that the NWPA “mandates a national repository program, and until the law is changed disposal in a repository remains the controlling policy.”[12] Yet, even though the NWPA also mandates that the repository be built at the Yucca site, the NRC decision expressly assumes that the Yucca facility will not be built.[13] The supposedly independent NRC blindly accepts the Administration’s defiance of the NWPA, a law enacted by Congress and reaffirmed in repeated votes and appropriations over the past 30 years. If the NRC can “assume away” the NWPA merely because of policy differences, the rule of law at the NRC has ended.[14] The NRC should have simply acknowledged that the NWPA gives sufficient basis to provide confidence that SNF will be removed from reactor sites. This would have allowed the NRC and the Administration to respect the rule of law while allowing the policy debate to unfold. 2. It Is a “No Confidence” Rule. The revised rule does not express confidence that the waste will be removed, although that is what the public demanded and the courts required when the NRC adopted the rule. In fact, the NRC decision expresses doubt about whether the waste will be removed, stating it could not predict “the time needed to bring about the necessary societal and political acceptance for a repository site.”[15] The NRC tried to finesse its failure to express confidence in removal to Yucca by emphasizing its determination that on-site storage would be safe for 60 years after the expiration of the reactor license. The 60-year interim-storage determination may give comfort to current reactor owners. It does nothing to give the public and investors confidence that waste from new reactors will ever be removed. 3. It Will Promote Litigation by Raising Concerns that “Interim” Storage May Become Permanent. NRC reactor regulations and reactor-operator best practices assure that on-site SNF storage is safe until the reactor is decommissioned. After decommissioning, permanent storage in an off-site geologic repository is necessary to mitigate the risks of SNF becoming stranded at a decommissioned site. The NRC based its revised-rule decision on the obvious conclusion that interim on-site storage is safe for 30 years after the reactor license expires, and on the less obvious conclusion that long-term storage should be safe for at least 30 years beyond that. Simply stating that on-site storage can be safe does nothing to move the nation closer to an effective nuclear waste disposal policy that resolves concerns that interim on-site storage will become permanent. By failing to express its confidence that the Administration would comply with the NWPA and remove SNF to Yucca, or to institute an alternative program to remove nuclear waste, the NRC has invited nuclear opponents to challenge the rule on the basis of on-site storage hazards. Indeed, this is already occurring. In February 2011, the states of New York, Vermont, and Connecticut challenged the new rule in federal court.[16] The states argue that the NRC should abandon the generic waste confidence approach and conduct full site-specific impact assessments of indefinite on-site SNF storage. The three states claim that: \* the revised rule does not reflect confidence that the waste problem has been solved; \* without Yucca or a certain alternative pathway, interim on-site storage might become long-term storage; and that \* long-term on-site storage poses a significant risk to health and the environment. These changes to the rule will bring new, unnecessary, and costly delays to the licensing process. For example, in the rulemaking proceeding, the NRC advised parties with site-specific SNF-storage concerns that they could raise them in site-specific license proceedings. This is, in essence, an invitation to protracted hearings on a complex, controversial issue that may be worrisome for reactor developers and investors. 4. It Undermines Investor Support for New Reactor Construction. Nuclear business and non-profit organizations have stated that building a repository is critical to the expansion of American nuclear power. Nuclear developers and investors need to know that there is a solution to the waste problem. Otherwise they may fear they would be saddling themselves with interminable licensing proceedings and indefinable SNF-disposal liabilities.[17] Some views from the industry: \* John Rowe, CEO of Exelon, the utility with the largest reactor fleet (including several in Illinois, a moratorium state) called Yucca the “lynchpin” to new reactor construction, and said that “Exelon will not build a new nuclear plant until there is a permanent solution to the disposition of SNF.”[18] \* James Miller, CEO of Southern Nuclear, the developer of the Vogtle reactors, which just received a license to build two new reactors, has stated that Yucca is the best available solution to the SNF problem.[19] \* The American Nuclear Society issued a position statement supporting expeditious processing of the Yucca Mountain license application.[20] \* The Nuclear Energy Institute stated, “Under any used fuel management scenario, disposal of high-level radioactive byproducts in a permanent geologic repository is necessary.”[21] Until waste confidence is firmly based on the NWPA and a Yucca repository, or a defined alternative, developers will be hesitant to move forward with new reactor projects. It may be expensive or impossible for them to prove the long-term safety of on-site storage in site-specific proceedings, because many sites are suitable for reactors but may not be appropriate for long-term waste storage. Finally, with the uncertainties created by the Administration and the new rule, state waste-based nuclear moratoriums are not likely to be repealed. 5. It Undermines the Incentives for Long-Term Nuclear Waste Management Solutions. The rule revision encourages a strategy of avoiding a permanent solution for nuclear-waste management. A basic condition for commercial nuclear power operations is that there must be a reliable method to dispose of SNF. Federal assumption of the responsibility for this commercial activity in the NWPA meets that condition. As long as the Energy Department was making slow but steady progress toward opening a repository at Yucca Mountain, it was reasonable for the NRC to deem the NWPA mandate an adequate basis for waste confidence. However, the Administration’s attempt to terminate the Yucca project without any backup plan renders this notion obsolete. By expressing confidence that SNF will be removed despite any evidence to support such a conclusion, the NRC effectively removes any pressure for any party to move on the issue. The rule under current circumstances essentially fortifies the status quo. The NWPA made the federal government responsible for waste disposal and required it to collect and store SNF beginning in 1998. The Administration, however, has demonstrated its disregard for this established law by abandoning the Yucca project and trying to stop the NRC from completing its safety review and issuing the facility license without establishing an alternative waste-disposal strategy. The NRC’s statement that it maintains confidence that a disposal solution will be developed without Yucca or establishing an alternative strains credulity. Further, it removes any incentive to find a way to remove the spent fuel from the reactor site. Time for Congress to Act Congress can provide significant clarity by doing two things: \* Require the Nuclear Regulatory Commission to make a final decision on Yucca Mountain. The Nuclear Waste Policy Act provides a clear framework and timeline for the NRC to consider the Yucca application. The NRC has chosen to ignore this law, thus creating substantial confusion about the status of nuclear-waste disposal. Thus, Congress should compel the NRC to finalize its review of the Yucca application and make its final determination within a set time period, such as within one year. \* Abandon the obsolete waste confidence rule. The rule is an artifact, no longer needed or useful. The Blue Ribbon Commission on America’s Nuclear Future, and others, have criticized the NWPA’s approach to nuclear-waste management.[22] Nonetheless, until needed reforms are implemented, the NWPA is the law of the land and creates a legally binding obligation on the U.S. government to collect and dispose of nuclear waste. Congress should affirm the NWPA by barring consideration of the waste confidence issue in any administrative or judicial proceeding except as provided by the NWPA.[23] It is not the place of the Energy Department, the NRC, or the courts to act on their doubts about the social or political acceptability of the NWPA, or on their confidence about the will of Congress, in adjudicatory proceedings on reactor licenses. Abandoning the waste confidence rule and simply recognizing that the federal government is responsible for waste management under current law would be a better approach. How the government meets that requirement, as long as it is done within established safety guidelines, should be irrelevant to the NRC. The United States has struggled for decades to implement a predictable and rational nuclear waste management policy. The difficulties are the result of poor policy choices, not of technological or economic obstacles. This government-created problem has led to unnecessary impediments to the expansion of clean and safe nuclear energy. Fixing this problem should begin with Congress simply demanding that America’s government bodies follow the law.

#### The plan is key to planning and regulatory certainty

Jack **Spencer 11**, nuclear energy fellow at Heritage, “Dubious Anniversary for NRC, Yucca Mountain, and U.S. Nuclear Power”, June 29, <http://blog.heritage.org/2011/06/29/dubious-anniversary-for-nrc-yucca-mountain-and-u-s-nuclear-power/>

But in this case, the stakes are much higher. The NRC’s lack of action is holding the future of American nuclear power hostage by keeping nuclear waste policy in a state of suspended animation. Absent a nuclear waste policy, there will be no nuclear renaissance in the U.S. Beyond that, the chairman’s actions on Yucca seem to move the NRC squarely into the political arena. While no Washington institution can be devoid of politics altogether, the perception is that the NRC has traditionally operated apolitically. Doing so is critical for the credibility of the institution and to maintaining the public trust. Anything that undermines that credibility and trust, even if only by perception, must be resolved. The facts are clear. The technical merit of the Yucca project is strong. The decision to halt work on the Yucca review is political. And even if the chairman’s intentions are pure, the perception is that politics are driving his actions. NRC officials testified last week and strongly criticized Jaczko for succumbing to political pressures and not taking a scientifically objective approach to Yucca Mountain. Aby Mohseni, acting director for licensing and inspections at the NRC, said in prepared remarks for the House Energy and Commerce subcommittee: Some senior managers contributed to the manipulation of the budget process and information to apparently make sure that the Yucca Mountain project would be left unfunded even if the license application was still before the NRC…. We were unprepared for the political pressures and manipulation of our scientific and licensing processes that would come with the appointment of Chairman Jaczko in 2009. The criticism of Jaczko has been relentless. Earlier in June, the House Committee on Science, Space, and Technology released a comprehensive report that details Jaczko’s attempt to prematurely and unnecessarily shut down the Yucca licensing process. Another June report, this one from NRC Inspector General Hubert Bell, criticized the chairman for “strategically” holding information. The entire IG’s report is worth reading, because it highlights Jaczko’s manipulation of the budget process to close Yucca Mountain for good. Regardless of whether we build new nuclear reactors or reprocess spent nuclear fuel, in every scenario, a geologic repository is necessary. The reality is that some of the byproducts of nuclear fission will last a long time. Therefore, the U.S. needs a place where it can be safely stored. If Yucca Mountain is technologically unable to fill those duties, then the NRC should say so. But all evidence suggests that Yucca is an appropriate place to store used nuclear fuel. The NRC’s job is to make that determination. Unfortunately, Jaczko has decided that the NRC should not do its job.

#### The rule structurally precludes nuclear expansion

William **Tucker 12**, veteran journalist. Educated at Amherst College, his work has appeared in Harper’s, the Atlantic Monthly, the American Spectator, the Weekly Standard, National Review, Reason, the New Republic, Reader’s Digest, the Wall Street Journal, and many other publications. His articles have won the John Hancock Award, the Gerald Loeb Award, the Amos Tuck Award, and he was a finalist for the National Magazine Award, “WILLIAM TUCKER: No Confidence in Waste Confidence”, August 13, <http://www.nucleartownhall.com/blog/william-tucker-no-confidence-in-waste-confidence/>

So instead of reprocessing, we have spent the last 40 years casting around for what to do with the stuff. Yucca Mountain was a good try but Harry Reid was able to handle that. Areva has offered to build an entire reprocessing complex in this country duplicating what it has done in France. Like any major manufacturer that once dominated the market but is now on the downhill side, however, we have developed a “not invented here” complex. “No thanks, Areva, we don’t you’re your help. We’re going to figure something out for ourselves. Just give us another 50 years.” So instead of actually doing something to treat spent fuel, all the efforts in Washington have become concentrated on something called the “Waste Confidence Rule.” If you’ve ever spent time in Washington, you know that every time the staffs of two Congressmen meet over an obscure issue there will be a battery of lawyers and policy experts on both sides of the table thoroughly schooled in the minutia of the issue. That’s the way things stand now with the Waste Confidence Rule. Nobody has any plans to develop a technology for dealing with spent fuel. Instead the issue has become whether the Nuclear Regulatory Commission can have enough confidence that the stuff can sit around in spent fuel pools and dry cask storage for another 80 to 120 years. If the NRC has “confidence,” then it can go ahead with licensing and building nuclear reactors. Of course all this is red meat to anti-nuclear groups. They see the opportunity for a “stuff the toilet” strategy. If they can blockade every possible strategy for dealing with spent fuel, then they can stop new construction and maybe even force some older reactors to start shutting down. A Waste Confidence Rule requires an Environmental Impact Statement and what are EIS’s for except to offer an opportunity for lawyers and policy experts to comb through them looking for opportunities to challenge them in court? And so a bevy of anti-nuclear groups plus a few states such as New York and Vermont that are trying to close reactors have gone to court. In June the D.C. Court of Appeals, notorious for its liberal stands, granted the petition and overturned the NRC’s adoption of the Confidence Rule last year. Last week the NRC said it will halt all new licensing and relicensing operations until it can draw up a new IES. That could take about ten years. Anti-nuclear groups were celebrating. "This decision forces the Nuclear Regulatory Commission to take a hard look at the environmental consequences of producing highly radioactive nuclear waste without a long-term disposal solution," said Geoffrey Fettus, a senior attorney at the Natural Resources Defense Council. But the irony is that many pro-nuclear enthusiasts are hoping the decision may work to their advantage as well. They say the court decision could force the NRC to go back and revisit the rather dubious maneuver by former chairman Gregory Jaczko in single-handedly ending the Yucca Mountain effort, obviously at the behest of his mentor, Majority Leader Reid. Jaczko is now gone and several other states are contesting the NRC decision, this could be an opportunity to reopen the whole issue. One thing that is not going to be re-examined in all this, however, is our even more dubious decision to abandon reprocessing in the first place. Canada reprocesses, Britain reprocesses, France reprocesses. Russia is offering to reprocess the entire world’s spent fuel and sell it back as new fuel. As a puzzled New York Times reporter commented in 2010, “The Russians have a peculiarly high comfort level with all things nuclear.” Before Fukushima Japan was reprocessing, although they have now run into a stone wall with all things nuclear. At this very moment, we are trying to tell South Korea that it cannot reprocess its spent fuel – even though they are now on the verge of surpassing us in the technology and are becoming one of the leading reactor developers in the world. Our argument is that we are “preventing nuclear proliferation.” If we allow the Koreans to reprocess, they may develop a nuclear weapon – like North Korea next door. The Koreans complain we are “treating them like a bunch of criminals.” And so the argument about “waste confidence” continues. One thing we can be confident about. Twenty years from now, we’ll have more lawyers and “policymakers” crossing the “i’s” and dotting the “t’s” of a Waste Confidence Rule than we’ll have engineers trying to solve the problem.

## 2

#### Advantage two is NRC

#### Nuclear waste has politicized the NRC, crushing its credibility

Spencer, nuclear energy fellow at Heritage, 2011

(Jack, “Dubious Anniversary for NRC, Yucca Mountain, and U.S. Nuclear Power,” June 29, http://blog.heritage.org/2011/06/29/dubious-anniversary-for-nrc-yucca-mountain-and-u-s-nuclear-power/)

Before the board’s decision can become final, however, the NRC must vote on whether or not to accept it. The problem is that NRC chairman Gregory Jaczko refuses to allow the commission to consider the ASLB’s conclusions.

This is extraordinarily problematic. First, it threatens decades of scientific and technical research, the labor of thousands of dedicated workers, and $15 billion in taxpayers’ and electricity ratepayers’ money. Of course, wasting time, effort, and money is nothing new for the federal government.

But in this case, the stakes are much higher. **The NRC’s lack of action is holding the future of American nuclear power hostage by keeping nuclear waste policy in a state of suspended animation**. Absent a nuclear waste policy, there will be no nuclear renaissance in the U.S.

Beyond that, the chairman’s actions on Yucca seem to move the **NRC squarely into the political arena**. While no Washington institution can be devoid of politics altogether, the perception is that the **NRC has traditionally operated apolitically**. Doing so is **critical for the credibility of the institution** and to maintaining the public trust. **Anything that undermines that credibility and trust**, **even if only by perception**, **must be resolved**.

#### The new chairwoman is trying to focus on NRC’s core mission of global nuclear safety

Inhofe, Ranking Member of the Senate Committee on Environment and Public Works, 9/12/2012

(James, “Recommendations for Enhancing Nuclear Reactor Safety,” CQ Congressional Testimony, Lexis)

Thank you, Chairman Boxer, for holding this hearing and focusing on implementing the lessons learned from Fukushima. The efforts will ensure that the **safety of nuclear plants** in the U.S., and **around the world**, **will be enhanced** and the use of nuclear energy will be sustained over the long term.

First, I would like to welcome Chairwoman Macfarlane to the Nuclear Regulatory Commission (NRC) and welcome her to the EPW hearing room in her new, official capacity. You have big challenges ahead and everyone here on this Committee has high hopes that you will be able to restore the collegial working environment at the Commission.

The NRC has been busy over the past year. For the first time in over 30 years, new licenses to build two reactors were issued by the Commission. In March, the Commission issued orders to implement the most significant post-Fukushima improvements. I am pleased that under Chairwoman Macfarlane, **the Commission is focusing on its mission of nuclear safety** without unnecessary distractions.

#### But the waste confidence rule makes credibility loss inevitable

Dickman, former Chief of Staff to the NRC Chairman, 8/20/2012

(Paul T., “Waste Confidence—A Classic Case of Failed Leadership,” http://atomicinsights.com/2012/08/part-2-waste-confidence-a-classic-case-of-failed-leadership.html)

Dr. Klein in his last major speech to the industry and NRC staff on March 9, 2010 gave some insight as to the struggles occurring in the Commission on this issue. He said “Many of you have spent the last year or two urging the Commission to pass a new waste confidence rule, readdressing several of the basic findings supporting the rule. But I think the current situation demonstrates that those of us who resisted a rush to update the waste confidence findings were correct to proceed with caution. **I continue to question whether the Commission would have maintained its public credibility if it had finalized the proposed update without taking the time to consider more fully the reality of the current situation**. What many people—even many people in this room—fail to understand is that **the waste confidence rule is a real challenge for us because it is not simply based on the technical judgment of the NRC**. Part of the Commission’s “confidence” underlying the rule must be based on events that are beyond the NRC’s control, and when those events are in flux, the Commission has to be very careful in deciding whether it can credibly say that we have “confidence” that a repository will be open on a given date or period of time.”

Twenty days later, Dale Klein was once again a private citizen. **The subsequent actions by the new and inexperienced Commission did not**, in my opinion “**consider more fully the reality of the current situation**” is what has led to the current situation. An ambitious young Chairman, an inexperienced Commission, a self-destructive DOE legal strategy, and a vindictive Majority Leader—This has all the makings of a Shakespearian Tragedy and **can anyone have doubted the outcome of the Appellate Court’s decision?**

Regardless of the protestations by industry, Waste Confidence is a huge problem. **Congress**, **not the NRC should be responsible for making these decisions**. If Congress is incapable of requiring the Administration to comply with existing laws (the Nuclear Waste Policy Act), what hope does the NRC have of addressing Waste Confidence?

[NOTE: Klein = former NRC chairman]

#### Politicization spills over to all NRC activities

Issa, Congressman from California, 7/23/2012

(Darrell, “New NRC chairman can learn from predecessor’s mistakes,” The Hill, http://oversight.house.gov/op-ed/new-nrc-chairman-can-learn-from-predecessors-mistakes/)

Despite what his allies might have you believe, criticisms of Chairman Jaczko were not motivated by politics, policy views, or personality differences. To the contrary, the concerns raised by NRC employees, commissioners, and members of Congress reflect a common interest – **preserving the independence and integrity of this institution**. Without these qualities, the NRC ceases to function as Congress intended and its **credibility is lost**.

Unfortunately, Chairman Jaczko and his supporters lost sight of this, placing his reputation before the agency. Blinded by their convictions, they dismissed substantiated charges of harassment and intimidation as byproducts of a self-described “passion for safety.” His inexcusable behavior was not only tolerated, it was justified. No NRC employees would be granted such leniency if they exhibited this type of chilling behavior. In fact, the agency has regulations to prevent this conduct at NRC licensed facilities, such as a nuclear plant. So, what does it say to the public when the head of the NRC is held to a different standard than the agency’s own employees or those it is charged to regulate?

**Public trust is as important to the NRC’s mission as any regulation or standard**. The American people benefit when the NRC, like the industry it regulates, maintains a **strong commitment to safety** culture – an environment that encourages all employees to maintain a sense of responsibility for the actions of the organization. Over the years, devotion to this concept has been ingrained in the Commission’s culture and operations. As a result, NRC employees possess a unique connection to their work. To them, the NRC is more than just a job; it is part of their character.

This sense of personal responsibility was exemplified by those employees and commissioners who refused to be silenced by a bully. Their willingness to speak reflects a selfless dedication to the institution, an understanding that the NRC’s commitment to safety must transcend words on paper – it must be part of the culture and work environment of the agency. This is the NRC the public deserves.

This week marks the first time the commissioners, headed by the new chairman, Dr. Allison MacFarlane, will appear before Congress since Mr. Jaczko has stepped down. Dr. MacFarlane would be wise to learn from her predecessor’s mistakes and remember that **the NRC is no place for politics** or personal ambition. **It is an institution built on trust**, strengthened through decades of hard work and dedication. The NRC’s employees, unencumbered by personal or political influences, have the opportunity to prove to the public what many of them already understand – the NRC’s mission is more important than any one person – it is a collective responsibility.

#### Waste confidence is diverting NRC from MDEP, which is key to international regulatory harmonization. Short term is key—

Svinicki, NRC Commissioner, U.S. Senate staffer for over a decade, and a longstanding member of the American Nuclear Society, where she served two terms on the ANS Special Committee on Nuclear non-Proliferation. In 2006, the Society honored her with its Presidential Citation in recognition of her contributions to the nuclear energy, science, and technology policies of the United States. She has served as a member of the Center for Strategic and International Studies’ Task Force on Global Nuclear Materials Management, and as an Expert Advisory Panel Member to the NRC on assessing the future of regulatory research needs. She was selected as a Stennis Congressional Staff Fellow of the 108th Congress, as a Brookings Institution Legis Congressional Fellow in 1997, and as the University of Michigan College of Engineering Alumni Society Merit Award recipient for Nuclear Engineering and Radiological Sciences in 2009. 9/18/2012

(Kristine L., “Ensuring a Safe and Secure Future for Nuclear Energy,” Center for Strategic and International Studies, Lexis)

**The focus in 2012** **in the near term** is on completing the licensing activities for design certification and combined license applications now pending before NRC, expanding and carrying out our construction inspection program in Georgia and South Carolina, the sites under construction, and beginning review of the applications for advanced reactor designs.

To facilitate that review, the NRC is developing a regulatory approach that supports, we hope, unique aspects of advanced design. This includes identifying and resolving policy, technical and licensing issues, developing regulatory strategies to support efficient and timely reviews, engaging the Department of Energy designers and potential applicants in pre-application interactions and coordinating our activities with stakeholders.

One initiative NRC has undertaken to streamline its review of new applications involves integrating the use of risk insights to create design-specific review plans and standards for light water, small modular reactor designs and the development over the longer term of risk-informed performance-based regulatory structure for non-light water reactor designs.

**For** awareness and insights regarding **advanced reactor licensing in other countries**, **the NRC continues to be involved in the international nuclear community**, **as exemplified by** the agency **working** closely **with the IAEA and** regulators in other countries, **participating in** the multinational design evaluation program, or **MDEP**.

NRC's involvement in MDEP has been a very constructive engagement for us. If you're not familiar with this program, it's an international initiative that aims to improve the efficiency and effectiveness of the -- of regulatory design reviews of new commercial reactors. Staff from NRC and representatives from the nuclear regulatory authorities of nine other countries and the IAEA currently participate.

One of the most significant of MDEP's many contributions, in my view, is its objective of **increasing the multinational convergence of codes**, **standards**, guides and practices **and safety goals**. And although a key concept throughout the work of MDEP is that national regulators retain sovereign authority for licensing and regulatory decisions, the MDEP collaboration, in my view, **can go a long way toward**s advancing the **international harmonization of regulatory reviews of nuclear technologies**.

Of course, NRC's involvement in groups like MDEP and others would not be possible unless previous commissions had begun to build the **necessary human capital to support NRC's future and current workload**. Cultivating the next generation of nuclear professionals is a shared obligation. To this end, NRC carries out its nuclear education programs, which includes scholarships and fellowships in nuclear science and engineering which supports faculty development grants to support probationary tenure-tracked faculty during the first six years of their career in the fields of nuclear engineer, health, physics and radiochemistry.

And the NRC also has a support program for trade school and community's college -- community college scholarships at post- secondary educational institutions. So in concert with similar efforts that are occurring and carried out by the Department of Energy and the industry, I would characterize that target investment -- targeted investments have been and are being made in the development of the nuclear workforce of the future.

Before I conclude my remarks, I'd like to touch on the issue of **waste disposal**, which is a topic that is discussed in each of the reports by CSIS, the Idaho National Laboratory, Third Way and the Bipartisan Policy Center, and which is likely to be addressed by, I believe, nearly every speaker who will be speaking this morning at the event.

Now this is a topic I generally leave to others. I think principally the discussion and dialogue among elected officials in the Congress and state and local government and policymakers in the administration is where this dialogue is most active. And I also leave this topic to others because, in my view, **the NRC's role in this discussion is narrow and clear**, at least in my mind.

However, in June of this year, the U.S. **Court of Appeals** for the D.C. Circuit found that the NRC had violated the National Environmental Policy Act in issuing its 2010 update to its Waste Confidence Decision and accompanying Temporary Storage Rule. The court stated that, quote, "the commission apparently has no long-term plan other than hoping for a geologic repository. If the government continues to fail in its quest to establish one, then spent nuclear fuel will seemingly be stored on site at nuclear plants on a permanent basis." The court went on to state, "The commission can and must assess the potential environmental effects of such a failure."

In response to this -- or among other actions, the court specifically **struck down the waste confidence updates finding that the NRC had made** that reasonable assurance exists that sufficient geologic repository capacity will be available for the disposal of high-level waste and spent fuel when necessary. That was the NRC's finding. The court vacated both the update and the rule and remanded the case for further proceedings consistent with their opinion.

So in response, in August, the NRC issued an order in multiple proceedings acknowledging that quote, "Waste confidence undergirds certain agency licensing decisions, in particular new reactor licensing and reactor license renewal.

In recognition of our duties under the law, we will not issue licenses dependent on the Waste Confidence Decision or the Temporary Storage Rule until the court's remand is addressed."

Also, earlier this month the commission set the course for addressing the remand by directing the NRC staff to proceed directly with the development of a generic environmental impact statement to support an updated Waste Confidence Decision and Temporary Storage Rule. **The commission directed the staff to complete this action within 24 months and to focus primarily on** the three deficiency in **the** -- **deficiencies** NRC's analysis as **identified in the D.C. Circuit's decision**.

#### NRC provides the model for harmonization

Fertel, President & CEO, Nuclear Energy Institute, 9/18/2012

(Marvin, “Ensuring a Safe and Secure Future for Nuclear Energy,” Center for Strategic and International Studies, Lexis)

And then both you and General Scowcroft referred to the other thing is right now **the rest of the world is building a lot more plants than us**. Secretary Poneman referred to the fact that he's been told that they like American technology. Well, they should. Our technology is still the most advanced technology. Our passive safety systems are more advanced than anybody else's. We also have the best operators in the world, and everybody's looking for a combination of operations plus technology.

And to be honest, I think **countries that are starting up ought to look to the Nuclear Regulatory Commission for the regulatory framework that they want**. One of the lessons learned out of Fukushima, not on the plant side but on the government side, was the lack of a very effective regulator. And we shouldn't have that happen anywhere else as we go forward.

So making it possible for us to export, which right now is very difficult -- we compete against countries. OK, when we compete against the French, it's France as a country. When we compete against the Russians, it's Russia as a country. When we compete against South Korea, they act like a country. When we compete against China eventually, they will be a country. **So we need to be helped more by the government by removing obstacles** and also helping to facilitate things to sell U.S. technology.

#### Harmonization creates a global nuclear renaissance without picking winners – MDEP is key

Brown, Senior Vice President, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas, et al, 2008

(Robert, “Benefits Gained through International Harmonization of Nuclear Safety Standards for Reactor Designs,” WNA Working Group on Cooperation in Reactor Design Evaluation and Licensing Discussion Paper, http://www.world-nuclear.org/uploadedFiles/org/reference/pdf/ps-cordel.pdf)

A greater convergence and **harmonization of national standards** would allow for increased international cooperation among regulators. Regulatory design reviews, which are central to the national licensing processes, would be improved, in both effectiveness and efficiency, by sharing methods and data arising from safety evaluations.

Moreover, knowledge transfer on all regulatory issues, including regulatory practice, **could greatly facilitate the development of civil nuclear energy in emerging nuclear countries**, which have yet to develop well-established and independent regulatory regimes. Such collaboration will be possible, however, **only if a high degree of convergence** of rules and standards is achieved internationally.

An area where closer collaboration based on harmonized safety requirements is urgently needed is in quality inspections in construction and component manufacturing. Given the large number of contractors and sub-contractors from all parts of the world that now become involved in a new-build project, collaboration among regulators is essential to an efficient handling of manufacturing oversight issues.

The process of harmonization in itself can lead to better national regulations because the regulators can obtain insights into why different solutions have been chosen by overseas counterparts. This harmonization may lead to a common choice of the most reasonable and convincing solutions.

Finally, the harmonization of safety standards can have a **positive impact on public confidence** in regulatory decisions. For example, if a certain safety requirement is perceived to be more stringent in another country, a national regulator might be seen as being less focused on safety. Moreover, safety goals will be better understood and more readily accepted if they are internationally aligned.

The Multinational Design Evaluation Programme (MDEP)

**Recognition of the benefits of standardization** on the part of leading national regulatory authorities **is reflected in** the creation of the Multinational Design Evaluation Programme (**MDEP**). As individual regulators review new nuclear reactor designs, MDEP aims to enhance cooperation among them through sharing resources and knowledge, thus improving efficiency and effectiveness of the licensing process.

Stage 1 of the MDEP was established in 2005 by the nuclear regulators of France, Finland and the USA in order to assist them in the exchange of technical data during certification of the European Pressurized Reactor (EPR).

**The ultimate goal** of MDEP’s Stage 2, which is currently administrated by the OECD’s Nuclear Energy Agency, **is to achieve a degree of convergence of** codes, **standards** and safety goals **in** participating countries, namely Canada, China, Finland, France, Japan, South Africa, South Korea, Russia, the UK and the USA. The IAEA also participates in MDEP meetings.

During Stage 3, it is expected that the lessons learned in the first two stages will be used to facilitate licensing of new reactors, including Generation IV designs.

The nuclear industry seeks through the CORDEL group to share its experiences and resources with regulators in order to achieve the timely delivery of progress in this area. The CORDEL group has already had preliminary discussions with MDEP representatives, and these discussions will continue in more detail in the future.

3. BENEFITS FOR THE INDUSTRY

Standardized designs will reduce the overall engineering and construction time and cost compared to the non-standardized approach used in the past, which involved a significant degree of customization. Standardization can **reduce licensing risk and increase predictability** of construction, improving the financial feasibility of nuclear new-build.

Seen from a vendor perspective, the gain lies in the ability to sell a reactor to any customer (electricity company) in any country without the need for design changes, unless justified by site-specific circumstances.

Seen from an electricity company (owner-operator) perspective, **the gain is the ability to choose any design for any country and to order that design without major changes**. This efficiency does not imply that an electricity company would necessarily seek to have a fleet of plants with a single design. For a variety of reasons, including those connected to country-specific political circumstances, technical and cultural background, preferences of national regulators, the need to match the plant’s output to the grid capacity, and the ability to follow demand, **an operator** (and in particular a multinational operator) **may** prefer to **run a diversified portfolio of reactor technologies**.

However, standardization does offer a “fleet” operational concept whether an electric utility operates in only one country or operates only one plant of a particular design in one country as part of a larger international “fleet” of that design. Of course, a utility may achieve greater benefits of standardization as fleet size grows.

Suppliers of high-quality nuclear components will also realize benefits. Just as in construction, the supply of standard components should be at lower costs and higher quality than supply of custom-made components. This greater volume of standard supply will also encourage more suppliers to enter the supply chain, thus **driving prices down through competition** while ensuring availability of components to meet the needs of the nuclear renaissance.

Harmonization of national nuclear safety standards will enhance the stability of regulatory regimes, thus **providing a major prerequisite for investment decisions**. Requirements that have been aligned as the result of long and intensive discussion among regulators, leading to the conclusion that these requirements are necessary and at the same time reasonable and sufficient, are unlikely to be changed by a single regulator. Indeed, agreements among regulators could include provisions that discourage the unjustified imposition of requirements by any individual national regulatory body.

Harmonization overcomes low natural gas prices – kick-starts reactor construction worldwide

Brown, Senior Vice President, Regulatory Affairs, GE-Hitachi Nuclear Energy Americas, et al, 2008

(Robert, “Benefits Gained through International Harmonization of Nuclear Safety Standards for Reactor Designs,” WNA Working Group on Cooperation in Reactor Design Evaluation and Licensing Discussion Paper, http://www.world-nuclear.org/uploadedFiles/org/reference/pdf/ps-cordel.pdf)

**For potential investors**, however, global expansion of nuclear power continues to be viewed primarily through a financial and economic prism that **focuses particularly on nuclear power’s competitiveness vis à-vis** other sources of base-load power such as **coal and gas**.

**A major factor in this equation is the potential for economies of scale** achieved by building plants in series. Currently, national variations in safety regulations present an obstacle to internationally standardized nuclear reactor designs, which would foster these economies.

**The achievement of harmonization of nuclear safety standards could overcome this obstacle**, **facilitating the emergence of a global market** that offers a choice of a small number of reactor types that are recognized by regulators as safe and technologically mature. **This important step could kick-start serial reactor construction worldwide**.

#### Nuclear power expansion’s key to global desalination

Saly T. Panicker and P.K. Tewari 11, Desalination Division, Bhabha Atomic Research Centre, Mumbai, “Nuclear Energy for Water Desalination” in “Nuclear Energy Encyclopedia: Science, Technology, and Applications”, googlebooks

Water scarcity is one of the most pressing crises affecting our planet It is a global issue. Water is indispensable for industrial development, economic growth, social well-being, and for the preservation of natural resources. It is estimated that one-fifth of the worlds population does not have access to sate drinking water. Drinking water with physical, chemical, or biological contamination has harmful effects on human beings. Seawater. brackish water, and fresh water have different levels of salinity, which is normally expressed by the total dissolved solids (TDS> concentration. Water is considered potable when its TDS is below 500 parts per million (ppin) as per the World Health Organization (WHO\*. A virtually inexhaustible reserve of water exists in the sea, which is not fit for drinking.

Desalination is the process of producing pure water from saline water using electricity or heat. The major types of commercial desalination processes arc (a) thermal processes, such as multi-stage flash (MSI-"!, multiple-effect distillation (MED). vapor compression (VC). and low temperature evaporation (LTE), where heat energy is used to vaporize fresh water from saline water; and (b) membrane processes such as reverse osmosis (RO) and electro-dialysis (ED), where pure water is separated through suitable membranes using mechanical or electrical energy. Globally, about 60 million cubic meter/day (M3/d) of fresh water is produced hy desalination. The energy for these plants is generally supplied from the conventional fossil fuel power plants. However, the depleting sources and future price uncertainty of the fossil fuels promote production of energy from nuclear or renewable sources.

9.2 NUCLEAR DESALINATION

Desalination is an energy-intensive process. A desalination system, especially ihe thermal unit, can be integrated with a power plant for directly receiving steam, electricity, and coolant (scawatcr) return stream as feed. Co-location of desalination and power plants lias the henelits of sharing infrastructural facilities, which would lead to the reduction of overall costs. Such dual purpose plants generating power and water have inherent design strategies for better thermodynamic efficiency besides economic optimization. Production of potable water in a facility in which a nuclear reactor is used as the source of energy for the process is termed nuclear desalination. Tins energy could be low-grade steam (for MSF/MED), waste heal (for LTE), or electricity (for ROVED). Years of successful operation have proved the technical feasibility and reliability of nuclear desalination.

A power plan! coupled with a desalinaiion system utilizing only a pan of the total energy for producing water is known as a dual-purpose plain or a cogeneration plant. A power plant exclusively dedicated for water desalination is known as single-purpose plant. For a given power rating, a nuclear power plant, in general, has a larger amount of waste heat than a fossil fuel power plant. The enthalpy of steam available at the inlet to the high pressure (HP) turbine of a nuclear power plant is lower due to the lower pressure and temperature of the saturated steam. Thus, the specific steam consumption in a nuclear power plant is higher as compared to conventional power plant. This leads to availability of a higher amount of steam that could be utilized for desalination (Table 9.1). In addition, a nuclear power plant is normally situated in coastal areas, where the feed seawater is available nearby and also there is scarcity of good quality water.

Table 9.2 shows the parameters of steam, produced in various reactor types. A nuclear plant, depending on its type, can provide steam or process heat from about 50 to I50°C for desalination. Liquid Metal Fast Breeder Reactor (LMFBR) and High Temperature Gas Cooled Reactor (HTCiR) generate steam at higher temperature and pressure. LMFBRs produce steam at approximately 500°C and MTGRs at still higher temperatures.

93 WORLD SCENARIO OF NUCLEAR DESALINATION

The possibility of using nuclear energy for desalination of seawater was realized as early as the 1960s. Experience with nuclear desalination now exceeds 150 reactor-years. Table 9.3 gives a list of the nuclear plants used for desalination of water.

Nuclear desalination has been drawing broad interest among the member states of International Atomic Energ) Agency (IAEA) due to acute water issues in many arid and semi-arid areas worldwide. The IAEA is playing an important role as a facilitating agency for creating (lie awareness, coordinating research projects, identifying important topics of common interest, organizing technical meetings, and providing forums for exchange of information on nuclear desalination. Argentina is exploring the possibilities of using its small reactor. CAREM, for providing energy input to desalination system. China has completed the feasibility study of nuclear desalination project using the NHR-200 type of nuclear reactor. Egypt has completed a feasibility study for a nuclear co-generation plant at El-Dabaa. Construction of a pre-heal reverse osmosis (RO) lest facility at El-Dabaa has been completed. France has collaborations with III Libya to undertake lechno-economie feasibility study for a specific site ami the adaptation of the experimental reactor at Tajoura for nuclear desalination and (2) Morocco (The AMANE project) for techno-economic feasibility study of Agadir and Laayoun sites. In Japan, several nuclear reactors are integrated with desalination facilities. The Korean program includes development of an integrated desalination plant with SMART for electricity generation and scawater desalination. Pakistan is establishing an MED based nuclear desalination demonstration plant integrated with the Karachi Nuclear Power Plant (KANUPP). The Russian Federal Agency for Atomic Energy (ROSATOM) is constructing a floating barge mounted co-generation nuclear plant based on ship propulsion reactor KLT-40s of PWR type. Tunisia has completed techno-economic feasibility study for the la Skhira site in the southeast part

of the country. Nuclear desalination is one of the missions of U.S. Department of Energy's launched Global Nuclear Energy Partnership (GNEP)'s Grid Appropriate Reactor (GAR) campaign. Indonesia, Saudi Arabia, Algeria. Brazil. Islamic Republic of Iran, Iraq. Italy, Jordan. Lebanon. Philippines. Syrian Arab Republic, and the UAE are exploring the potential of nuclear desalination in their countries or regions.

#### Only reactors can reliably power desal plants

Science Daily 7, “Could Nuclear Power Be The Answer To Fresh Water?”, November 20, <http://www.sciencedaily.com/releases/2007/11/071120082429.htm>

Scientists are working on new solutions to the ancient problem of maintaining a fresh water supply. With predictions that more than 3.5 billion people will live in areas facing severe water shortages by the year 2025, the challenge is to find an environmentally benign way to remove salt from seawater.

Global climate change, desertification, and over-population are already taking their toll on fresh water supplies. In coming years, fresh water could become a rare and expensive commodity. Research results presented at the Trombay Symposium on Desalination and Water Reuse offer a new perspective on desalination and describe alternatives to the current expensive and inefficient methods.

Pradip Tewari of the Desalination Division at Bhabha Atomic Research Centre, in Mumbai, India, discusses the increasing demand for water in India driven not only by growing population and expectancies rapid agricultural and industrial expansion. He suggests that a holistic approach is needed to cope with freshwater needs, which include primarily seawater desalination in coastal areas and brackish water desalination as well as rainwater harvesting, particularly during the monsoon season. "The contribution of seawater and brackish water desalination would play an important role in augmenting the freshwater needs of the country."

Meenakshi Jain of CDM & Environmental Services and Positive Climate Care Pvt Ltd in Jaipur highlights the energy problem facing regions with little fresh water. "Desalination is an energy-intensive process. Over the long term, desalination with fossil energy sources would not be compatible with sustainable development; fossil fuel reserves are finite and must be conserved for other essential uses, whereas demands for desalted water would continue to increase."

Jain emphasizes that a sustainable, non-polluting solution to water shortages is essential. Renewable energy sources, such as wind, solar, and wave power, may be used in conjunction to generate electricity and to carry out desalination, which could have a significant impact on reducing potential increased greenhouse gas emissions. "Nuclear energy seawater desalination has a tremendous potential for the production of freshwater," Jain adds.

The development of a floating nuclear plant is one of the more surprising solutions to the desalination problem. S.S. Verma of the Department of Physics at SLIET in Punjab, points out that small floating nuclear power plants represent a way to produce electrical energy with minimal environmental pollution and greenhouse gas emissions. Such plants could be sited offshore anywhere there is dense coastal population and not only provide cheap electricity but be used to power a desalination plant with their excess heat. "Companies are already in the process of developing a special desalination platform for attachment to FNPPs helping the reactor to desalinate seawater," Verma points out.

A. Raha and colleagues at the Desalination Division of the Bhabha Atomic Research Centre, in Trombay, point out that Low-Temperature Evaporation (LTE) desalination technology utilizing low-quality waste heat in the form of hot water (as low as 50 Celsius) or low-pressure steam from a nuclear power plant has been developed to produce high-purity water directly from seawater. Safety, reliability, viable economics, have already been demonstrated. BARC itself has recently commissioned a 50 tons per day low-temperature desalination plant.

Co-editor of the journal\*, B.M. Misra, formerly head of BARC, suggests that solar, wind, and wave power, while seemingly cost effective approaches to desalination, are not viable for the kind of large-scale fresh water production that an increasingly industrial and growing population needs.

India already has plans for the rapid expansion of its nuclear power industry. Misra suggests that large-scale desalination plants could readily be incorporated into those plans. "The development of advanced reactors providing heat for hydrogen production and large amount of waste heat will catalyze the large-scale seawater desalination for economic production of fresh water," he says.

#### Global water scarcity’s inevitable – causes war and kills billions

Nitish Priyadarshi 12, lecturer in the department of environment and water management at Ranchi University in India, “War for water is not a far cry”, June 16, <http://www.cleangangaportal.org/node/44>

The battles of yesterday were fought over land. Those of today are over energy. But the battles of tomorrow may be over water. Along with population growth and increasing per capita water consumption, massive pollution of the world's surface water systems has placed a great strain on remaining supplies of clean fresh water. Global deforestation, destruction of wetlands, dumping of pesticides and fertilizer into waterways, and global warming are all taking a terrible toll on the Earth's fragile water system.

The combination of increasing demand and shrinking supply has attracted the interest of global corporations who want to sell water for a profit. The water industry is touted by the World Bank as a potential trillion-dollar industry. Water has become the “blue gold” of the 21st century.

In many parts of the world, one major river supplies water to multiple countries. Climate change, pollution and population growth are putting a significant strain on supplies. In some areas renewable water reserves are in danger of dropping below the 500 cubic meters per person per year considered a minimum for a functioning society.

In recent times, several studies around the globe show that climatic change is likely to impact significantly upon freshwater resources availability. In India, demand for water has already increased manifold over the years due to urbanization, agriculture expansion, increasing population, rapid industrialization and economic development. At present, changes in cropping pattern and land-use pattern, over-exploitation of water storage and changes in irrigation and drainage are modifying the hydrological cycle in many climate regions and river basins of India.

Due to warming and climate change rainfall trend has been badly affected worldwide. This change has adversely affected the groundwater recharge.

Water scarcity is expected to become an even more important problem than it is today.

In a case study of Jharkhand state of India groundwater recharging is mainly dependent on rainfall. Though Jharkhand receives sufficient amount of rainfall (900 to 1400 mm/year) but from last several years the rainfall pattern is very erratic. From last two years Ranchi city the capital of Jharkhand state received sufficient rainfall but distribution of rainfall was not uniform. It rained heavily just for two to three days in the month of August and September which resulted in heavy runoff and less infiltration affecting groundwater level.

The process of urbanization and industrialization from last 20 years has caused changes in the water table of Jharkhand State of India as a result of decreased recharge and increased withdrawal. Many of the small ponds which were main source of water in the surrounding areas are now filled for different construction purpose affecting the water table.

By 2100, water scarcity could impact between 1.1 and 3.2 billion people, says a leaked draft of an Intergovernmental Panel on Climate Change (IPCC) report due to be published in April 2007. The report focuses on the consequences of global warming and options for adapting to them. In February 2007 the panel released a report on the scientific basis of climate change.

The IPCC predicts critical water shortages in China and Australia, as well as parts of Europe and the United States. Africa and poor countries such as Bangladesh would be most affected because they were least able to cope with drought.

Major cities worldwide may face a water shortage crisis by 2050 if relevant governments don't react quickly. The water shortage will mostly affect basic daily needs such as drinking, cooking, bathing and washing clothes, and the poor residents of the world's major cities in developing countries are the ones who will suffer most.

"By 2050, big cities that will not have enough water available nearby include Beijing, New Delhi, Mexico City, Lagos and Tehran. China and India will be particularly hard hit unless significant new efforts are taken by their cities,".

There are several principal manifestations of the water crisis.

1. Inadequate access to safe drinking water for about 884 million people.

2. Inadequate access to water for sanitation and waste disposal for 2.5 billion people.

3. Groundwater over drafting (excessive use) leading to diminished agricultural yields.

4. Overuse and pollution of water resources harming biodiversity.

5. Regional conflicts over scarce water resources sometimes resulting in warfare.

Potential Hot Spots:

Egypt: A coalition led by Ethiopia is challenging old agreements that allow Egypt to use more than 50 percent of the Nile’s flow. Without the river, all of Egypt would be desert.

Eastern Europe: Decades of pollution have fouled the Danube, leaving down-stream countries, such as Hungary and the Republic of Moldova, scrambling to find new sources of water.

Middle East: The Jordan River, racked by drought and diverted by Israeli, Syrian and the Jordanian dams, has lost 95 percent of its former flow.

Former Soviet Union: The Aral sea, at one time the world’s fourth largest inland sea, has lost 75 percent of its water because of diversion programs begun in the 1960s.

There are many other countries of the world that are severely impacted with regard to human health and inadequate drinking water. The following is a partial list of some of the countries with significant populations (numerical population of affected population listed) whose only consumption is of contaminated water:

 Sudan: 12.3 million

 Venezuela: 5.0 million

 Ethiopia: 2.7 million

 Tunisia: 2.1 million

 Cuba :1.3 million

#### Those wars go global

Reilly ‘2

(Kristie, Editor for In These Times, a nonprofit, independent, national magazine published in Chicago. We’ve been around since 1976, fighting for corporate accountability and progressive government. In other words, a better world, “NOT A DROP TO DRINK,” <http://www.inthesetimes.com/issue/26/25/culture1.shtml>)

\*Cites environmental thinker and activist Vandana Shiva Maude Barlow and Tony Clarke—probably North America’s foremost water experts

The two books provide a chilling, in-depth examination of a rapidly emerging global crisis. “Quite simply,” Barlow and Clarke write, “unless we dramatically change our ways, between one-half and two-thirds of humanity will be living with severe fresh water shortages within the next quarter-century. … The hard news is this: Humanity is depleting, diverting and polluting the planet’s fresh water resources so quickly and relentlessly that every species on earth—including our own—is in mortal danger.” The crisis is so great, the three authors agree, that the world’s next great wars will be over water. The Middle East, parts of Africa, China, Russia, parts of the United States and several other areas are already struggling to equitably share water resources. Many conflicts over water are not even recognized as such: Shiva blames the Israeli-Palestinian conflict in part on the severe scarcity of water in settlement areas. As available fresh water on the planet decreases, today’s low-level conflicts can only increase in intensity.

#### And nuclear

Weiner ‘90

(Jonathan, Visiting Professor of Molecular Biology at Princeton University. The Next One Hundred Years: Shaping the Fate of Our Living Earth, p. 214)

If we do not destroy ourselves with the A-bomb and the H-bomb, then we may destroy ourselves with the C-bomb, the Change Bomb. And in a world as interlinked as ours, one explosion may lead to the other. Already in the Middle East, from North Africa to the Persian Gulf and from the Nile to the Euphrates, tensions over dwindling water supplies and rising populations are reaching what many experts describe as a flashpoint. A climate shift in the single battle-scarred nexus might trigger international tensions that will unleash some of the 60,000 nuclear warheads the world has stockpiled since Trinity.

#### The NRC can only focus on safety if it avoids political debates

Waxman, Ranking Member of House Committee on Energy and Commerce, 7/24/2012

(Henry A., “NRC Policy and Governance Oversight,” Hearing of the Subcommittee on Environment and the Economy and Subcommittee on Energy and Power, Lexis)

I want to begin by welcoming Dr. Allison Macfarlane, the new chairman of the Nuclear Regulatory Commission. I look forward to hearing your testimony and perspectives on how to **refocus the Commission’s energy on the safety and security of America’s nuclear power plants**. The mission of the Nuclear Regulatory Commission is to license and regulate the nation’s civilian use of nuclear materials to “ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.” This is a vital mission, but for the last year and half, **the Commission has been distracted from its responsibilities by politicians who second-guessed its decisions** and sowed internal dissension. Regrettably, this Committee helped fan the flames of discord within the Commission by looking for any opportunity to cast aspersions on the former Chairman. It is time to move on. We have four commissioners here today, including the new chairman. We should focus on examining important nuclear safety issues, not rehashing old grudges. There’s no shortage of issues to discuss, from the ongoing shut-down of the San Onofre Nuclear Generating Station in California due to safety concerns to the status of NRC’s postFukushima review of nuclear power plant safety in the United States. It’s been more than a year since the Fukushima nuclear accident in Japan. Japan’s independent commission investigating the events leading up to the disaster recently concluded that the power plant operator and Japan’s nuclear regulators failed to implement basic safety measures despite known risks posed by earthquakes, tsunamis, and other events that can cause long-term blackouts at reactors. This is a cautionary tale for the United States, one that NRC should heed when implementing lessons learned from the Fukushima disaster.

#### Focus and credibility are key to safety improvements

Nuclear Energy Institute 6/26/2012

(“NRC Leadership Must Reinstate Environment That Promotes Collegial Engagement,” http://www.nei.org/newsandevents/newsreleases/nrc-leadership-must-reinstate-environment-that-promotes-collegial-engagement)

Safe performance of nuclear energy facilities and the Nuclear Regulatory Commission’s **credibility** are the two **most important factors for policymaker and public confidence in nuclear energy**. As such, the industry is concerned with anything that threatens the credibility of either. It is critical that the NRC leadership, including Allison Macfarlane if confirmed by the Senate, take the steps necessary to ensure that the agency is an efficient, effective regulator.

The industry is always concerned about the possibility of a **chilled working environment** at our facilities or at the NRC, including the possibility of staff intimidation, at a time when the senior management and staff are working on crucial licensing activities and post-Fukushima safety recommendations. The industry takes safety culture issues seriously, and we expect the same priority treatment of these issues by our regulator.

**Safety is maximized when NRC** and industry **resources are focused on those matters that are most important to safety**. It is important that the NRC commission and staff have a professional, collegial environment that allows the important work of the agency to continue without interruption or distraction.

#### NRC is modeled

Domenici, Former U.S. Senator and Bipartisan Policy Center Senior Fellow, and Miller, Former Department of Energy Assistant Secretary for Nuclear Energy, September 2012

(Pete and Warren, “Maintaining U.S. Leadership in Global Nuclear Energy Markets,” A Report of the Bipartisan Policy Center’s Nuclear Initiative, http://bipartisanpolicy.org/sites/default/files/Nuclear%20Report.PDF)

At present, however, the U.S. safety and security infrastructure and regulatory framework remain without peer and **U.S. expertise and guidance** on operational and regulatory issues **continues to be sought around the world**. The domestic nuclear industry established the INPO in the wake of the Three Mile Island accident in 1979 in a collective effort to hold all industry players accountable to the highest standards for safe and reliable commercial operations. Similarly, **the NRC is seen as the gold standard for commercial nuclear regulation**. As long as other countries seek to learn from the experience and expertise of U.S. firms and regulators, the United States will enjoy greater access to international nuclear programs. A substantial reduction in domestic nuclear energy activities could erode U.S. international standing.

#### Spills over globally

Nuclear Energy Insider 9/19/2012

(“NRC Chair Macfarlane: ‘natural hazards come in many forms,’” http://analysis.nuclearenergyinsider.com/new-build/nuclear-energy-insider-policy-and-commission-brief-13-%E2%80%93-19-september-2012)

The US Nuclear Regulatory Commission Chairman Allison Macfarlane has said that ‘safety culture’ is among the key lessons of the Fukushima tragedy. At this week’s International Nuclear Safety Group Forum at the start of the International Atomic Energy Agency’s annual General Conference in Austria she told international regulators that the United States is beginning the process of transitioning implementation of its post-Fukushima efforts into the daily routine of reactor regulation.

Speaking in Austria Macfarlane also said it is important to avoid focusing on planning for a single type of accident. “We must remember that natural hazards come in many forms… We should not focus on planning for the next „expected? accident but rather have measures in place to address a variety of permutations. Our focus on external events must continue to be broad to make nuclear reactors worldwide as safe as possible,” she said.

A strong safety culture is only part of the issue, Macfarlane said in her first international meeting. “**It is critically important for all countries to have strong inspection and enforcement programs with transparent processes and objective criteria**. Workers in the nuclear industry need a questioning attitude and an environment in which they feel free to raise concerns.”

She noted the “whistleblower” protections available in the United States, and added that even with all the protections in place in the United States for raising safety concerns “safety culture is still a challenge for the United Sates to promote and assess.”

During the course of the IAEA General **Convention Macfarlane was due to meet with 20 national regulators and sign a number of bilateral cooperation agreements that contribute to sharing global nuclear safety expertise**. Among the nations signing agreements with the United States will be Mexico, Switzerland, Jordan, Korea and Turkey.

#### Safety is key to broader nuclear applications

Allison 8

Graham Allison, Harvard Belfer Center for International Affairs and Science Director, JFK Government Professor, and T.P. Sreenivasan, Former UN and Vienna Ambassador, Brookings Visiting Fellow, May 2008, IAEA Commissioned Independent Report prepared by a panel of 22 nonproliferation experts, Allison and Sreenivasan Executive Directors, Reinforcing the Global Nuclear Order for Peace and Prosperity: The Role of the IAEA to 2020 and Beyond, http://belfercenter.ksg.harvard.edu/publication/18333/reinforcing\_the\_global\_nuclear\_order\_for\_peace\_and\_prosperity.html?breadcrumb=%2Fproject%2F3%2Fmanaging\_the\_atom

As Chernobyl showed, a nuclear accident anywhere is a nuclear accident everywhere.13 A major accidental release of radioactivity could cause widespread suffering and economic disruption, and undermine **prospects for** large-scale growth in peaceful nuclear applications. Member states and the IAEA must do everything they can to ensure that such an accident never occurs again.

#### Peaceful nuclear applications critical to global food security

Allison 8

Graham Allison, Harvard Belfer Center for International Affairs and Science Director, JFK Government Professor, and T.P. Sreenivasan, Former UN and Vienna Ambassador, Brookings Visiting Fellow, May 2008, IAEA Commissioned Independent Report prepared by a panel of 22 nonproliferation experts, Allison and Sreenivasan Executive Directors, Reinforcing the Global Nuclear Order for Peace and Prosperity: The Role of the IAEA to 2020 and Beyond, http://belfercenter.ksg.harvard.edu/publication/18333/reinforcing\_the\_global\_nuclear\_order\_for\_peace\_and\_prosperity.html?breadcrumb=%2Fproject%2F3%2Fmanaging\_the\_atom

Nuclear techniques have also contributed significantly to improving global food security and safety. The IAEA, through its partnership with the Food and Agriculture Organization of the United Nations, has played an indispensable role not only in developing nuclear technology but also in building capacity and transferring technology to member states for key agricultural projects. The goals of these projects include improving the efficiency and sustainability of land and water management; breeding new crops with special qualities and adapted to marginal environments; improving animal production and health; controlling insects that are major pests of plants and livestock; and increasing food safety while facilitating international trade.

Global food supplies and agricultural resources will increasingly come under pressure from climate change and an expanded demand for food, feed, and biofuels from a growing world population. Nuclear techniques can be used to provide accurate information on the efficiency of land and water management practices, which can be used to adapt to climate change and enhance food and biofuel production. To preserve agricultural resources and the environment, isotopic techniques will increasingly be important to develop efficient management strategies for water – including groundwater – and soils. The IAEA’s activities to induce mutations for improving crop productivity will become more important to develop crop varieties that can grow under the harsher conditions brought about by climate change and on marginal lands not yet exploited for agriculture. Since most of the IAEA’s member states do not have the mature capacity to use these nuclear techniques, the involvement of the Agency in building capacity and transferring techniques for more efficient land and water management – which are considered to be in the “public good” domain – will remain crucial for sustainable agriculture and the socio-economic stability of these member states.

Nuclear techniques can also help increase agricultural productivity by reducing the major losses that are caused by plant and animal pests and diseases. Techniques for diagnosing transboundary animal diseases, focusing on nuclear and nuclear-related molecular technologies, will be increasingly important for early and rapid detection in both the laboratory and the field. Area-wide application of the Sterile Insect Technique (SIT) to protect crops and livestock from pests is a unique technology in which the Agency has global leadership and an excellent track record. Expanding international agricultural trade will increasingly require the integration of pre- and post-harvest pest-control measures such as SIT and food irradiation, so that member states can meet regulations for international agricultural export markets.

Food wars and extinction

Brown, 9 – founder of the Worldwatch Institute and the Earth Policy Institute

(Lester R, “Can Food Shortages Bring Down Civilization?” Scientific American, May)

The biggest threat to global stability is the potential for food crises in poor countries to cause government collapse. Those crises are brought on by ever worsening environmental degradation

One of the toughest things for people to do is to anticipate sudden change. Typically we project the future by extrapolating from trends in the past. Much of the time this approach works well. But sometimes it fails spectacularly, and people are simply blindsided by events such as today's economic crisis.

For most of us, the idea that civilization itself could disintegrate probably seems preposterous. Who would not find it hard to think seriously about such a complete departure from what we expect of ordinary life? What evidence could make us heed a warning so dire--and how would we go about responding to it? We are so inured to a long list of highly unlikely catastrophes that we are virtually programmed to dismiss them all with a wave of the hand: Sure, our civilization might devolve into chaos--and Earth might collide with an asteroid, too! For many years I have studied global agricultural, population, environmental and economic trends and their interactions. The combined effects of those trends and the political tensions they generate point to the breakdown of governments and societies. Yet I, too, have resisted the idea that food shortages could bring down not only individual governments but also our global civilization.

I can no longer ignore that risk. Our continuing failure to deal with the environmental declines that are undermining the world food economy--most important, falling water tables, eroding soils and rising temperatures--forces me to conclude that such a collapse is possible. The Problem of Failed States   Even a cursory look at the vital signs of our current world order lends unwelcome support to my conclusion. And those of us in the environmental field are well into our third decade of charting trends of environmental decline without seeing any significant effort to reverse a single one. In six of the past nine years world grain production has fallen short of consumption, forcing a steady drawdown in stocks. When the 2008 harvest began, world carryover stocks of grain (the amount in the bin when the new harvest begins) were at 62 days of consumption, a near record low. In response, world grain prices in the spring and summer of last year climbed to the highest level ever.As demand for food rises faster than supplies are growing, the resulting food-price inflation puts severe stress on the governments of countries already teetering on the edge of chaos. Unable to buy grain or grow their own, hungry people take to the streets. Indeed, even before the steep climb in grain prices in 2008, the number of failing states was expanding [see sidebar at left]. Many of their problem's stem from a failure to slow the growth of their populations. But if the food situation continues to deteriorate, entire nations will break down at an ever increasing rate. We have entered a new era in geopolitics. In the 20th century the main threat to international security was superpower conflict; today it is failing states. It is not the concentration of power but its absence that puts us at risk.States fail when national governments can no longer provide personal security, food security and basic social services such as education and health care. They often lose control of part or all of their territory. When governments lose their monopoly on power, law and order begin to disintegrate. After a point, countries can become so dangerous that food relief workers are no longer safe and their programs are halted; in Somalia and Afghanistan, deteriorating conditions have already put such programs in jeopardy.Failing states are of international concern because they are a source of terrorists, drugs, weapons and refugees, threatening political stability everywhere. Somalia, number one on the 2008 list of failing states, has become a base for piracy. Iraq, number five, is a hotbed for terrorist training. Afghanistan, number seven, is the world's leading supplier of heroin. Following the massive genocide of 1994 in Rwanda, refugees from that troubled state, thousands of armed soldiers among them, helped to destabilize neighboring Democratic Republic of the Congo (number six).Our global civilization depends on a functioning network of politically healthy nation-states to control the spread of infectious disease, to manage the international monetary system, to control international terrorism and to reach scores of other common goals. If the system for controlling infectious diseases--such as polio, SARS or avian flu--breaks down, humanity will be in trouble. Once states fail, no one assumes responsibility for their debt to outside lenders. If enough states disintegrate, their fall will threaten the stability of global civilization itself.

#### Fukushima puts global nuclear safety on the brink—another accident shuts down civilian use

Stewart Brand, CNN, 3/24/11, What's next for nuclear power?, features.blogs.fortune.cnn.com/2011/03/24/whats-next-for-nuclear-power/

My thoughts are only partially complete. I'm paying close attention. One thing we know is that a 9.0 earthquake did not harm the nuclear reactors in Japan. What did get them was the tsunami that was just a bit higher than what they had prepared for. I'm impressed that so far they've not had really significant releases of radioactive stuff. And I'm really impressed with the reporting on the crisis. When you compare how the media have handled this calamity with what happened in '86 at Chernobyl and before that at Three Mile Island, there's a lot less panic and a lot more detailed, knowledgeable public instruction going on. I think that is very good news, particularly because people in the U.S. and parts of Europe are starting to change their minds about nuclear. Before, it was, "Should we just shut these damn things down?" Now, I think, it's more in the mode of, "Should we go ahead with a nuclear renaissance, and if so, what kind of details need to be focused on?" In Fukushima, we're looking at a 40-year-old boiling-water reactor whose cooling capability, it turns out, was not as redundant as it needed to be. Newer reactor designs, like the Westinghouse AP1000, have passive cooling systems. They don't need extra power; nobody has to do anything. We should learn from Japan. What new training do we want to provide for plant operators? What new equipment and systems have to be installed? What new requirements should the NRC enforce? If the discussion is technical rather than theological, I think nuclear will go forward. With its fast-growing thirst for electricity, China, which has 25 nuclear power plants under construction including the Sanmen reactor in Zhejiang Province, remains committed to nuclear. We've already come a long way. There have been no more Three Mile Islands because the industry paid close attention to what happened there. For the same reason, there will be no more Fukushimas. But, you know, probably in China or India or somewhere, there'll be some other nuclear event, and it will be a big, serious problem that everybody will look at with either horror or close attention or both. Basically, high concentrations of energy -- whether it's in gasoline or natural gas going through pipes underneath your neighborhood -- are dangerous stuff. Nuclear is more in Black Swan territory, where you have infrequent but big events. Other sources of energy fall into the routine-death domain, both for civilians and workers, so you're always seeing cost-benefit analyses. The sad thing for me is that in the U.S. we're more concerned about these damn nuclear plants than about what happened in Japan with this absolutely horrifying tsunami and earthquake. I think that nuclear is a significant part of their problems, but it is far from the worst problem. My perspective is mainly global. What the U.S. does or doesn't do in the wake of Japan is important but not the main event. The main event is in the developing world, where billions of people are getting out of poverty and moving to cities, and they want electricity. They're either going to get that electricity from coal or they're going to get it from nuclear. My personal preference for the atmosphere is that it not be coal. So I was glad to read that even after what's happened in Japan, China and India remain committed to nuclear power. We used to think, Well, one more major nuclear accident and that's it for the nuclear industry. Everybody said that. Now we've had one more major nuclear accident, and from what I can see so far, to our surprise, that's not it for the nuclear industry. It looks as if this will be seen as a cautionary story. Meanwhile the big calamity -- the earthquake-and tsunami-scale calamity that is climate change -- is still overshadowing everybody and everything.

## plan

#### The United States Federal Government should remove the waste confidence rule.

# 2AC

## indo-pak

#### Indo-Pak water wars go nuclear

Zahoor ‘11

(Musharaf, is researcher at Department of Nuclear Politics, National Defence University, Islamabad, “Water crisis can trigger nuclear war in South Asia,” <http://www.siasat.pk/forum/showthread.php?77008-Water-Crisis-can-Trigger-Nuclear-War-in-South-Asia>, AM)

South Asia is among one of those regions where water needs are growing disproportionately to its availability. The high increase in population besides large-scale cultivation has turned South Asia into a water scarce region. The two nuclear neighbors Pakistan and India share the waters of Indus Basin. All the major rivers stem from the Himalyan region and pass through Kashmir down to the planes of Punjab and Sindh empty into Arabic ocean. It is pertinent that the strategic importance of Kashmir, a source of all major rivers, for Pakistan and symbolic importance of Kashmir for India are maximum list positions. Both the countries have fought two major wars in 1948, 1965 and a limited war in Kargil specifically on the Kashmir dispute. Among other issues, the newly born states fell into water sharing dispute right after their partition. Initially under an agreed formula, Pakistan paid for the river waters to India, which is an upper riparian state. After a decade long negotiations, both the states signed Indus Water Treaty in 1960. Under the treaty, India was given an exclusive right of three eastern rivers Sutlej, Bias and Ravi while Pakistan was given the right of three Western Rivers, Indus, Chenab and Jhelum. The tributaries of these rivers are also considered their part under the treaty. It was assumed that the treaty had permanently resolved the water issue, which proved a nightmare in the latter course. India by exploiting the provisions of IWT started wanton construction of dams on Pakistani rivers thus scaling down the water availability to Pakistan (a lower riparian state). The treaty only allows run of the river hydropower projects and does not permit to construct such water reservoirs on Pakistani rivers, which may affect the water flow to the low lying areas. According to the statistics of Hydel power Development Corporation of Indian Occupied Kashmir, India has a plan to construct 310 small, medium and large dams in the territory. India has already started work on 62 dams in the first phase. The cumulative dead and live storage of these dams will be so great that India can easily manipulate the water of Pakistani rivers. India has set up a department called the Chenab Valley Power Projects to construct power plants on the Chenab River in occupied Kashmir. India is also constructing three major hydro-power projects on Indus River which include Nimoo Bazgo power project, Dumkhar project and Chutak project. On the other hand, it has started Kishan Ganga hydropower project by diverting the waters of Neelum River, a tributary of the Jhelum, in sheer violation of the IWT. The gratuitous construction of dams by India has created serious water shortages in Pakistan. The construction of Kishan Ganga dam will turn the Neelum valley, which is located in Azad Kashmir into a barren land. The water shortage will not only affect the cultivation but it has serious social, political and economic ramifications for Pakistan. The farmer associations have already started protests in Southern Punjab and Sindh against the non-availability of water. These protests are so far limited and under control. The reports of international organizations suggest that the water availability in Pakistan will reduce further in the coming years. If the situation remains unchanged, the violent mobs of villagers across the country will be a major law and order challenge for the government. The water shortage has also created mistrust among the federative units, which is evident from the fact that the President and the Prime Minister had to intervene for convincing Sindh and Punjab provinces on water sharing formula. The Indus River System Authority (IRSA) is responsible for distribution of water among the provinces but in the current situation it has also lost its credibility. The provinces often accuse each other of water theft. In the given circumstances, Pakistan desperately wants to talk on water issue with India. The meetings between Indus Water Commissioners of Pakistan and India have so far yielded no tangible results. The recent meeting in Lahore has also ended without concrete results. India is continuously using delaying tactics to under pressure Pakistan. The Indus Water Commissioners are supposed to resolve the issues bilaterally through talks. The success of their meetings can be measured from the fact that Pakistan has to knock at international court of arbitration for the settlement of Kishan Ganga hydropower project. The recently held foreign minister level talks between both the countries ended inconclusively in Islamabad, which only resulted in heightening the mistrust and suspicions. The water stress in Pakistan is increasing day by day. The construction of dams will not only cause damage to the agriculture sector but India can manipulate the river water to create inundations in Pakistan. The rivers in Pakistan are also vital for defense during wartime. The control over the water will provide an edge to India during war with Pakistan. The failure of diplomacy, manipulation of IWT provisions by India and growing water scarcity in Pakistan and its social, political and economic repercussions for the country can lead both the countries toward a war. The existent A-symmetry between the conventional forces of both the countries will compel the weaker side to use nuclear weapons to prevent the opponent from taking any advantage of the situation. Pakistan's nuclear programme is aimed at to create minimum credible deterrence. India has a declared nuclear doctrine which intends to retaliate massively in case of first strike by its' enemy. In 2003, India expanded the operational parameters for its nuclear doctrine. Under the new parameters, it will not only use nuclear weapons against a nuclear strike but will also use nuclear weapons against a nuclear strike on Indian forces anywhere. Pakistan has a draft nuclear doctrine, which consists on the statements of high ups. Describing the nuclear thresh-hold in January 2002, General Khalid Kidwai, the head of Pakistan's Strategic Plans Division, in an interview to Landau Network, said that Pakistan will use nuclear weapons in case India occupies large parts of its territory, economic strangling by India, political disruption and if India destroys Pakistan's forces. The analysis of the ambitious nuclear doctrines of both the countries clearly points out that any military confrontation in the region can result in a nuclear catastrophe. The rivers flowing from Kashmir are Pakistan's lifeline, which are essential for the livelihood of 170 million people of the country and the cohesion of federative units. The failure of dialogue will leave no option but to achieve the ends through military means.

## disease

Extinction

Keating, 9

(Deputy Web Editor-Foreign Policy, 11/13, “The End of the World, http://www.foreignpolicy.com/articles/2009/11/13/the\_end\_of\_the\_world?page=full)

How it could happen: Throughout history, plagues have brought civilizations to their knees. The Black Death killed more off more than half of Europe's population in the Middle Ages. In 1918, a flu pandemic killed an estimated 50 million people, nearly 3 percent of the world's population, a far greater impact than the just-concluded World War I. Because of globalization, diseases today spread even faster - witness the rapid worldwide spread of H1N1 currently unfolding. A global outbreak of a disease such as ebola virus -- which has had a 90 percent fatality rate during its flare-ups in rural Africa -- or a mutated drug-resistant form of the flu virus on a global scale could have a devastating, even civilization-ending impact. How likely is it? Treatment of deadly diseases has improved since 1918, but so have the diseases. Modern industrial farming techniques have been blamed for the outbreak of diseases, such as swine flu, and as the world’s population grows and humans move into previously unoccupied areas, the risk of exposure to previously unknown pathogens increases. More than 40 new viruses have emerged since the 1970s, including ebola and HIV. Biological weapons experimentation has added a new and just as troubling complication.

## at: t – restriction

#### A license is THE restriction on nuclear production

NRC 5, Nuclear Regulatory Commission, "Backgrounder on Nuclear Power Plant Licensing Process," July, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-bg.html>

The Nuclear Regulatory Commission (NRC) is responsible for licensing and regulating the operation of commercial nuclear power plants in the United States. Currently operating nuclear power plants have been licensed under a two-step process described in Title 10 of the Code of Federal Regulations (10 CFR) under Part 50. This process requires both a construction permit and an operating license.

In an effort to improve regulatory efficiency and add greater predictability to the process, in 1989 the NRC established alternative licensing processes in 10 CFR Part 52 that included a combined license. This process, although not used to date, combines a construction permit and an operating license with conditions for plant operation.

Other licensing alternatives under Part 52 include Early Site Permits that allow an applicant to obtain approval for a reactor site without specifying the design of the reactor(s) that could be built there, and certified standard plant designs which can be used as pre-approved designs.

In either process (10 CFR Part 50 or Part 52), before a nuclear power plant can be built and operated, approval must be obtained from the NRC. In both licensing processes the NRC maintains oversight of the construction and operation of a facility throughout its lifetime to assure compliance with the Commission's regulations for the protection of public health and safety, the common defense and security, and the environment.

## 2ac qer cp

#### No implementation

Barlas 12

Stephen, Columnist @ Financial Executive, 1/1, Lexis

"We've known about the dangers of our oil dependence for decades. Richard Nixon talked about freeing ourselves from dependence on foreign oil," said Obama. "And every president since that time has talked about freeing ourselves from dependence on foreign oil. Politicians of every stripe have promised energy independence, but that promise has so far gone unmet." But it is highly unlikely that Obama's blueprint will lead to a firmer footing for U.S. energy security than past so-called blueprints from other presidents, or perhaps more importantly, whether a print is even necessary. Obama's policy is a loosely knit set of policies that focus on producing more oil at home and reducing dependence on foreign oil by developing cleaner alternative fuels and greater efficiency. The Obama plan is not the result of any particular deep thinking or strategy. The President's Council of Advisors on Science and Technology (PCAST) called for the development of such a strategy in its November 2010 Report to the President on Accelerating the Pace of Change in Energy Technologies. Through an Integrated Federal Energy Policy. PCAST called for a Quadrennial Technology Review (QTR) as the first step in preparing a Quadrennial Energy Review. DOE completed the QTR in November 2011, six months after Obama published his blueprint. Steven E. Koonin, former undersecretary of Energy for Science, says QTR is limited in scope and all DOE felt it could get done given budget and time. "Technology development absent an understanding and shaping of policy and market context in which it gets deployed is not a productive exercise," he says. At this point there is no indication that DOE will even undertake the much more important QER, much less complete it any time soon. The larger reality is that any energy independence plan proposed by any U.S, president--whether based on a QER or not--has as much a chance of coming to fruition as Washington's football Redskins have of getting into the Super Bowl. But regardless of the rhetoric of president after president, maybe the U.S. doesn't even need an energy independence or energy security policy.

#### Obama recommendation is the kiss of death – CP links to politics, doesn’t solve NRC politicization, and won’t be implemented

Tomasky 4/18

Michael Tomasky, Democracy journal editor, 4/8/12, Barack Obama and the ‘Centrist’ Fantasy About Dealing With the GOP, [www.thedailybeast.com/articles/2012/04/18/barack-obama-and-the-centrist-fantasy-about-dealing-with-the-gop.html](http://www.thedailybeast.com/articles/2012/04/18/barack-obama-and-the-centrist-fantasy-about-dealing-with-the-gop.html)

Well, lots of people spent Wednesday making fun of Tom Friedman’s column pleading with Mike Bloomberg to run for president. Piling on doesn’t interest me. What interests me is that Friedman and Financial Times columnist Sebastian Mallaby, whom Friedman quoted, and others in the center-left orbit they inhabit genuinely seem to believe that if Barack Obama put a bold and comprehensive tax-reform plan on the table, the Republicans would be forced to respond and negotiate in good faith. But this is pure fantasy. All that would happen would be that Obama would cost himself loads of political capital, and the center of gravity on the subject of taxation would again be pushed to the right. That isn’t just bad for Obama, which is a second-order concern; it would be horrible for the country. I’m sure that people like Friedman and Mallaby, and Erskine Bowles and Alan Simpson and Alice Rivlin and Pete Domenici, mean well and operate in good faith. They want to see a president issue big and courageous proposals, and they want Congress to rise above the blah-blah-blah. They want our system to vindicate itself. Well, who doesn’t? Unfortunately, it won’t. Let’s imagine a scenario. Obama comes forward with a tax-reform proposal along Bowles-Simpson lines, one that meets the GOP halfway. He comes up with three marginal rates for individuals, the highest one around 35, maybe 38 tops; or maybe he adds a fourth “LeBron James” rate, a higher rate on dollars earned above some fantastically high figure that applies to something like .2 percent of all tax filers; but that would probably be in there as a bargaining chip. He proposes the elimination of certain “tax expenditures,” or deductions and loopholes like the home-mortgage-interest deduction and the deduction for employer-sponsored health care, which are the two big ones; or maybe he’s more modest about this and places caps on those, not eliminating them entirely; or perhaps he sticks with something like getting rid of the state and local tax deduction. Finally, he lowers the corporate rate from the current 35 percent, but proposes closing several corporate loopholes, like energy-tax preferences for the oil and gas industry. WWMD? That is, what would McConnell do—and Boehner, and Cantor, and the rest? Would they scratch their chins and say, “Gee, this is great. We’re delighted that the president has put something serious on the table, and we will work hard with him to find common ground”? Actually, they might say that, at first, just to pull the wool over people’s eyes. But in short order, the line from them and their confederates in positions of lighter responsibility would be: “This is a massive tax increase! Eliminating these deductions on middle-class people will raise their taxes, so he’s breaking his promise, see, we told you! The LeBron tax is just more ‘Democrat’ class warfare, more punishing the job creators.” “The corporate plan,” they’ll say, “sounds good on paper, but again, he’s attacking the job creators by eliminating these important deductions, and many corporations, especially small businesses”—you know they’ll throw that one in!—“are going to end up paying more.” And that’s just elected officials. At Heritage and Cato, they’ll comb through the fine print and find an Achilles' heel, something that can be distorted to sound just hideous, which will of course be in there, because tax policy is unbelievably complex. And then, once Mr. Oxycontin and the Fox people start hooping and hollering about that, it won’t be long before the whole thing can be dismissed as something Marx would be proud of. No they wouldn’t, you say? Why? Because their allegations wouldn’t be true? Oh, yes, that has regularly stopped them in the past. Or because there would be too much pressure on them to behave responsibly this time? Pressure from whom? The New York Times and Washington Post editorial pages? Please. Direct me to one instance—and no, the Post and the Iraq War doesn’t count, because that was the Post endorsing something Republicans were for anyway—when Eric Cantor has read a Times editorial and said, “Golly, these fellows make some very fair points, I must heed them.” The only pressure they pay attention to is from Limbaugh, Fox, and the base. And that pressure will consist entirely of one message: **resist, at all costs, or perish**. And that’s what the Republicans will do. There’s every reason to think it will be even worse in a second Obama term, because the base will be so enraged that the guy “stole” another election that the demand will be that the Republicans be even more obstructionist. And yes, there are a few honest Republicans. But Barney Frank summed up nicely in his interview with New York magazine why they can’t be relied on for anything: “People ask me, ‘Why don’t you guys get together?’ And I say, ‘Exactly how much would you expect me to cooperate with Michele Bachmann?’ And they say, ‘Are you saying they’re all Michele Bachmann?’ And my answer is, ‘No, they’re not all Michele Bachmann. Half of them are Michele Bachmann. The other half are afraid of losing a primary to Michele Bachmann.’” That, alas, is the size of it. Columnists and wise men and women can afford the luxury of pretending or hoping that Republicans will behave as an American political party is supposed to behave. But Obama can’t. All it would accomplish is to put himself in an extremely vulnerable position: He’ll have expended an enormous amount of political capital in putting forward a big proposal, and he’ll lose, and the Republicans will convince a significant portion of the country that it was Obama’s fault for being “partisan. But the worst outcome is this: if Obama makes a big proposal that meets the GOP halfway, and they block it, then **the substantive center of gravity will shift to the right** one more time. The same people who now wish that Obama would “show leadership” will make the same demand, except that next time, that demand will mean that he offer even lower rates in order to win Republican support. Guess what? The Republicans know this. Obstructionism suits them just fine. That’s the reality of today’s GOP. What can change it? Not much. Losing lots of elections. If they’re ever down to 38 senators and 153 House members like the good old days, they’ll have to deal. Until then, **Obama wouldn’t be a leader if he tried to negotiate with them** in good faith. **He’d be a fool.**

#### NRC will be involved, and political factors will overwhelm technical ones – plus, CP won’t be implemented

Sands 11 (Derek, Inside Energy with Federal Lands, 11/21, Lexis)

In the wake of a major internal report on the future of the Energy Department's technology roadmap, the agency's top scientist cautioned last week that political and economic factors would be even more difficult to solve than the technical challenges. Steven Koonin, DOE's under secretary for science, told lawmakers on the Senate Energy and Natural Resources Committee that using the agency's recently released Quadrennial Technology Review as a basis for a government-wide policy under a separately planned Quadrennial Energy Review would be challenging. "A QER dealing with technology and policy will be far more complex, with many possible goals, and many more participants," Koonin said at the hearing Tuesday. "I don't believe we know how to do it right at the moment, and because it needs to be done right, it should not be done in haste." The QER would be modeled on a similar military policy review that the Pentagon performs every four years. That broader energy review would be led by DOE, and is aimed at coordinating energy policy across federal agencies. While DOE wrapped up the first-of-its-kind technology review in September, it has not yet set a timeframe for a QER. The technology review concluded that DOE should make broad changes in how it doles out billions of dollars in energy-technology spending in coming years, shifting from an emphasis on funding new power-plant technologies to providing more money for the next generation of transportation technologies (IE, 3 October, 1). At Tuesday, hearing, Koonin testified on two bills that would require cross-government energy policy reviews. Koonin stepped down from his post as under secretary on Friday, and his appearance before the committee was his last. The Energy Research and Development Coordiation Act (S. 1807) introduced by Senator Jeff Bingaman, a New Mexico Democrat and the committee's chairman, would require federal agencies involved in energy R&D to coordinate their planning and budget process. The Quadrennial Energy Review Act (S. 1703), introduced by Senator Mark Pryor, an Arkansas Democrat, and co-sponsored by Senate Lisa Murkowski, the senior Republican on the committee, would require a comprehensive review of federal energy programs and technologies every four years. Apart from Pryor and Murkowski, that bipartisan bill has attracted two Republican and four Democratic co-sponsors, including Bingaman. While Koonin said developing a quadrennial energy review would be difficult, he also said it would be a crucial step. "Technology development absent an understanding of what is shaping the policy and market contexts in which it would get deployed is not a very productive exercise," Koonin said. "We absolutely have to bring the technology, the policy, the market environments together in a coherent picture if we want to make progress on the challenges we are facing." Murkowski echoed that view, saying a quadrennial energy review could help stabilize a national energy policy. "I have long believed that our nation needs to develop an energy policy that can endure — a policy that won't be completely revamped every time a new administration comes into office, or every time Congress passes a new Energy Policy Act," Murkowski said. "It's hard to believe that we don't already require something like the QER." However, she also acknowledged the difficulties that will come with developing such a broad-ranging policy, and urged an open process. "Any study or plan must involve all parties from the start," Murkowski said. "If there is not buy-in across the political aisle, from Capitol Hill to the White House, from industry and NGOs alike, there is little chance the review will help generate a long-term strategy that can survive changes in administrations or in Congress." This view was shared by Ernest Moniz, the director of the Massachusetts Institute of Technology Energy Initiative and a member of the President's Council of Advisors on Science and Technology. That group recommended that DOE do a technology review, and that the administration begin a QER process. "A test of the [technology review] is whether it will indeed stimulate the kind of discussion that can build sufficient agreement to support long-term stable portfolio planning with both administration and Congressional endorsement," Moniz told the lawmakers during the hearing.

#### Links to politics

PCAST 10

President’s Council of Advisors on Science and Technology (PCAST), Executive Office of the President, Co-Chaired by John P. Holdren, Assistant to the President for Science and Technology Director, Office of Science and Technology Policy, and Eric Lander, President, Broad Institute of Harvard and MIT, Nov 2010, REPORT TO THE PRESIDENT ON ACCELERATING THE PACE OF CHANGE IN ENERGY TECHNOLOGIES THROUGH AN INTEGRATED FEDERAL ENERGY POLICY, www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-energy-tech-report.pdf

A QER process would, in some sense, formulate an integrated energy policy for the twenty­first century. It will span mission and vision definition, strategy, and tactics. The QER and the process leading to it would provide an effective tool for Administration­wide coherence on energy and for effective dialog with Congress on a coordinated legislative agenda. **Presidential interest and engagement will be a necessary ingredient for success.**

**While the QER will be a product of the Administration, substantial input from the Congress**, the energy industry, academia, state and local governments, nongovernmental organizations, **and consumers will be essential throughout the process. Transparency in the process of gathering input for the QER will be key to the development of a sound product that can gain wide support.**

#### Either counterplan delays 3 years or attempts to speed up process gutting credibility

PCAST 10

Executive Office of the President, President’s Council of Advisors ¶ on Science and Technology, Nov, 10,http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-energy-tech-report.pdf

Our most important recommendation is that the Administration establish a new process that can forge a more coordinated and robust Federal energy policy, a major piece of which is advancing energy innovation. Many Executive Branch agencies and departments must be engaged, with leadership from the Executive Offce of the President. This is needed because “energy policy” is an amalgam, and often derivative, of policies for environment, competitiveness, security, finance, land use, and more. The President should establish a Quadrennial Energy Review (QER) process that will provide a multiyear roadmap that lays out an integrated view of short-, intermediate-, and long-term energy objectives; outlines legislative proposals to Congress; puts forward anticipated Executive actions coordinated across multiple agencies; and identifies resource requirements for the development and implementation of energy technologies. The Secretary of Energy should provide the Executive Secretariat for the QER. While the QER will be a product of the Administration, substantial input from the Congress, the energy industry, academia, NGOs, and the public at large will be essential to the process. A staged process should be implemented now so as to provide some elements of a QER during each of the next four years.

We recommend that the Secretary of Energy prepare and implement a DOE­Quadrennial Energy Review, focused on energy technology innovation, as a component of the full interagency QER on a shorter timescale. The DOE­QER should include roadmaps for key energy technologies, an integrated plan for the involvement of the national laboratories in energy programs, portfolio assessments that lay out the optimal deployment of resources, identification, and projections of demonstration projects, and identification of funding needs for each technology. This QER will also be prepared with strong input from many sources inside and outside of the Administration including industry, business, state and local governments, non­governmental organizations, and consumers.

 A complete and integrated QER will take longer to mature. While a good start should be made in 2011, the full government­wide QER should be targeted for delivery in early 2015. PCAST encourages Congress to use the QER as a basis for a 4­year authorization process that guides annual appropriations. The Federal investment in energy research, development, demonstration, and deployment (RDD&D) is incommensurate with the objective of leadership in energy technology innovation. We recommend a substantial increase – to $16 billion per year – in Federal support for energy RDD&D. Given the diffculty of increasing appropriated funds to this level and the importance of “front­loading” the required investment to jump start innovation, we recommend an alternative approach. The President should engage the private sector and Congress so as to generate about $10 billion per year of additional RDD&D funding through new revenue streams. This increase will provide the U.S. with the potential to leapfrog to development and deployment of the advanced energy technologies that will define a robust 21st century energy system.

## elections

#### Bioterror is ineffective, expensive, and inefficient

Stratfor 7, private intelligence agency, analyzes geopolitical trends, 12/21/ (“Bioterrorism: Sudden Death Overtime?,” http://www2.stratfor.com/analysis/bioterrorism\_sudden\_death\_overtime)

In this season of large college bowl games and the National Football League playoffs in the United States, and large nonsporting events such as the New Year’s Eve celebration in New York’s Times Square — not to mention the upcoming Olympic Games in Beijing — a discussion of bioterrorism and the threat it poses might be of interest. First, it must be recognized that during the past several decades of the modern terrorist era, biological weapons have been used very infrequently — and there are some very good reasons for this. Contrary to their portrayal in movies and television shows, biological agents are difficult to manufacture and deploy effectively in the real world. In spite of the fear such substances engender, even in cases in which they have been somewhat effective they have proven to be less effective and more costly than more conventional attacks using firearms and explosives. In fact, nobody even noticed what was perhaps the largest malevolent deployment of biological agents in history, in which thousands of gallons of liquid anthrax and botulinum toxin were released during several attacks in a major metropolitan area over a three-year period. This use of biological agents was perpetrated by the Japanese apocalyptic cult Aum Shinrikyo. An examination of the group’s chemical and biological weapons (CBW) program provides some important insight into biological weapons, their costs — and their limitations. In the late 1980s, Aum’s team of trained scientists spent millions of dollars to develop a series of state-of-the-art biological weapons research and production laboratories. The group experimented with botulinum toxin, anthrax, cholera and Q fever and even tried to acquire the Ebola virus. The group hoped to produce enough biological agent to trigger a global Armageddon. Between April of 1990 and August of 1993, Aum conducted seven large-scale attacks involving the use of thousands of gallons of biological agents — four with anthrax and three with botulinum toxin. The group’s first attempts at unleashing mega-death on the world involved the use of botulinum toxin. In April of 1990, Aum used a fleet of three trucks equipped with aerosol sprayers to release liquid botulinum toxin on targets that included the Imperial Palace, the Diet and the U.S. Embassy in Tokyo, two U.S. naval bases and the airport in Narita. In spite of the massive quantities of agent released, there were no mass casualties and, in fact, nobody outside of the cult was even aware the attacks had taken place. When the botulinum operations failed to produce results, Aum’s scientists went back to the drawing board and retooled their biological weapons facilities to produce anthrax. By mid-1993, they were ready to launch attacks involving anthrax, and between June and August of 1993 the group sprayed thousands of gallons of aerosolized liquid anthrax in Tokyo. This time Aum not only employed its fleet of sprayer trucks, but also use sprayers mounted on the roof of their headquarters to disperse a cloud of aerosolized anthrax over the city. Again, the attacks produced no results and were not even noticed. It was only after the group’s successful 1995 subway attacks using sarin nerve agent that a Japanese government investigation discovered that the 1990 and 1993 biological attacks had occurred. Aum Shinrikyo’s team of highly trained scientists worked under ideal conditions in a first-world country with a virtually unlimited budget. The team worked in large, modern facilities to produce substantial quantities of biological weapons. Despite the millions of dollars the group spent on its bioweapons program, it still faced problems in creating virulent biological agents, and it also found it difficult to dispense those agents effectively. Even when the group switched to employing a nerve agent, it only succeeded in killing a handful of people. A comparison between the Aum Shinrikyo Tokyo subway attack and the jihadist attack against the Madrid trains in 2004 shows that chemical/biological attacks are more expensive to produce and yield fewer results than attacks using conventional explosives. In the March 1995 Tokyo subway attack — Aum’s most successful — the group placed 11 sarin-filled plastic bags on five different subway trains and killed 12 people. In the 2004 Madrid attack, jihadists detonated 10 improvised explosive devices (IEDs) and killed 191 people. Aum’s CBW program cost millions and took years of research and effort; the Madrid bombings only cost a few thousand dollars, and the IEDs were assembled in a few days. The most deadly biological terrorism attack to date was the case involving a series of letters containing anthrax in the weeks following the Sept. 11 attacks — a case the FBI calls Amerithrax. While the Amerithrax letters did cause panic and result in companies all across the country temporarily shutting down if a panicked employee spotted a bit of drywall dust or powdered sugar from doughnuts eaten by someone on the last shift, in practical terms, the attacks were very ineffective. The Amerithrax letters resulted in five deaths; another 22 victims were infected but recovered after receiving medical treatment. The letters did not succeed in infecting senior officials at the media companies targeted by the first wave of letters, or Sens. Tom Daschle and Patrick Leahy, who were targeted by a second wave of letters. By way of comparison, John Mohammed, the so-called “D.C. Sniper,” was able to cause mass panic and kill twice as many people (10) by simply purchasing and using one assault rifle. This required far less time, effort and expense than producing the anthrax spores used in the Amerithrax case. It is this cost-benefit ratio that, from a militant’s perspective, makes firearms and explosives more attractive weapons for an attack. This then is the primary reason that more attacks using biological weapons have not been executed: The cost is higher than the benefit. Certainly, history has shown that militant organizations and homegrown militants are interested in large sporting events as venues for terror; one needs to look no further than the 1972 Munich Massacre, the 1980 Olympic Park bombing or even the 2005 incident in which University of Oklahoma student Joel Hinrichs died after a TATP-filled backpack he was wearing exploded outside a football game at Oklahoma Memorial Stadium, to see this. Because of this, vigilance is needed. However, militants planning such attacks will be far more likely to use firearms or IEDs in their attacks than they will biological agents. Unfortunately, in the real world guns and suicide bombs are far more common — and more deadly — than air horns filled with creepy bioterror.

#### Cant repeal health care – too many obstacles

Somashekhar 12

(Sandhya – Washington Post, “Romney would face tough road trying to repeal ‘Obamacare’ if elected president” July 10, 2012, http://www.washingtonpost.com/politics/mitt-romney-would-face-tough-road-trying-to-repeal-obamacare-if-elected-president/2012/07/10/gJQAh4nmaW\_story.html)

Mitt Romney has vowed that on his first day as president, he would act to repeal President Obama’s health-care law, thus fulfilling a long-standing promise. **But the reality for a President Romney would be more complicated.** Unless Republicans gain huge numbers in Congress, he probably would not have the votes to simply repeal the entire law. From the White House, he could instruct the Department of Health and Human Services to drag its feet, pushing back deadlines and turning to an army of lawyers and consultants to figure out how to exploit the law’s weaknesses. But that kind of administrative muscle flexing could bring its own political problems. “The simple answer is there’s nothing Romney can do on the first day to repeal the Affordable Care Act, but he could do a great deal to gum up the works,” said Timothy Jost, a law professor at Washington and Lee University. Nearly two weeks after the Supreme Court upheld most of the law, its future remains unsettled, with the November election its next major hurdle. Americans have been stubbornly divided over the law, with Republican voters highly unified in their opposition to the largest new federal social program in decades. In what has become a common Washington ritual, House Republicans are scheduled again Wednesday to vote on a repeal of the law. It will be the 33rd time Republicans have tried to undo all or part of the law since its passage in 2010 and the first since the court decision. As in those previous attempts, it is almost purely symbolic because it is unlikely to pass muster in the Democratic-led Senate. Despite Romney’s role in passing a similar overhaul while governor of Massachusetts, he has been steadfast in his opposition to the law, a factor that has been key to his winning over deeply conservative voters. As a result, many predict that he would move decisively and aggressively to make good on that promise if elected. Still, doing so would carry political pitfalls because millions of Americans not only support the law, but also are already benefiting from some of its provisions, such as one that requires insurance companies to cover children with preexisting conditions. Others say Romney would be held responsible for the health-care system that might be reshaped by his actions. “He belongs to a very conservative party that hates this bill, many members of which have sworn that they’d rather eat ground glass than let this law go forward,” said Henry J. Aaron, a senior fellow of economic studies at the Brookings Institution. “But there is the conflicting problem of, ‘If you break it, you own it.’ [He will own] anything that goes wrong with the health-care system down the road.” Then there is the matter of what Romney would be able to do as president. He has said that on Day One in office, he will “act to repeal Obamacare” and issue waivers to all 50 states exempting them from the law’s requirements. But neither will be so easy to pull off. Few political analysts expect the GOP to have a 60-vote, filibuster-proof majority in the Senate come January, the advantage needed to pass most controversial legislation these days. Without it, Romney would have little chance of pushing a repeal bill through Congress. Romney also would face problems in waiving all states from the measure. Although the law permits states to apply for exemptions, they must prove that they have alternate programs in place to provide comparable benefits. But those waivers won’t be available until 2017, according to experts. Romney campaign officials say they have a blueprint.

#### No comebacks, especially for Romney

Uygur, 10-1

Cenyk Uygur, host of the young Turks on Current Tv, “This Election Is Already Over - Obama Has Won,” Huffington Post, <http://www.huffingtonpost.com/cenk-uygur/obama-polls-lead_b_1927955.html>

There's another poll out today showing President Obama with a nine point lead in Ohio. That's the fifth poll in a row showing him with a larger than a five point lead. The Quinnipiac University/CBS News/New York Times poll that came out last week had him with a ten point lead.

No Republican has ever won the presidency without winning Ohio. Plus, whoever has won Ohio has won the last 11 presidential races. Ten point leads aren't small, they're gigantic.

Here's my new favorite fact: whoever is leading two weeks after the last convention has never relinquished the lead in the last 15 presidential elections. It's way past two weeks since the last convention and President Obama doesn't have a small lead, he has a huge lead.

This thing is over. The rest is just running out the clock. In fact, I already called it on our Current show last Wednesday.

The debates hardly matter. They are way overhyped. The last presidential debate that mattered was ... in 1960. Conventional wisdom says that Al Gore lost his lead to George Bush after the debates in 2000. Here are two inconvenient facts about those debates. First, according to polling done immediately after the debates Gore won two out of three debates, including the famous "sigh" debate (sometimes conventional wisdom is so painfully stupid -- the media painted that as a loss for Gore when the polling was clear, he won by a comfortable seven points). Second, Gore won the popular vote (and the electoral vote if you recounted all of Florida by any recount standard).

In the interest of full-disclosure I work for Current, a network co-founded by Al Gore and in the interest of full-disclosure I have already said this many, many times well before I worked for Current.

Could a miracle happen between now and Election Day? Of course, but it would have to be a major one because I don't think a minor miracle will do it here. Do you still have to vote? Of course, none of these polls matter if people don't actually go out and vote.

But the debates are very unlikely to move the numbers and President Obama, being a careful politician, is very unlikely to stumble and Romney, who has been running an awful campaign, is very unlikely to miraculously get much, much better and overwhelm the president in the next month or so.

Does Romney look like he's running the kind of campaign that could pull off the greatest come from behind victory in our lifetimes?

Here is another look at the numbers to show you why this is not a close election (including other swing states):

This doesn't mean that the election won't tighten sometime between now and Election Day. And, of course, the media will make a huge deal out of it because this is our bread and butter. We love this stuff and can't wait for more drama (including myself because I love the horse race almost as much as I love the policy discussions). This is our Super Bowl and we secretly don't want a blow-out. But if you look at the numbers objectively, for all intents and purposes, this thing is already in the books. It's over. President Obama will get re-elected.

#### No internal link

Wang 9/27/12

Herman, writer for The Barrel, a Platts energy forecasting blog, “Even with US gasoline prices at a higher number, energy isn’t a big deal in White House race,” <http://blogs.platts.com/2012/09/27/energy_campaign/>, AM

The respected polling firm Gallup asked voters in August what the most important issue facing the country was, and only 1% cited energy. That’s down sharply from the 25% of poll respondents who cited energy as the top issue in the days before the 2008 election, in which Republicans coined the rallying cry “Drill, baby, drill!” in response to high oil and gasoline prices. This time around, the economy, unemployment, general dissatisfaction with government and health care are greater concerns for voters, said Frank Newport, editor in chief of The Gallup Poll. Energy “doesn’t show up when we [ask voters] to tell us in your own words why you’re voting for the candidates,” he said. “We just don’t see much evidence that it’s a high top-of-mind issue in the campaign.”

#### The public loves nuclear—newest polling and be skeptical of their link authors

Westenhaus 9/30/12

Brian, editor of the popular energy technology site New Energy and Fuel, “Confidence in Nuclear Power is on the Rise Again,” <http://oilprice.com/Alternative-Energy/Nuclear-Power/Confidence-in-Nuclear-Power-is-on-the-Rise-Again.html>, AM

The Nuclear Energy Institute announced a September telephone survey in a press release suggesting almost two thirds of U.S. adults favor the use of nuclear energy as one of the ways to provide electricity in the United States. This latest survey found that Americans strongly favoring nuclear energy outnumber those strongly opposed by a two-to-one ratio, 29% versus 14%. The new numbers improve on a poll conducted in September 2011, six months after the Fukushima accident, when 62% of American favored nuclear energy, with 35% opposed. The new survey shows confidence is improving. Just over three quarters of respondents agree that nuclear energy facilities operating in the United States are ‘safe and secure,’ while only 19% think they are not. Eighty percent of Americans opposed to 16% believe “we should learn the lessons from the Japanese accident and continue to develop advanced nuclear energy plants to meet America’s growing electricity demand.” In a shock to the political system and the anti nuclear crowd a large majority (81%) of those surveyed favor the renewal of operating licenses of facilities that continue to meet federal safety standards, while 74% believe electric utilities should prepare now so they will be ready to build new nuclear power plants in the next decade if needed.

#### Yucca’s popular

Nicolas **Loris 8**, economist at Heritage, “3 out of 4 Americans Support Nuclear”, October 1, <http://blog.heritage.org/2008/10/01/3-out-of-4-americans-support-nuclear/>

Remember a couple of months ago when I told you that 2 out of 3 Americans favor building new nuclear power plants in the United States? No? That’s all right because it’s now 3 out of 4 Americans that support nuclear according to a new survey conducted by Bisconti Research Inc. The survey found that The new survey found that 69 percent of Americans believe the United States should definitely build more nuclear power plants in the future – a 10 percentage point gain from April. Three-fourths of respondents say they would find it acceptable to add a new reactor at the nearest existing nuclear power plant site – a nine-point jump from April’s result.” Also encouraging results from the poll: Seventy-six percent of Americans agree that the federal government should continue to develop the Yucca Mountain, Nev., site as a geologic repository for commercial used nuclear fuel and high-level radioactive waste from U.S. defense programs “as long as it meets U.S. Nuclear Regulatory Commission regulations.” Eighty-four percent of Americans believe it is “more appropriate” to centralize storage of used nuclear fuel “at one or two volunteer sites” than to store used fuel containers at nuclear power plant sites until they are moved to a permanent disposal facility.” With nuclear proven to be safe, clean and affordable, these numbers shouldn’t come as a surprise. Moreover, with gas prices remaining near $4-a-gallon, home-heating season on its way, and increased electricity demands, new nuclear must be included in the mix.

#### Uniqueness overwhelms for women and the key issue is the economy—not energy

Levy 8/30/12

Ariel Edwards, staff writer for huffington post, “Female Voters Prefer Obama To Romney, Are Focused On Economy, Poll Says,” <http://www.huffingtonpost.com/2012/08/30/female-voters-obama-romney-poll_n_1844312.html?1346360706>, AM

As women have found themselves in the center of much of 2012's political wrangling -- their bodies a topic for debate, and their hearts and minds a top campaign priority -- many are embracing their status as key voters, according to a poll released Thursday by Lifetime television. Female voters strongly favor President Barack Obama over GOP presidential nominee Mitt Romney, according to the survey, which was conducted by Republican pollster Kellyanne Conway of the polling company, inc./WomanTrend and Democratic pollster Celinda Lake of Lake Research Partners. "Both parties have women that they can appeal to," Lake said. "Women are the key swing vote and will probably decide the election, but I think women are more self-conscious about the role. I think the really interesting part is that women are poised to take things into their own hands." Obama received support from 52 percent of likely female voters, compared to 36 percent for Romney. That double-digit lead tracks with Obama's performance in 2008 exit polls, although it's a few points higher than Obama's lead among women in other recent polls. Half of the women polled said Obama deserved an "A" or "B" for his time in office, while 29 percent gave him a "D" or an "F." Michelle Obama also fared well, with 72 percent of women viewing her favorably. Ann Romney, who exclaimed "I love you women!" during her Wednesday convention speech, was far less well-known, with 30 percent viewing her favorably, and 45 percent saying they hadn't heard of her or had no opinion. The survey was conducted prior to the speech. As with the general electorate, women largely gave top priority to the economy and jobs. And although nine out of 10 women said it was important that a candidate understand women, even more prioritized an understanding of the middle class, with 94 percent calling it important.

#### Collapse of US deterrence causes CBW and EMP attacks that cause extinction

Schneider, 8

(National Institute for Public Policy, “The Future of the U.S. nuclear deterrent,” Comparative Strategy 27.4, ebscohost)

Today, the United States, the world’s only superpower with global responsibilities, is the only nuclear weapons state that is seriously debating (admittedly largely inside the beltway) about whether the United States should retain a nuclear deterrent. By contrast, the British Labour Government has decided to retain and modernize its nuclear deterrent. In every other nuclear weapons state—Russia, China, France, India, Pakistan, and allegedly Israel—there is general acceptance of the need for a nuclear deterrent and its modernization. Amazingly, the United States is the only nuclear-armed nation that is not modernizing its nuclear deterrent. Distinguished former leaders such a George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, despite the manifest failure of arms control to constrain the weapons of mass destruction (WMD) threat, call for “A world free of Nuclear Weapons” because “. . . the United States can address almost all of its military objectives by non-nuclear means.”1 This view ignores the monumental verification problems involved and the military implication of different types of WMD—chemical and biological (CBW) attack, including the advanced agents now available to potential enemies of the United States and our allies. A U.S. nuclear deterrent is necessary to address existing threats to the very survival of the U.S., its allies, and its armed forces if they are subject to an attack using WMD. As former Secretary of Defense Harold Brown and former Deputy Secretary of Defense John Deutch wrote in The Wall Street Journal, “However, the goal, even the aspirational goal, of eliminating all nuclear weapons is counterproductive. It will not advance substantive progress on nonproliferation; and it risks compromising the value that nuclear weapons continue to contribute, through deterrence, to U.S. security and international stability.”2 Why can’t the United States deter WMD (nuclear, chemical, biological) attack with conventional weapons? The short answer is that conventional weapons can’t deter a WMD attack because of their minuscule destructiveness compared with WMD, which are thou- sands to millions of times as lethal as conventional weapons. Existing WMD can kill millions to hundreds of millions of people in an hour, and there are national leaders who would use them against us if all they had to fear was a conventional response. The threat of nuclear electromagnetic pulse (EMP) attack, as assessed by a Congressional Commission in 2004, is so severe that one or at most a handful of EMP attacks could **demolish industrial civilization** in the United States.3 The view that conventional weapons can replace nuclear weapons in deterrence or warfighting against a state using WMD is not technically supportable. Precision-guided conventional weapons are fine substitutes for non-precision weapons, but they do not remotely possess the lethality of WMD warheads. Moreover, their effectiveness in some cases can be seriously degraded by counter-measures and they clearly are not effective against most hard and deeply buried facilities that are associated with WMD threats and national leadership protection. If deterrence of WMD attack fails, conventional weapons are unlikely to terminate adversary WMD attacks upon us and our allies or to deter escalation. Are there actual existing threats to the survival of the United States? The answer is unquestionably “yes.” Both Russia and China have the nuclear potential to destroy the United States (and our allies) and are modernizing their forces with the objective of targeting the United States.4 China is also increasing the number of its nuclear weapons.5 Russia is moving away from democracy, and China remains a Communist dictatorship. A number of hostile dictatorships—North Korea, Iran, and possibly Syria—have or are developing longer-range missiles, as well as chemical, biological, and nuclear weapons.6 They already have the ability to launch devastating WMD attacks against our allies and our forward deployed forces, and in time may acquire capabilities against the United States. Iran will probably have nuclear weapons within approximately 2 to 5 years.7 The United States already faces a chemical and biological weapons threat despite arms control prohibitions. Due to arms control, we do not have an in-kind deterrent. Both Iranian and Syria acquisition of nuclear weapons could be affected by sales from North Korea, which have been reported in the press.8

#### Credible nuclear attribution capabilities solves deterrence

Talmadge 7

(IR & Government Prof-George Washington, PhD-MIT, “Deterring a Nuclear 9/11, Spring, www.twq.com/07spring/docs/07spring\_talmadge.pdf)

Deterrence will depend on convincing other states and even skeptics in the U.S. government that the United States actually has the ability to identify the origins of a nuclear weapon detonated on its soil. The United States could exag­gerate this capability in an attempt to deceive its adversaries, and it might want to do so in the short to medium term.43 Ultimately, however, the most persua­sive means of convincing the world of a U.S. attribution capability is actually to have one and then to publicize it. Some avenues for such discussion are obvious: national strategy documents, presidential or other high-level statements, and strategically placed media leaks. Other opportunities would be more subtle: encouraging members of the U.S. scientific community to disseminate credible information to their colleagues overseas, emphasizing the capability in bilateral or multilateral talks with countries of concern, and using third parties to convey the information through diplomatic back channels. Whatever the approach, the United States would want to send a credible, recurring message that it could and would find a return address for any nuclear bomb.

MARKED

U.S. leaders also would want to emphasize that retaliation, perhaps in kind, perhaps through devastatingly precise conventional attacks, would be strategi­cally necessary and politically unavoidable in the aftermath of a terrorist nuclear detonation. The U.S. government could not sit idly by, knowing the origin of a terrorist nuclear weapon detonated on its soil, and not retaliate against the state(s) or substate organization(s) responsible for it, especially if those states or organizations had a history of supporting terrorism. To do otherwise would be to invite follow-on attacks and to allow the deaths of hundreds of thousands of Americans to go unanswered. The American public would demand retribution, especially if the terrorists themselves were nowhere to be found.

Or so U.S. leaders could claim, whether it is true now or not. The more that U.S. leaders publicly emphasize the possession of an attribution capability and a willingness to retaliate against those who assist terrorists, the more the public will in fact expect such retaliation. The more that other countries sense this domestic expectation, for instance, in polling data that the U.S. govern­ment might want to disseminate, the more politically credible the U.S. threat to retaliate in such cases will seem. This credibility will ultimately strengthen deterrence, making it plain that U.S. leaders would have little choice but to wreak destruction on governments, militaries, or other substate organizations that are found to have assisted aspiring nuclear terrorists.

#### Key to nuclear health expertise

APS 8

APS (American Physical Society), Report from the APS Panel on Public Affairs Committee on Energy and Environment, June 2008, Readiness of the U.S. Nuclear Workforce for 21st Century Challenges, http://www.aps.org/policy/reports/popa-reports/upload/Nuclear-Readiness-Report-FINAL-2.pdf

3.3. Health Physics

As for any large-scale enterprise involving radioactivity, the status of the health physics (HP) workforce and its training facilities must be considered when studying U.S. future nuclear readiness. For occupational safety and the protection of the public, HP professionals are employed in many sectors, including the commercial nuclear power industry, DOE’s national laboratories, homeland security, the NRC, the military, and medical facilities.

Recent reports and surveys have examined the health physics workforce needs and arrived at the following conclusions:

• The nation’s health physics capabilities will be impacted negatively over the next decade due to the number of expected retirements coupled with inadequate numbers of graduates entering the field. Fig. 3.2 provides the combined total (as well as breakdown by degree) of undergraduate and graduate students graduating from HP programs. On the other hand, the 2004 retirement rate in the U.S. was about 167 per year20. Assuming that an equal percentage of individuals retire over a forty-year working lifetime, the number of existing health physics program graduates, approximately 130-200 per year (2004-2007 data below), does not allow for much increase in the demand for their services.

#### Enforcement guarantees Obama gets blamed

Canon and Johnson, professor of polisci at UK and vice-presiding judge on the Oklahoma court of appeals, ‘99

(Bradley C. Canon and Charles A. Johnson, Judicial Policies: Implementation and Impact, 1999, p. 3)

As we will see in later chapters, many judicial decisions afford a great deal of latitude for interpretation and implementation. Political actors and institutions who follow through on the decisions make the judicial policy. Certainly, the judges who enforced civil rights decisions were subject to political pressures from a variety of sources. Similar pressures affected public and private institutions after court decisions on affirmative action. Even presidential politics may become intertwined with judicial policies, as did Richard Nixon’s 1968 “law and order” campaign criticizing the Supreme Court’s criminal justice decisions or the explosive issue of abortion in virtually every presidential election since 1980. Like Congress and the president, the Supreme Court and other courts must rely on others to translate policy into action. And like the processes of formulating legislative, executive, and judicial policies, the process of translating those decisions into action is often a political one subject to a variety of pressures from a variety of political actors in the system.

# 1AR

## theory

#### Should means desirable, not certain

Atlas Collaboration, 1999, “Use of shall, should, may can,” <http://rd13doc.cern.ch/Atlas/DaqSoft/sde/inspect/shall.html>

'shall' describes something that is mandatory. If a requirement uses 'shall', then that requirement \_will\_ be satisfied without fail. Noncompliance is not allowed. Failure to comply with one single 'shall' is sufficient reason to reject the entire product. Indeed, it must be rejected under these circumstances.   Examples:  "Requirements shall make use of the word 'shall' only where compliance is mandatory."  This is a  good example.    "C++ code shall have comments every 5th line."  This is a bad example. Using 'shall' here is too strong. should 'should' is weaker. It describes something that might not be satisfied in the final product, but that is desirable enough that any noncompliance shall be explicitly justified. Any use of 'should' should be examined carefully, as it probably means that something is not being stated clearly. If a 'should' can be replaced by a 'shall', or can be discarded entirely, so much the better.  Examples:  "C++ code should be ANSI compliant."  A good example. It may not be possible to be ANSI compliant on all  platforms, but we should try.    "Code should be tested thoroughly."  Bad example. This 'should' shall be replaced with 'shall' if this requirement is to be stated anywhere (to say nothing of defining what  'thoroughly' means).

#### Princeton WordNet[[1]](#footnote-1) defines “Resolved” as “determined”—we are both determined that the plan should happen

## courts link

#### Obama gets blame for courts – election issue and Republican spin

Time, 9 (“Obama's Supreme Move to the Center,” 1/26, [http://www.time.com/time/printout/0,8816,1818334,00.html](http://www.time.com/time/printout/0%2C8816%2C1818334%2C00.html))

When the Supreme Court issues rulings on hot-button issues like gun control and the death penalty in the middle of a presidential campaign, Republicans could be excused for thinking they'll have the perfect opportunity to paint their Democratic opponent as an out-of-touch social liberal. But while Barack Obama may be ranked as one of the Senate's most liberal members, his reactions to this week's controversial court decisions showed yet again how he is carefully moving to the center ahead of the fall campaign. On Wednesday, after the Supreme Court ruled that the death penalty was unconstitutional in cases of child rape, Obama surprised some observers by siding with the hardline minority of Justices Scalia, Thomas, Roberts and Alito. At a press conference after the decision, Obama said, "I think that the rape of a small child, six or eight years old, is a heinous crime and if a state makes a decision that under narrow, limited, well-defined circumstances the death penalty is at least potentially applicable, that that does not violate our Constitution." Then Thursday, after Justice Scalia released his majority opinion knocking down the city of Washington's ban on handguns, Obama said in a statement, "I have always believed that the Second Amendment protects the right of individuals to bear arms, but I also identify with the need for crime-ravaged communities to save their children from the violence that plagues our streets through common-sense, effective safety measures. The Supreme Court has now endorsed that view." John McCain's camp wasted no time in attacking, with one surrogate, conservative Senator Sam Brownback of Kansas, calling Obama's gun control statement "incredible flip-flopping." McCain advisor Randy Scheunemann was even tougher in a conference call Thursday. "What's becoming clear in this campaign," Scheunemann said, is "that for Senator Obama the most important issue in the election is the political fortunes of Senator Obama. He has demonstrated that there really is no position he holds that isn't negotiable or isn't subject to change depending on how he calculates it will affect his political fortunes." Politicians are always happy to get a chance to accuse opponents of flip-flopping, but McCain's team may be more afraid of Obama's shift to the center than their words betray. Obama has some centrist positions to highlight in the general election campaign on foreign policy and national security, social issues and economics. His position on the child rape death penalty case, for example, is in line with his record in Illinois of supporting the death penalty. He is on less solid ground on the gun ban as his campaign said during the primary that he believed the D.C. law was constitutional. A top legal adviser to Obama says both cases are consistent with his previous positions. "I don't see him as moving in his statements on the death penalty or the gun case," says Cass Sunstein, a former colleague of Obama's at the University of Chicago. Sunstein says Obama is "not easily characterized" on social issues, and says the Senator's support for allowing government use of the Ten Commandments in public, in some cases, is another example of his unpredictability on such issues. On the issue of gun control, he says Obama has always expressed a belief that the Second Amendment guarantees a private right to bear arms, as the court found Thursday. But Obama's sudden social centrism would sound more convincing in a different context. Since he wrapped up the primary earlier this month and began to concentrate on the independent and moderate swing voters so key in a general election, Obama has consistently moved to the middle. He hired centrist economist Jason Furman, known for defending the benefits of globalization and private Social Security accounts, to the displeasure of liberal economists. On Father's Day, Obama gave a speech about the problem of absentee fathers and the negative effects it has on society, in particular scolding some fathers for failing to "realize that what makes you a man is not the ability to have a child — it's the courage to raise one." Last week, after the House passed a compromise bill on domestic spying that enraged liberals and civil libertarians, Obama announced that though he was against other eavesdropping compromises in the past, this time he was going to vote for it. Whether Obama's new centrist sheen is the result of flip-flopping or reemphasizing moderate positions, the Supreme Court decisions have focused attention again on the role of the court in the campaign season. McCain himself is vulnerable to charges of using the Supreme Court for political purposes. Earlier this month, when the court granted habeas corpus rights to accused terrorist prisoners at Guantanamo Bay, McCain attacked the opinion in particularly harsh language, though advisers say closing the prison there is high on his list of actions to rehabilitate America's image around the world. Liberals are hoping that despite Obama's moderate response to the Supreme Court decisions, the issues alone will rally supporters to him. "What both of these decisions say to me is that the Supreme Court really is an election-year issue," says Kathryn Kolbert, president of People For the American Way. "We're still only one justice away from a range of really negative decisions that would take away rights that most Americans take for granted," she says. And Obama's run to the center surely won't stop conservatives from using the specter of a Democratic-appointed Supreme Court to try to rally support.

#### Justices are tied to political parties

Tushnet, 9 – Professor of Law at Georgetown Law School

(Mark, “A Court Divided: The Rehnquist Court and the Future of Constitutional Law”, 2005, p. 11)

So the Rehnquist Court is a political court. For scholars, tying the Supreme Court to party politics is not all that new. The standard view of the Warren Court, for example, is that it worked in conjunction with the Democratic Party to implement a New Deal/Great Society vision of the Constitution. The Rehnquist Court resembles the Warren Court in implementing a constitutional vision associated with the nation’s dominant political party. What makes its story more complicated (and interesting) is that the Republican Party has remained a coalition of economic and cultural conservatives. The Republicans on the Court who would use the Constitution to advance the economic and cultural agendas of the modern Republican Party have been able to lay the groundwork for later advances. But their actual accomplishments have been meager because they have been thwarted, not by activist liberals or by Democrats but by Republicans uneasy about the Republican cultural agenda.

## impacts

#### All previous human spaceflight is insignificant – long term colonization is still infeasible.

Launius 10 – (2010, Roger, PhD, Curator, Planetary Exploration Programs, National Air and Space Museum, expert on Aerospace history, fellow and board member of the American Astronautical Society, “Can we colonize the solar system? Human biology and survival in the extreme space environment,” Endeavour Volume 34, Issue 3, September 2010, Pages 122-129, science direct, )

Although microbial life might survive the extreme conditions of space, for Homo sapien sapiens the space environment remains remarkably dangerous to life. One space life scientist, Vadim Rygalov, remarked that ensuring human life during spaceflight was largely about providing the basics of human physiological needs. From the most critical – meaning that its absence would cause immediate death, to the least critical – these include such constants available here on Earth of atmospheric pressure, breathable oxygen, temperature, drinking water, food, gravitational pull on physical systems, radiation mitigation, and others of a less immediate nature. As technologies, and knowledge about them, stand at this time, humans are able to venture into space for short periods of less than a year only by supplying all of these needs either by taking everything with them (oxygen, food, air, etc.) or creating them artificially (pressurized vehicles, centrifugal force to substitute for gravity, etc.).10 Spaceflight would be much easier if humans could go into hibernation during the extremes of spaceflight, as did the Streptococcus mitis bacteria. Resolving these issues has proven difficult but not insurmountable for such basic spaceflight activities as those undertaken during the heroic age of space exploration when the United States and the Soviet Union raced to the Moon. Overcoming the technological hurdles encountered during the Mercury, Gemini, and Apollo programs were child's play in comparison to the threat to human life posed by long duration, deep space missions to such places as Mars. Even the most sophisticated of those, the lunar landings of Project Apollo, were relatively short camping trips on an exceptionally close body in the solar system, and like many camping trips undertaken by Americans the astronauts took with them everything they would need to use while there. This approach will continue to work well until the destination is so far away that resupply from Earth becomes highly problematic if not impossible///////MARK///// if the length of time to be gone is so great that resupply proves infeasible. There is no question that the U.S. could return to the Moon in a more dynamic and robust version of Apollo; it could also build a research station there and resupply it from Earth while rotating crews and resupplying from Earth on a regular basis. In this instance, the lunar research station might look something like a more sophisticated and difficult to support version of the Antarctic research stations. A difficult challenge, yes; but certainly it is something that could be accomplished with presently envisioned technologies.11 The real difficulty is that at the point a lunar research station becomes a colony profound changes to the manner in which humans interact with the environment beyond Earth must take place. Countermeasures for core challenges – gravity, radiation, particulates, and ancillary effects – provide serious challenges for humans engaged in space colonization (Figure 4).

#### Collapse inevitable no matter who wins

Bovt, 9/12

(Columnist-Moscow Times, “Whether Obama or Romney, the Reset Is Dead,” http://www.themoscowtimes.com/opinion/article/whether-obama-or-romney-the-reset-is-dead/467947.html#ixzz274U7VOyl

During every U.S. presidential election campaign, there is a debate in Russia over whether the Republican or Democratic candidate would be more beneficial for the Kremlin. Russian analysts and politicians always fail to understand that Americans have shown little interest in foreign policy since the end of the Cold War. Even when foreign policy is mentioned in the campaign, **Russia is far down the list as a priority item**. The volume of U.S-Russian trade remains small. The recent Exxon-Rosneft deal notwithstanding, U.S. interest in Russia's energy projects has fallen, particularly as the Kremlin has increased its role in this sector. To make matters worse, the United States is determined to establish clean energy and energy independence, while Russia's gas exports are feeling the pinch from stiff competition with the U.S. development of shale gas production. Of course, traditional areas of cooperation remain: the transit of shipments to and from Afghanistan through Russia, Iran's nuclear program and the struggle against international terrorism. But the transit route into Afghanistan cannot, by itself, greatly influence bilateral relations as a whole, and progress on the other two points seems to have reached a plateau beyond which little potential remains for bringing the two countries into closer cooperation. On the positive side, a new visa agreement came into force this week that will facilitate greater contact between both countries' citizens. But it will be years before that significantly influences overall U.S.-Russian relations. A new agreement regarding child adoptions has also been implemented after a few disturbing adoption stories prompted Russia's media, with the help of government propaganda, to spoil the U.S. image in Russia. Meanwhile, both U.S. President Barack Obama and Republican candidate Mitt Romney support the U.S. missile defense program in principle, although the exact form and scope of its deployment differ among the candidates. Even though President Vladimir Putin, during his interview with RT state television last week, expressed guarded optimism over the prospect of reaching an agreement on missile defense with Obama, Russia seems to underestimate the degree to which Americans are fixated on missile defense as a central component of their national security. **It is highly unlikely that any U.S. administration** — Democratic or Republican — **will ever agree to major concessions on missile defense.** It even seemed that Kremlin propagandists were happy when in March Romney called Russia the United States' No. 1 foe. They were given another present when Obama, addressing the Democratic National Convention last week, said Romney's comment only proved that he lacked foreign policy experience and was locked in Cold War thinking. For the next two months, however, the two candidates are unlikely to devote much attention to Russia. Russia's internal politics will also be one of the key factors shaping future U.S.-Russian relations. The two-year jail sentence slapped on three members of Pussy Riot for their anti-Putin prayer in Moscow's main cathedral has already become a subject of discussion between Foreign Minister Sergei Lavrov and U.S. Secretary of State Hillary Clinton. Even the most pragmatic "pro-reset" U.S. administration would criticize to one degree or another Russia's poor record on human rights. It appears that Russia is moving increasingly toward confrontation rather than rapprochement with the West. The Kremlin now seems fully committed to spreading the myth that the U.S. State Department is the cause behind most of Russia's domestic problems and is bent on undermining its national security by deploying missile defense installations in Europe and by supporting the opposition. There are other disturbing signals as well. Take, for example, the United Russia bill that would prohibit Russian officials from owning bank accounts and property overseas, with particular attention paid to their holdings in the West. The ideological underpinning of this bill is that assets located in the West are tantamount to betrayal of the motherland. Then there is Russia's opposition to the U.S. Magnitsky Act. The Kremlin interprets this initiative as yet another confirmation of its suspicions that Washington is conspiring against it and that the bill's real U.S. motive is to blackmail Russian officials by threatening to freeze their overseas bank accounts and property. An increase in these anti-Western attitudes **does not bode well for U.S.-Russian relations, even if Obama is re-elected** in November. **Regardless of which candidate wins,** **the reset is bound to** either slowly **die a natural death** under Obama or be extinguished outright under Romney. As a result, the most we can likely expect from U.S.-Russian relations in the next four years is cooperation on a limited range of mundane issues. Under these conditions, avoiding excessive anti-Russian or anti-U.S. rhetoric from both sides would itself be considered a major achievement in bilateral relations.

#### Relations resilient despite Romney

Loiko 12

(Sergei – prominent Russian rights activist, “THE WORLD; FOREIGN EXCHANGE; Russian rights activist is wary of Putin” June 29, 2012, Los Angeles Times, MAIN NEWS; Foreign Desk; Part A; Pg. 3)

What do you think of the fate of the reset in the Russian-U.S. relationship, which appears to be all but buried now? I think that the reset in the relations will continue with some nuances added. What we should expect now is some kind of a revamping of the reset if Obama wins the election. If Mitt Romney comes to the White House, the reset will be initially subjected to some serious invectives but eventually a desire for a constructive cooperation will prevail. We will survive this difficult period we always experience in election years.

#### Strong Indian relations are inevitable

Tharoor 12

(Shashi, a former Indian minister of state for external affairs and U.N. under-secretary-general, is a member of India’s parliament. His most recent book, “Pax Indica: India and the World of the 21st Century,” has just been published, “U.S. presidential election and India’s American ties” 2012-08-16, http://view.koreaherald.com/kh/view.php?ud=20120816001110&cpv=0)

With America’s presidential election looming, perhaps its most striking aspect from an Indian point of view is that no one in New Delhi is unduly concerned about the outcome. There is now a broad consensus in Indian policymaking circles that, whoever wins, India-United States relations are more or less on the right track. Democrats and Republicans alike have both been responsible for this development. President Barack Obama’s successful visit to India in 2010, and his historic speech to a joint session of Parliament, capped the most significant recent milestone in bilateral relations. This was one of many encounters that Obama has had with Prime Minister Manmohan Singh in various forums since taking office, often in multilateral summits like the G20, and it consolidated the new relationship that has emerged from a decade of dramatic change. Throughout the Cold War, the world’s oldest democracy and its largest were essentially estranged. America’s initial indifference was best reflected in President Harry Truman’s reaction when Chester Bowles asked to be named ambassador to India: “I thought India was pretty jammed with poor people and cows round streets, witch doctors, and people sitting on hot coals and bathing in the Ganges…but I did not realize anybody thought it was important.” If that was bad, India’s political orientation was worse. The American preference for making anti-communist allies, however unsavory, tied Washington to Pakistan’s increasingly Islamist dictatorship, while India’s non-aligned democracy drifted toward the secular Soviet embrace. The U.S. government regarded non-alignment with distaste; Eisenhower’s secretary of state, John Foster Dulles, notoriously declared that “neutrality between good and evil is itself evil.” In a world divided between two uncompromising superpowers, India’s temporizing seemed like appeasement at best, and aid and comfort for the enemy at worst. Pakistan, on the other hand, became an essential component in America’s strategy of containment of the Soviet Union and in its later opening to China. From India’s point of view, U.S. indulgence of Pakistan became overt hostility when the U.S. sent the Seventh Fleet into the Bay of Bengal in support of the Pakistani genocide in Bangladesh in 1971. Tempers cooled soon enough, but India was always regarded as tilting toward the Kremlin, hardly a recommendation for warm relations in American eyes. With the end of the Cold War, and India’s reorientation of its foreign policy, as well as its increasing integration into the global economy, a thaw set in. India’s detonation of a nuclear device in 1998, however, triggered a fresh round of U.S. sanctions. President Bill Clinton began to turn things around with a hugely successful visit to India in 2000, his last year in office. George W. Bush’s administration took matters much further, with a defense agreement in 2005 and a landmark accord on civil nuclear cooperation in 2008 (which remains the centerpiece of the transformed relationship). The nuclear accord simultaneously accomplished two things. It admitted India into the global nuclear club, despite its refusal to sign the Nuclear Non-Proliferation Treaty. More important, it acknowledged that U.S. exceptionalism had found a sibling. Thanks to the U.S., which strong-armed the 45 countries of the Nuclear Suppliers’ Group into swallowing their concerns that special treatment for India could constitute a precedent for rogue nuclear aspirants like Pakistan, North Korea, and Iran, there is now an “Indian exception.” Under Obama, nothing quite so dramatic was possible: no spectacular breakthroughs were conceived or executed, nor could many have been imagined. But Obama ― who had displayed a photograph of Mahatma Gandhi in his Senate office, carried a locket of the Hindu god Hanuman, and spoke often of his desire to build a “close strategic partnership” with India ― struck the right symbolic chords in New Delhi and won over the fractious parliament. The U.S. is India’s largest trading partner///MARK/// (if both goods and services are included). American exports to India have grown faster in the last five years than those to any other country. The Confederation of Indian Industry estimates that, despite the recent global financial crisis and the U.S. recession that sparked it, bilateral trade in services is likely to grow from $60 billion to more than $150 billion in the next six years. During the Obama years, there has been progress on other fronts ― the small but significant steps that add up to strengthening the sinews of a relationship. Agreements on seemingly mundane subjects like agriculture, education, health, and even space exploration and energy security attest to enhanced cooperation. The two governments have also proclaimed initiatives on clean energy and climate change. Significant trade and investment deals, as well as growing linkages between American and Indian universities, have confirmed that each country is developing a more significant stake in the other than ever before. As a result, Indians will follow the unfolding U.S. elections, like everyone else, with more than passing interest. But, unlike most of the rest of the world, they will feel very little anxiety about the outcome.

## uq 1ar

#### History is overwhelming

Drum, 9-24

Kevin Drum, writer for Mother Jones, 9-24-2012, Mother Jones, http://www.motherjones.com/kevin-drum/2012/09/obamas-lead-starting-look-insurmountable

Obama's Lead Is Starting to Look Insurmountable

Nate Silver has an epic post today about late September polls from past years and how well they predict the eventual winner of a presidential race. Here are the highlights

 Obama is currently up by 3.7 percent. No candidate in the past 50 years has lost a lead that big.

 No candidate with more than 47 percent of the vote in late September has ever lost. Obama is currently at 48.3 percent.

 Big changes in the final month aren't impossible, but they've gotten rarer in the past 20 years.

 It's not true that undecided voters tend to break for the challenger in the last few weeks of a race.

Comeback impossible – 47 percent

Chait, 9-27

Jonathan Chait, editor at New York Magazine, “The Poetic Justice of Romney’s Self-Immolation,” http://nymag.com/daily/intel/2012/09/poetic-justice-of-romneys-self-immolation.html

I’ve been wrong before, and I’ll be wrong again, but I may never have been as wrong as I was when I initially predicted that Mitt Romney’s heinous diatribe against 47 percent of America would have little direct impact on the election. It’s an absolutely crushing blow. Obviously it doesn’t guarantee his defeat — if a secret video surfaces depicting Obama promising to impose Sharia law in his second term, Romney will stand a good chance of coming back — but it destroys his public standing in ways that make a comeback nearly impossible.

Here is Obama’s latest ad using Romney’s comments:

What’s devastating about the ad, aside from the juxtaposition of Romney’s words against photos of regular Americans, is something I only noticed the second time I watched it. It’s the sound of silverware clinking on china in the background as Romney speaks. That detail contrasts the atmosphere Romney inhabits with the one in which most Americans live. You can tell, even though you’re not seeing this, that the remarks are being made to people enjoying a formal dinner.

The damage of the remarks is twofold. Obviously, it deeply reinforces the worst stereotypes voters have of Romney. Indeed, the fact that he is currently running ads trying to make the case that he does care about all of America testifies to the grim position in which Romney finds himself. If you’re trying to clear the threshold of “does this candidate hate me” six weeks before the election, you’re probably not on the verge of closing the sale

Worse still, the comments destroy Romney’s fundamental credibility. Here America sees what he says behind closed doors. Nothing he can say in public can possibly overcome the damage of these comments, because voters will quite correctly assume that he is telling them what they want to hear. George W. Bush’s campaign figured out how to do this to both Al Gore and John Kerry — by painting them as liars, Bush destroyed them as a message delivery platform. Romney has, essentially, done it to himself.

The size of the political damage Romney has incurred is beside the point. He was trailing narrowly, but in a polarized electorate with a tiny number of undecided voters. Not only has he turned some of those undecided voters against him, but he’s blown up his bridge to reach them.

Obama’s already won – fundamentals

Giles, 10-1

Jim Giles, consultant for New Scientist, 10-1-2012, “The US presidential election is no contest,” New Scientist, http://www.newscientist.com/article/mg21528840.200-the-us-presidential-election-is-no-contest.html?page=2

Don’t believe the US presidential opinion polls. Barring a political earthquake, Barack Obama will be re-elected at a canter

FROM tabloids and broadsheets to left-leaning blogs and conservative talk shows, the US media has been united on one point in recent months: the presidential election is too tight to call. The difference between the candidates is "razor thin", The New York Post said recently. The "race remains close", agreed The Washington Post. According to The New York Times it is "widely expected to rest on a final blitz of advertising and furious campaigning".

But it takes just a few clicks to go from that last article to one that tells a very different story - one much more in keeping with what science tells us about the election. The New York Times hosts FiveThirtyEight, a blog by statistician Nate Silver dedicated to crunching electoral numbers. It gives the Republican challenger Mitt Romney a 1-in-4 chance of victory. Over at PredictWise, another source of political forecasts, Romney's odds are only a shade better. The race isn't close or razor-thin or dependent on advertising. It is President Obama's to lose - something that readers are rarely told.

Why the discrepancy? To answer that question, think about what polls actually are. They are often taken as an indication of who will win the election. But polls only provide a snapshot, often with a large margin of error, of who would win if the election took place today. That's very different from what we really care about, which is the candidate most likely to win the real thing in November. That's a forecast. It's what FiveThirtyEight and PredictWise provide, and it's a more complex beast than a poll.

The PredictWise forecast, the work of Microsoft researcher David Rothschild, depends on three types of data and the impact that each is known to have.

One is economic indicators, and the link here is simple: the better the economy is doing, the greater the incumbent's chances of winning. The US economy remains unhealthy but, crucially, it's on the mend. We know from previous elections that the direction of the economy has a bigger influence than its absolute state, so this information narrowly favours Obama.

The next ingredient is the wisdom of the crowd. It is well known that groups can make more accurate predictions than individuals when opinions are aggregated into a collective forecast. In this case, the aggregation takes place at websites like the Iowa Electronic Markets, where investors buy and sell futures in the two candidates. The return on these contracts is based on who wins and by how much, so prices reflect the traders' collective confidence in each candidate. Obama's shares have recently been trading at two to three times the price of Romney's.

The final input takes us back to opinion polls. With a little number crunching, polls can be transformed into forecasts. The process depends on the trends in polling numbers seen during previous elections.

It's known, for instance, that support for the incumbent tends to pick up two to three months before election day. This is probably due to the challenger's honeymoon period coming to an end. It is easier for voters to idealise a challenger, who may not previously have had a high national profile, than it is the incumbent, who has been headline news for almost four years. As voters learn more about a challenger they inevitably discover things they do not like, prompting some to decide to stick with what they know. This may be one reason why Obama has edged ahead in the polls in recent weeks.

There are different recipes for combining these ingredients, and not every forecaster uses them in the same way. Some, including Rothschild, increase the accuracy by considering data on individual states rather than at a national level. But almost every model is predicting an Obama victory. Most have been making this prediction for a year or so. And election forecasting is hardly a newcomer: one model run by Allan Lichtman of the American University in Washington DC has correctly called the popular vote in the past seven elections. "I don't see how Obama can lose," Lichtman told US News & World Report.

If the models are robust, and their predictions strongly in favour of Obama, why are we being told that the race is a dead heat? I think it is partly a cultural issue. Earlier this year I wrote a story about election forecasting for a British publication. The science editor liked it, but a colleague on the politics desk vetoed the piece, in part because he simply didn't believe the forecasts. I can see why. The hurly-burly of day-to-day politics is filled with dramatic events, like the recent leaked video of Romney talking in unvarnished terms about voters he cannot hope to win over. These events make the race feel like a roller-coaster ride.

The truth, as revealed by the science, is much more prosaic. Obama is way ahead and has been for ages. The meat and drink of daily political reporting - party conventions, gaffes, attack ads - have a limited and often passing impact. That's not to say that an unforeseen event couldn't put Romney in the White House. But it would have to be something huge, because studies of previous elections show outcomes depend far more on fundamental factors such as employment rates.

That, however, doesn't make for an exciting story. I remember where I was when John McCain selected the deeply divisive Sarah Palin as his running mate in 2008 - an event that supposedly redefined the race. Two weeks later Lehman Brothers filed for bankruptcy. It was genuine drama, the stuff that sells newspapers and advertising space. But it didn't change the way people voted. The scientific predictions gave McCain minimal chance all the way through the 2008 race, and he duly lost. The forecasts are similar for Romney. The race is not tight, and the only honest approach is to say so.

## at: environmentalism

#### Candidates won’t talk about environment

Plummer, 2012

Bradford Plummer, September/October 2012, Audubon Magazine, "Has The Environment Become A Nn-Issue In The 2012 Presidential Race," [www.audubonmagazine.org/articles/living/has-environment-become-non-issue-2012-presidential-race](http://www.audubonmagazine.org/articles/living/has-environment-become-non-issue-2012-presidential-race)

Apart from a few jabs here and there over the Keystone XL oil pipeline, this election season Barack Obama and Mitt Romney would rather talk about the economy than the environment.

“It’s pretty clear that there’s been a conscious decision on both sides not to engage with these issues this year,” says Robert J. Brulle, currently a fellow at Stanford and a professor at Drexel University who studies environmental politics and media effects.

Elections haven’t always been so greenless. Back in 2008 rising awareness about climate change pushed both Obama and John McCain to thoughtfully engage in a conversation about our warming planet—including in this magazine (see “Face-Off," September-October 2008). This time around, however, with the U.S. economy still wheezing, many Americans seem to have tuned out. A Gallup poll from 2012, for example, found that Americans’ worries about air and drinking water pollution had fallen to their lowest point in decades. Such polls, explains Brulle, have likely led candidates to steer away from topics like climate. And green groups, for their part, have struggled to find a coherent, compelling message to rally voters. When influential figures aren’t talking about green issues, media coverage tends to drop, too. “It’s a self-reinforcing cycle,” Brulle says.

## No Internal Link 1AR

#### Voters only care about gas prices.

Wang 9/27/12

Herman, writer for The Barrel, a Platts energy forecasting blog, “Even with US gasoline prices at a higher number, energy isn’t a big deal in White House race,” <http://blogs.platts.com/2012/09/27/energy_campaign/>, AM

The only time energy perks up as a major electoral factor is when gasoline prices rise up, he added. But even when that happens, as it did earlier this summer when gasoline prices surpassed $4 a gallon in many parts of the country, the impact on voter behavior seems muted.

“We asked the question, how high would [gasoline prices] have to be to really affect your family, and people were saying $5/gallon or more,” Newport said. “It didn’t get there, of course. I think Americans have a set point now where these fluctuations up and down don’t make as much difference anymore

1. <http://wordnetweb.princeton.edu/perl/webwn?s=resolved> [↑](#footnote-ref-1)