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### DoD

**Advantage One---The DoD**

**Domestic DoD bases are vulnerable due to connectivity to the civilian grid.**

**Robitaille 12** (George, Department of Army Civilian & US Army War College, *Small Modular Reactors: The Army’s Secure Source of Energy?*, March, Strategy Research Project)

In recent years, the U.S Department of Defense (DoD) has identified a security issue at our installations related to the dependence on the civilian electrical grid. 1 The DoD depends on a steady source of electricity at military facilities to perform the functions that secure our nation. The flow of electricity into military facilities is controlled by a public grid system that is susceptible to being compromised because of the age of the infrastructure, damage from **natural disasters** and the potential for **cyber attacks**. Although most major functions at military installations employ diesel powered generators as temporary backup, the public grid may not be available to provide electricity when it is needed the most. The United States electrical infrastructure system is prone to failures and susceptible to **terrorist attacks**. 2 It is critical that the source of electricity for our installations is reliable and secure. In order to ensure that our military facilities possess a secure source of electricity, either the public system of electric generation and distribution is upgraded to increase its reliability as well as reducing its susceptibility to cyber attack or another source of electricity should be pursued. Although significant investments are being made to upgrade the electric grid, the current **investment levels** are not keeping up with the aging system. Small modular reactors (SMRs) are nuclear reactors that are about an order of magnitude smaller than traditional commercial reactor used in the United States. SMRs are capable of generating electricity and at the same time, they are not a significant contributor to global warming because of green house gas emissions. The DoD needs to look at small modular nuclear reactors (SMRs) to determine if they can provide a safe and secure source of electricity. Electrical Grid Susceptibility to Disruptions According to a recent report by the Defense Science Board, the DoD gets ninety nine percent of their electrical requirements from the civilian electric grid. 3 The electric grid, as it is currently configured and envisioned to operate for the foreseeable future, may not be reliable enough to ensure an uninterrupted flow of electricity for our critical military facilities given the influences of the aging infrastructure, its susceptibility to severe weather events, and the potential for cyber attacks. The DoD dependency on the grid is reflected in the $4.01 Billion spent on facilities energy in fiscal year 2010, the latest year which data was available. 4 The electricity used by military installations amounts to $3.76 billion. 5 As stated earlier, the DoD relies on the commercial grid to provide a secure source of energy to support the operations that ensure the security of our nation and it may not be available when we need it. The system could be taken down for extended periods of time by failure of aging components, acts of nature, or intentionally by cyber attacks. Aging Infrastructure. The U.S electric power grid is made up of independently owned power plants and transmission lines. The political and environmental resistance to building new electric generating power plants combined with the rise in consumption and aging infrastructure increases the potential for grid failure in the future. There are **components** in the U.S. electric grid that are over one hundred years old and some of the recent outages such as the 2006 New York blackout can be directly attributed to this out of date, aging infrastructure. 6 Many of the components of this system are at or exceeding their operational life and the general trend of the utility companies is to not replace power lines and other equipment until they fail. 7 The government led deregulation of the electric utility industry that started in the mid 1970s has contributed to a three decade long deterioration of the electric grid and an increased state of instability. Although significant investments are being made to upgrade the electric grid, the many years of prior neglect will require a considerable amount of time and funding to bring the aging infrastructure up to date. Furthermore, the current investment levels to upgrade the grid are not keeping up with the aging system. 8 In addition, **upgrades** to the digital infrastructure which were done to increase the systems efficiency and reliability, have actually made the system more susceptible to cyber attacks. 9 Because of the aging infrastructure and the impacts related to weather, the extent, as well as frequency of failures is expected to increase in the future. Adverse Weather. According to a 2008 grid reliability report by the Edison Electric Institute, sixty seven per cent of all power outages are related to **weather**. Specifically, lightning contributed six percent, while adverse weather provided thirty one percent and vegetation thirty percent (which was predominantly attributed to wind blowing vegetation into contact with utility lines) of the power outages. 10 In 1998 a falling tree limb damaged a transformer near the Bonneville Dam in Oregon, causing a cascade of related black-outs across eight western states. 11 In August of 2003 the lights went out in the biggest blackout in North America, plunging over fifty million people into darkness over eight states and two Canadian provinces. Most areas did not have power restored four or five days. In addition, drinking water had to be distributed by the National Guard when water pumping stations and/or purification processes failed. The estimated economic losses associated with this incident were about five billion dollars. Furthermore, this incident also affected the operations of twenty two nuclear plants in the United States and Canada. 12 In 2008, Hurricane Ike caused approximately seven and a half million customers to lose power in the United States from Texas to New York. 13 The electric grid suffered numerous power outages every year throughout the United States and the number of outages is expected to increase as the infrastructure ages without sufficient upgrades and weather-related impacts continue to become more frequent. Cyber Attacks. The civilian grid is made up of three unique electric networks which cover the East, West and Texas with approximately one hundred eighty seven thousand miles of power lines. There are several weaknesses in the electrical distribution infrastructure system that could compromise the flow of electricity to military facilities. The flow of energy in the network lines as well as the main distribution hubs has become totally dependent on **computers** and internet-based communications. Although the digital infrastructure makes the grid more efficient, it also makes it more susceptible to cyber attacks. Admiral Mr. Dennis C. Blair (ret.), the former Director of National Intelligence, testified before Congress that “the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures. 14 ” The Intelligence Community assesses that a number of nations already have the technical capability to conduct such attacks. 15 In the 2009 report, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Adm. Blair stated that “Threats to cyberspace pose one of the most serious economic and national security challenges of the 21st Century for the United States and our allies.”16 In addition, the report highlights a growing array of state and non-state actors that are targeting the U.S. critical infrastructure for the purpose of creating chaos that will subsequently produce detrimental effects on citizens, commerce, and government operations. These actors have the ability to compromise, steal, change, or completely destroy information through their detrimental activities on the internet. 17 In January 2008, US Central Intelligence Agency senior analyst Tom Donahue told a gathering of three hundred international security managers from electric, water, oil & gas, and other critical industry, that data was available from multiple regions outside the United States, which documents cyber intrusions into utilities. In at least one case (outside the U.S.), the disruption caused a power outage affecting multiple cities. Mr. Donahue did not specify who executed these attacks or why, but did state that all the intrusions were conducted via the Internet. 18 During the past twenty years, advances in computer technologies have permeated and advanced all aspects of our lives. Although the digital infrastructure is being increasingly merged with the power grid to make it more efficient and reliable, it also makes it more vulnerable to cyber attack. In October 2006, a foreign hacker invaded the Harrisburg, PA., water filtration system and planted malware. 19 In June 2008, the Hatch nuclear power plant in Georgia shut down for two days after an engineer loaded a software update for a business network that also rebooted the plant's power control system. In April 2009, The Wall Street Journal reported that cyber spies had infiltrated the U.S. electric grid and left behind software that could be used to disrupt the system. The hackers came from China, Russia and other nations and were on a “fishing expedition” to map out the system. 20 According to the secretary of Homeland Security, Janet Napolitano at an event on 28 October 2011, cyber–attacks have come close to compromising the country’s critical infrastructure on multiple occasions. 21 Furthermore, during FY11, the United States Computer Emergency Readiness Team took action on more than one hundred thousand incident reports by releasing more than five thousand actionable cyber security alerts and information products. 22 The interdependence of modern infrastructures and digital based systems makes any cyber attacks on the U.S. electric grid potentially significant. The December 2008 report by the Commission on Cyber Security for the forty fourth Presidency states the challenge plainly: “America’s failure to protect cyberspace is one of the most urgent national security problems facing the new administration”. 23 The susceptibility of the grid to being compromised has resulted in a significant amount of resources being allocated to ensuring the systems security. Although a substantial amount of resources are dedicated to protecting the nation’s infrastructure, it may not be enough to ensure the continuous flow of electricity to our critical military facilities. SMRs as they are currently envisioned may be able to provide a secure and independent alternative source of electricity in the event that the public grid is compromised. SMRs may also provide additional DoD benefit by supporting the recent government initiatives related to energy consumption and by circumventing the adverse ramifications associated with building coal or natural gas fired power plants on the environment.

**The risk of cyber attacks against the civilian electricity grid is high.**

**Habiger 10** (Eugene, Commander in Chief – United States Strategic Command, Served as Director of Security and Emergency Operations – U.S. Department of Energy, Previously Deputy chief of staff for personnel – Headquarters U.S. Air Force, Vice commander – Headquarters Air Education and Training Command, Deputy Director, Later director, Programs and Evaluation, Office of the Deputy Chief of Staff, Programs and Resources, Headquarters U.S. Air Force, He was also the chairman of the Program Review Committee and the Air Force Board, *CYBERWARFARE AND CYBERTERRORISM: THE NEED FOR A NEW U.S. STRATEGIC APPROACH*, The Cyber Security Institute, http://www.army-technology.com/downloads/whitepapers/vehicle-protection/file1552/)

However, there are reasons to believe that what is going on now amounts to a fundamental shift as opposed to business as usual. Today’s network exploitation or information operation trespasses possess a number of characteristics that suggest that the line between espionage and conflict has been, or is close to being, crossed. (What that suggests for the proper response is a different matter.) First, the **number of cyber attacks** we are facing is growing significantly. Andrew Palowitch, a former CIA official now consulting with the US Strategic Command (STRATCOM), which oversees the Defense Department’s Joint Task Force‐Global Network Operations, recently told a meeting of experts that the Defense Department has experienced almost **80,000 computer attacks**, and some number of these assaults have actually “reduced” the military’s “operational capabilities.”20 Second, the nature of these attacks is starting to shift from penetration attempts aimed at gathering intelligence (cyber spying) to offensive efforts aimed at taking down systems (cyberattacks). Palowitch put this in stark terms last November, “We are currently in a cyber war and war is going on today.”21 Third, these recent attacks need to be taken in a broader strategic context. Both Russia and China have stepped up their offensive efforts and taken a much more aggressive cyber warfare posture. The Chinese have developed an openly discussed cyberwar strategy aimed at achieving electronic dominance over the U.S. and its allies by 2050. In 2007 the Department of Defense reported that for the first time China has developed first strike viruses, marking a major shift from prior investments in defensive measures.22 And in the intervening period China has launched a series of offensive cyber operations against U.S. government and private sector networks and infrastructure. In 2007, Gen. James Cartwright, the former head of STRATCOM and now the Vice Chairman of the Joint Chiefs of Staff, told the US‐China Economic and Security Review Commission that China’s ability to launch “denial of service” attacks to overwhelm an IT system is of particular concern. 23 Russia also has already begun to wage offensive cyberwar. At the outset of the recent hostilities with Georgia, Russian assets launched a series of cyberattacks against the Georgian government and its critical infrastructure systems, including media, banking and transportation sites.24 In 2007, cyberattacks that many experts attribute, directly or indirectly, to Russia shut down the Estonia government’s IT systems. Fourth, the current geopolitical context must also be factored into any effort to gauge the degree of threat of cyberwar. The start of the new Obama Administration has begun to help reduce tensions between the United States and other nations. And, the new administration has taken initial steps to improve bilateral relations specifically with both China and Russia. However, it must be said that over the last few years the posture of both the Chinese and Russian governments toward America has clearly become more assertive, and at times even aggressive. Some commentators have talked about the prospects of a cyber Pearl Harbor, and the pattern of Chinese and Russian behavior to date gives reason for concern along these lines: both nations have offensive cyberwarfare strategies in place; both nations have taken the cyber equivalent of building up their forces; both nations now regularly probe our cyber defenses looking for gaps to be exploited; both nations have begun taking actions that cross the line from cyberespionage to cyberaggression; and, our bilateral relations with both nations are increasingly fractious and complicated by areas of marked, direct competition. Clearly, there a sharp differences between current U.S. relations with these two nations and relations between the US and Japan just prior to World War II. However, from a strategic defense perspective, there are enough warning signs to warrant preparation. In addition to the threat of cyberwar, the limited resources required to carry out even a large scale cyberattack also makes likely the potential for a significant cyber terror attack against the United States. However, the lack of a long list of specific incidences of cyberterrorism should provide no comfort. There is **strong evidence** to suggest that al Qaeda has the ability to conduct cyberterror attacks against the United States and its allies. Al Qaeda and other terrorist organizations are extremely active in cyberspace, using these technologies to communicate among themselves and others, carry out logistics, recruit members, and wage information warfare. For example, al Qaeda leaders used email to communicate with the 9‐11 terrorists and the 9‐11 terrorists used the Internet to make travel plans and book flights. Osama bin Laden and other al Qaeda members routinely post videos and other messages to online sites to communicate. Moreover, there is evidence of efforts that al Qaeda and other terrorist organizations are actively developing cyberterrorism capabilities and seeking to carry out cyberterrorist attacks. For example, the Washington Post has reported that “U.S. investigators have found evidence in the logs that mark a browser's path through the Internet that al Qaeda operators spent time on sites that offer software and programming instructions for the digital switches that run power, water, transport and communications grids. In some interrogations . . . al Qaeda prisoners have described intentions, in general terms, to use those tools.”25 Similarly, a 2002 CIA report on the cyberterror threat to a member of the Senate stated that al Qaeda and Hezbollah have become "more adept at using the internet and computer technologies.”26 The FBI has issued bulletins stating that, “U. S. law enforcement and intelligence agencies have received indications that Al Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA‐related web sites.”27 In addition a number of jihadist websites, such as 7hj.7hj.com, teach computer attack and hacking skills in the service of Islam.28 While al Qaeda may lack the cyber‐attack capability of nations like Russia and China, there is every reason to believe its operatives, and those of its ilk, are as capable as the cyber criminals and hackers who routinely effect great harm on the world’s digital infrastructure generally and American assets specifically. In fact, perhaps, the most troubling indication of the level of the cyberterrorist threat is the countless, serious non‐terrorist cyberattacks routinely carried out by criminals, hackers, disgruntled insiders, crime syndicates and the like. If run‐of‐the‐mill criminals and hackers can **threaten power grids**, hack vital military networks, steal vast sums of money, take down a city’s of traffic lights, compromise the Federal Aviation Administration’s air traffic control systems, among other attacks, it is **overwhelmingly likely** that terrorists can carry out similar, if not more malicious attacks. Moreover, even if the world’s terrorists are unable to breed these skills, they can certainly buy them. There are untold numbers of cyber mercenaries around the world—sophisticated hackers with advanced training who would be willing to offer their services for the right price. Finally, given the nature of our understanding of cyber threats, there is always the possibility that we have already been the victim or a cyberterrorist attack, or such an attack has already been set but not yet effectuated, and we don’t know it yet. Instead, a well‐designed cyberattack has the capacity to cause widespread chaos, sow societal unrest, undermine national governments, spread paralyzing fear and anxiety, and create a state of utter turmoil, all without taking a single life. A sophisticated cyberattack could throw a nation’s banking and finance system into chaos causing markets to crash, prompting runs on banks, degrading confidence in markets, perhaps even putting the nation’s currency in play and making the government look helpless and hapless. In today’s difficult economy, imagine how Americans would react if vast sums of money were taken from their accounts and their supporting financial records were destroyed. A truly nefarious cyberattacker could carry out an attack in such a way (akin to Robin Hood) as to engender populist support and deepen rifts within our society, thereby making efforts to restore the system all the more difficult. A modestly advanced enemy could use a cyberattack to shut down (if not physically damage) one or more regional power grids. An entire region could be cast into total darkness, power‐dependent systems could be shutdown. An attack on one or more regional power grids could also cause cascading effects that could jeopardize our entire national grid. When word leaks that the blackout was caused by a cyberattack, the specter of a foreign enemy capable of sending the entire nation into darkness would only increase the fear, turmoil and unrest. While the finance and energy sectors are considered prime targets for a cyberattack, an attack on any of the 17 delineated critical infrastructure sectors could have a major impact on the United States. For example, our healthcare system is already technologically driven and the Obama Administration’s e‐health efforts will only increase that dependency. A cyberattack on the U.S. e‐health infrastructure could send our healthcare system into chaos and put countless of lives at risk. Imagine if emergency room physicians and surgeons were suddenly no longer able to access vital patient information. A cyberattack on our nation’s water systems could likewise cause widespread disruption. An attack on the control systems for one or more dams could put entire communities at risk of being inundated,and could create ripple effects across the water, agriculture, and energy sectors. Similar water control system attacks could be used to at least temporarily deny water to otherwise arid regions, impacting everything from the quality of life in these areas to agriculture. In 2007, the U.S. Cyber Consequences Unit determined that the destruction from a single wave of cyberattacks on critical infrastructures could exceed $700 billion, which would be the rough equivalent of 50 Katrina‐esque hurricanes hitting the United States all at the same time.29 Similarly, one IT security source has estimated that the impact of a single day cyberwar attack that focused on and disrupted U.S. credit and debit card transactions would be approximately $35 billion.30 Another way to gauge the potential for harm is in comparison to other similar noncyberattack infrastructure failures. For example, the August 2003 regional power grid blackout is estimated to have cost the U.S. economy up to $10 billion, or roughly .1 percent of the nation’s GDP. 31 That said, a cyberattack of the exact same magnitude would most certainly have a much larger impact. The origin of the 2003 blackout was almost immediately disclosed as an atypical system failure having nothing to do with terrorism. This made the event both less threatening and likely a single time occurrence. Had it been disclosed that the event was the result of an attack that could readily be repeated the impacts would likely have grown substantially, if not exponentially. Additionally, a cyberattack could also be used to disrupt our nation’s defenses or distract our national leaders in advance of a more traditional conventional or strategic attack. Many military leaders actually believe that such a disruptive cyber pre‐offensive is the most effective use of offensive cyber capabilities. This is, in fact, the way Russia utilized cyberattackers—whether government assets, governmentdirected/ coordinated assets, or allied cyber irregulars—in advance of the invasion of Georgia. Widespread distributed denial of service (DDOS) attacks were launched on the Georgian governments IT systems. Roughly a day later Russian armor rolled into Georgian territory. The cyberattacks were used to prepare the battlefield; they denied the Georgian government a critical communications tool isolating it from its citizens and degrading its command and control capabilities precisely at the time of attack. In this way, these attacks were the functional equivalent of conventional air and/or missile strikes on a nation’s communications infrastructure.32 One interesting element of the Georgian cyberattacks has been generally overlooked: On July 20th, weeks before the August cyberattack, the website of Georgian President Mikheil Saakashvili was overwhelmed by a more narrowly focused, but technologically similar DDOS attack.33 This should be particularly chilling to American national security experts as our systems undergo the same sorts of focused, probing attacks on a constant basis. The ability of an enemy to use a cyber attack to counter our offensive capabilities or soften our defenses for a wider offensive against the United States is much more than mere speculation. In fact, in Iraq it is already happening. Iraq insurgents are now using off‐the‐shelf software (costing just $26) to hack U.S. drones (costing $4.5 million each), allowing them to intercept the video feed from these drones.34 By hacking these drones the insurgents have succeeded in greatly reducing one of our most valuable sources of real‐time intelligence and situational awareness. If our enemies in Iraq are capable of such an effective cyberattack against one of our more sophisticated systems, consider what a more technologically advanced enemy could do. At the strategic level, in 2008, as the United States Central Command was leading wars in both Iraq and Afghanistan, a cyber intruder compromised the security of the Command and sat within its IT systems, monitoring everything the Command was doing. 35 This time the attacker simply gathered vast amounts of intelligence. However, it is clear that the attacker could have used this access to wage cyberwar—altering information, disrupting the flow of information, destroying information, taking down systems—against the United States forces already at war. Similarly, during 2003 as the United States prepared for and began the War in Iraq, the IT networks of the Department of Defense were hacked 294 times.36 By August of 2004, with America at war, these ongoing attacks compelled then‐Deputy Secretary of Defense Paul Wolfowitz to write in a memo that, "Recent exploits have reduced operational capabilities on our networks."37 This wasn’t the first time that our national security IT infrastructure was penetrated immediately in advance of a U.S. military option.38 In February of 1998 the Solar Sunrise attacks systematically compromised a series of Department of Defense networks. What is often overlooked is that these attacks occurred during the ramp up period ahead of potential military action against Iraq. The attackers were able to obtain vast amounts of sensitive information—information that would have certainly been of value to an enemy’s military leaders. There is no way to prove that these actions were purposefully launched with the specific intent to distract American military assets or degrade our capabilities. However, such ambiguities—the inability to specifically attribute actions and motives to actors—are the very nature of cyberspace. Perhaps, these repeated patterns of behavior were mere coincidence, or perhaps they weren’t. The potential that an enemy might use a cyberattack to soften physical defenses, increase the gravity of harms from kinetic attacks, or both, significantly increases the potential harms from a cyberattack. Consider the gravity of the threat and risk if an enemy, rightly or wrongly, believed that it could use a cyberattack to degrade our strategic weapons capabilities. Such an enemy might be convinced that it could win a war—conventional or even nuclear—against the United States. The effect of this would be to undermine our **deterrence**‐based defenses, making us significantly more at risk of a **major war.**

**SMR’s solve --- they address weaknesses which otherwise leads to nuclear retaliation.**

**Andres 11** (\*Richard B. – Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University, \*\*Hanna L. Breetz – Doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, *Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications*, Strategic Forum, National Defense University, Institute for National Strategic Studies, February 2011, http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

Small reactors and energy Security The DOD interest in small reactors derives largely from problems with base and logistics vulnerability. Over the last few years, the Services have begun to reexamine virtually every aspect of how they generate and use en- ergy with an eye toward cutting costs, decreasing carbon emissions, and reducing energy-related vulnerabilities. These actions have resulted in programs that have signif- icantly reduced DOD energy consumption and green- house gas emissions at domestic bases. Despite strong efforts, however, two critical security issues have thus far proven resistant to existing solutions: bases’ vulnerability to civilian power outages, and the need to transport large quantities of fuel via convoys through hostile territory to forward locations. Each of these is explored below. Grid Vulnerability. DOD is unable to provide its bases with electricity when the civilian electrical grid is offline for an extended period of time. Currently, domestic military installations receive **99 percent** of their electricity from the civilian power grid. As explained in a recent study from the Defense Science Board: DOD’s key problem with electricity is that critical missions, such as national strategic awareness and national command authorities, are almost entirely dependent on the national transmission grid . . . [which] is fragile, vulnerable, near its capacity limit, and outside of DOD control. In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.7 The grid’s fragility was demonstrated during the 2003 Northeast blackout in which 50 million people in the United States and Canada lost power, some for up to a week, when one Ohio utility failed to properly trim trees. The blackout created cascading disruptions in sewage systems, gas station pumping, cellular communications, border check systems, and so forth, and demonstrated the interdependence of modern infrastructural systems.8 More recently, awareness has been growing that the grid is also vulnerable to purposive attacks. A re- port sponsored by the Department of Homeland Secu- rity suggests that a coordinated cyber attack on the grid could result in a third of the country losing power for a period of weeks or months.9 Cyberattacks on critical infrastructure are not well understood. It is not clear, for instance, whether existing **terrorist groups** might be able to develop the capability to conduct this type of attack. It is likely, however, that some **nation-states** either have or are working on developing the ability to take down the U.S. grid. In the event of a war with one of these states, it is possible, if not likely, that parts of the civilian grid would cease to function, taking with them military bases located in affected regions. Government and private organizations are currently working to secure the grid against attacks; however, it is not clear that they will be successful. Most military bases currently have backup power that allows them to func- tion for a period of hours or, at most, a few days on their own. If power were not restored after this amount of time, the results could be disastrous. First, military assets taken offline by the crisis would not be available to help with disaster relief. Second, during an extended blackout, global military operations could be seriously compromised; this disruption would be particularly serious if the blackout was induced during major combat operations. During the Cold War, this type of event was far less likely because the United States and Soviet Union shared the common understanding that blinding an opponent with a grid black- out could **escalate to nuclear war**. America’s current opponents, however, may not share this fear or be deterred by this possibility. In 2008, the Defense Science Board stressed that DOD should mitigate the electrical grid’s vulnerabilities by turning military installations into “islands” of energy self-sufficiency.10 The department has made ef- forts to do so by promoting efficiency programs that lower power consumption on bases and by constructing renewable power generation facilities on selected bases. Unfortunately, these programs will not come close to reaching the goal of islanding the vast majority of bases. Even with massive investment in efficiency and renew- ables, most bases would not be able to function for more than a few days after the civilian grid went offline. Unlike other alternative sources of energy, small reactors have the potential to **solve** DOD’s vulnerability to grid outages. Most bases have relatively light power de- mands when compared to civilian towns or cities. Small reactors could easily support bases’ power demands separate from the civilian grid during crises. In some cases, the reactors could be designed to produce enough power not only to supply the base, but also to provide critical services in surrounding towns during long-term outages. Strategically, islanding bases with small reactors has another benefit. One of the main reasons an enemy might be willing to risk reprisals by taking down the U.S. grid during a period of military hostilities would be to affect ongoing military operations. Without the lifeline of intelligence, communication, and logistics provided by U.S. domestic bases, American military operations would be compromised in almost any conceivable contingency. Making bases more resilient to civilian power outages would **reduce the incentive** for an opponent to attack the grid. An opponent might still attempt to take down the grid for the sake of disrupting civilian systems, but the powerful incentive to do so in order to win an ongoing battle or war would be greatly reduced.

**Plus they eliminate the incentive for cyber attacks in the first place.**

**Loudermilk 11** (Micah, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University*, Small Nuclear Reactors: Enabling Energy Security for Warfighters*, Small Wars Journal, March 27th 2011, http://smallwarsjournal.com/blog/small-nuclear-reactors-enabling-energy-security-for-warfighters)

Recognition of these facts led the Defense Science Board to recommend "islanding" U.S. military installations to mitigate the electrical grid's vulnerabilities. Although DOD has undertaken a wide array of energy efficiency programs and sought to construct renewable energy facilities on bases, these endeavors **will fall far short** of the desired goals and still leave bases unable to function in the event of long-term outages.

As the NDU report argues though, small nuclear reactors have the potential to alleviate domestic base grid vulnerabilities. With a capacity of anywhere between 25 and 300 megawatts, small reactors possess sufficient generation capabilities to power any military installation, and most likely some critical services in the areas surrounding bases, should a blackout occur. Moreover, making bases resilient to civilian power outages would **reduce the incentive** for an opponent to disrupt the grid in the event of a conflict as military capabilities would be unaffected. Military bases are also secure locations, reducing the associated fears that would surely arise from the distribution of reactors across the country. Furthermore, small nuclear reactors, by design, are significantly safer than prior generations of reactors due to passive safety features, simplified designs, sealed reactor cores, and lower operational requirements.

**Miscalculation and escalation is guaranteed.**

**Clarke 9** (Richard, Special adviser to the president for cyber security in the George W. Bush administration, Now chairman of Good Harbor Consulting, *War from Cyberspace*, The National Interest, December 22, http://nationalinterest.org/article/war-from-cyberspace-3278)

AS IN the 1960s, the speed of war is rapidly accelerating. Then, long-range missiles could launch from the prairie of Wyoming and hit Moscow in only thirty-five minutes. Strikes in cyber war move at a rate approaching the speed of light. And this speed favors a strategy of preemption, which means the chances that people can become trigger-happy are high. This, in turn, makes cyber war all the more likely. If a cyber-war commander does not attack quickly, his network may be destroyed first. If a commander does not preempt an enemy, he may find that the target nation has suddenly raised new defenses or even disconnected from the worldwide Internet. There seems to be a premium in cyber war to making the first move. And much as in the nuclear era, there is a real risk of escalation with cyber war. Nuclear war was generally believed to be something that might quickly grow out of conventional combat, perhaps initiated with tanks firing at each other in a divided Berlin. The speed of new technologies created enormous risks for crisis instability and miscalculation. Today, the risks of miscalculation are even higher, enhancing the chances that what begins as a battle of computer programs ends in a shooting war. Cyber war, with its low risks to the cyber warriors, may be seen by a decision maker as a way of sending a signal, making a point without actually shooting. An attacker would likely think of a cyber offensive that knocked out an electric-power grid and even destroyed some of the grid's key components (keeping the system down for weeks), as a somewhat antiseptic move; a way to keep tensions as low as possible. But for the millions of people thrown into the dark and perhaps the cold, unable to get food, without access to cash and dealing with social disorder, it would be in many ways the same as if bombs had been dropped on their cities. Thus, the nation attacked might well respond with "kinetic activity."

**It is the highest probability scenario for a nuclear WW3.**

**Lawson 9** (Sean, Assistant professor in the Department of Communication at the University of Utah, *Cross-Domain Response to Cyber Attacks and the Threat of Conflict Escalation*, May 13th 2009, http://www.seanlawson.net/?p=477)

Introduction

At a time when it seems impossible to avoid the seemingly growing hysteria over the threat of cyber war,[1] network security expert Marcus Ranum delivered a refreshing talk recently, “The Problem with Cyber War,” that took a critical look at a number of the assumptions underlying contemporary cybersecurity discourse in the United States. He addressed one issue in partiuclar that I would like to riff on here, the issue of conflict escalation–i.e. the possibility that offensive use of cyber attacks could escalate to the use of physical force. As I will show, his concerns are entirely legitimate as current U.S. military cyber doctrine assumes the possibility of what I call “**cross-domain responses**” to cyberattacks.

Backing Your Adversary (Mentally) into a Corner

Based on the premise that completely blinding a potential adversary is a good indicator to that adversary that an attack is iminent, Ranum has argued that

“The best thing that you could possibly do if you want to start **World War III** is launch a cyber attack. [...] When people talk about cyber war like it’s a practical thing, what they’re really doing is messing with the OK button for starting World War III. We need to get them to sit the f-k down and shut the f-k up.” [2]

He is making a point similar to one that I have made in the past: Taking away an adversary’s ability to make rational decisions could backfire. [3] For example, Gregory Witol cautions that

“attacking the decision makerÃ¢â‚¬â„¢s ability to perform rational calculations may cause more problems than it hopes to resolveÃ¢â‚¬Â¦ Removing the capacity for rational action may result in completely unforeseen consequences, including longer and bloodier battles than may otherwise have been.” [4]

Ã¯Â»Â¿Cross-Domain Response

So, from a theoretical standpoint, I think his concerns are well founded. But the current state of U.S. policy may be cause for even greater concern. It’s not just worrisome that a hypothetical blinding attack via cyberspace could send a signal of imminent attack and therefore trigger an irrational response from the adversary. What is also cause for concern is that current U.S. policy indicates that “kinetic attacks” (i.e. physical use of force) are seen as potentially legitimate responses to cyber attacks. Most worrisome is that current U.S. policy implies that a **nuclear response** is possible, something that policy makers have not denied in recent press reports.

The reason, in part, is that the U.S. defense community has increasingly come to see cyberspace as a “domain of warfare” equivalent to air, land, sea, and space. The definition of cyberspace as its own domain of warfare helps in its own right to blur the online/offline, physical-space/cyberspace boundary. But thinking logically about the potential consequences of this framing leads to some disconcerting conclusions.

If cyberspace is a domain of warfare, then it becomes possible to define “cyber attacks” (whatever those may be said to entail) as acts of war. But what happens if the U.S. is attacked in any of the other domains? It retaliates. But it usually does not respond only within the domain in which it was attacked. Rather, responses are typically “cross-domain responses”–i.e. a massive bombing on U.S. soil or vital U.S. interests abroad (e.g. think 9/11 or Pearl Harbor) might lead to air strikes against the attacker. Even more likely given a U.S. military “way of warfare” that emphasizes multidimensional, “joint” operations is a massive conventional (i.e. non-nuclear) response against the attacker in all domains (air, land, sea, space), simultaneously.

The possibility of “kinetic action” in response to cyber attack, or as part of offensive U.S. cyber operations, is part of the current (2006) National Military Strategy for Cyberspace Operations [5]:

Of course, the possibility that a cyber attack on the U.S. could lead to a U.S. nuclear reply constitutes possibly the ultimate in “cross-domain response.” And while this may seem far fetched, it has not been ruled out by U.S. defense policy makers and is, in fact, implied in current U.S. **defense policy documents**. From the National Military Strategy of the United States (2004):

“The term WMD/E relates to a broad range of adversary capabilities that pose potentially devastating impacts. WMD/E includes chemical, biological, radiological, nuclear, and enhanced high explosive weapons as well as other, more asymmetrical ‘weapons’. They may rely more on disruptive impact than destructive kinetic effects. For example, cyber attacks on US commercial information systems or attacks against transportation networks may have a greater economic or psychological effect than a relatively small release of a lethal agent.” [6]

The authors of a 2009 National Academies of Science report on cyberwarfare respond to this by saying,

“Coupled with the declaratory policy on nuclear weapons described earlier, this statement implies that the United States will regard certain kinds of cyberattacks against the United States as being in the same category as nuclear, biological, and chemical weapons, and thus that a nuclear response to certain kinds of cyberattacks (namely, cyberattacks with devastating impacts) may be possible. It also sets a relevant scale–a cyberattack that has an impact larger than that associated with a relatively small release of a lethal agent is regarded with the same or greater seriousness.” [7]

Asked by the New York Times to comment on this, U.S. defense officials would not deny that nuclear retaliation remains an option for response to a massive cyberattack:

“Pentagon and military officials confirmed that the United States reserved the option to respond in any way it chooses to punish an adversary responsible for a catastrophic cyberattack. While the options could include the use of nuclear weapons, officials said, such an extreme counterattack was hardly the most likely response.” [8] The rationale for this policy:

“Thus, the United States never declared that it would be bound to respond to a Soviet and Warsaw Pact conventional invasion with only American and NATO conventional forces. The fear of escalating to a nuclear conflict was viewed as a pillar of stability and is credited with helping deter the larger Soviet-led conventional force throughout the cold war. Introducing the possibility of a nuclear response to a catastrophic cyberattack would be expected to serve the same purpose.” [9]

Non-unique, Dangerous, and In-credible?

There are a couple of interesting things to note in response. First is the development of a new acronym, WMD/E (weapons of mass destruction or effect). Again, this acronym indicates a weakening of the requirement of physical impacts. In this new definition, mass effects that are not necessarily physical, nor necessarily destructive, but possibly only disruptive economically or even psychologically (think “shock and awe”) are seen as equivalent to WMD. This new emphasis on effects, disruption, and psychology reflects both contemporary, but also long-held beliefs within the U.S. defense community. It reflects current thinking in U.S. military theory, in which it is said that U.S. forces should be able to “mass fires” and “mass effects” without having to physically “mass forces.” There is a sliding scale in which the physical (often referred to as

the “kinetic”) gradually retreats–i.e. massed forces are most physical; massed fire is less physical (for the U.S. anyway); and massed effects are the least physical, having as the ultimate goal Sun Tzu’s “pinnacle of excellence,” winning without fighting.

But the emphasis on disruption and psychology in WMD/E has also been a key component of much of 20th century military thought in the West. Industrial theories of warfare in the early 20th century posited that industrial societies were increasingly interdependent and reliant upon mass production, transportation, and consumption of material goods. Both industrial societies and the material links that held them together, as well as industrial people and their own internal linkages (i.e. nerves), were seen as increasingly fragile and prone to disruption via attack with the latest industrial weapons: airplanes and tanks. Once interdependent and fragile industrial societies were hopelessly disrupted via attack by the very weapons they themselves created, the nerves of modern, industrial men and women would be shattered, leading to moral and mental defeat and a loss of will to fight. Current thinking about the possible dangers of cyber attack upon the U.S. are based on the same basic premises: technologically dependent and therefore fragile societies populated by masses of people sensitive to any disruption in expected standards of living are easy targets. Ultimately, however, a number of researchers have pointed out the pseudo-psychological, pseudo-sociological, and a-historical (not to mention non-unique) nature of these assumptions. [10] Others have pointed out that these assumptions did not turn out to be true during WWII strategic bombing campaigns, that modern, industrial societies and populations were far more resilient than military theorists had assumed. [11] Finally, even some military theorists have questioned the assumptions behind cyber war, especially when assumptions about our own technology dependence-induced societal fragility (dubious on their own) are applied to other societies, especially non-Western societies (even more dubious). [12]

Finally, where deterrence is concerned, it is important to remember that a deterrent has to be credible to be effective. True, the U.S. retained nuclear weapons as a deterrent during the Cold War. But, from the 1950s through the 1980s, there was increasing doubt among U.S. planners regarding the credibility of U.S. nuclear deterrence via the threat of “massive retaliation.” As early as the 1950s it was becoming clear that the U.S. would be reluctant at best to actually follow through on its threat of massive retaliation. Unfortunately, most money during that period had gone into building up the nuclear arsenal; conventional weapons had been marginalized. Thus, the U.S. had built a force it was likely never to use. So, the 1960s, 1970s, and 1980s saw the development of concepts like “flexible response” and more emphasis on building up conventional forces. This was the big story of the 1980s and the “Reagan build-up” (not “Star Wars”). Realizing that, after a decade of distraction in Vietnam, it was back in a position vis-a-viz the Soviets in Europe in which it would have to rely on nuclear weapons to offset its own weakness in conventional forces, a position that could lead only to blackmail or holocaust, the U.S. moved to create stronger conventional forces. [13] Thus, the question where cyber war is concerned:

If it was in-credible that the U.S. would actually follow through with massive retaliation after a Soviet attack on the U.S. or Western Europe, is it really credible to say that the U.S. would respond with nuclear weapons to a cyber attack, no matter how disruptive or destructive?

Beyond credibility, deterrence makes many other assumptions that are problematic in the cyber war context. It assumes an adversary capable of being deterred. Can most of those who would perpetrate a cyber attack be deterred? Will al-Qa’ida be deterred? How about a band of nationalistic or even just thrill-seeker, bandwagon hackers for hire? Second, it assumes clear lines of **command and control**. Sure, some hacker groups might be funded and assisted to a great degree by states. But ultimately, even cyber war theorists will admit that it is doubtful that states have complete control over their armies of hacker mercenaries. How will deterrence play out in this kind of scenario?

**And attacks collapse military war fighting capability.**

**Loudermilk 11** (Micah, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University*, Small Nuclear Reactors: Enabling Energy Security for Warfighters*, Small Wars Journal, March 27th 2011, http://smallwarsjournal.com/blog/small-nuclear-reactors-enabling-energy-security-for-warfighters)

Last month, the Institute for National Strategic Studies at National Defense University released a report entitled Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications. Authored by Dr. Richard Andres of the National War College and Hanna Breetz from Harvard University, the paper analyzes the potential for the Department of Defense to incorporate small reactor technology on its domestic military bases and in forward operating locations. According to Andres and Breetz, the reactors have the ability to solve two critical vulnerabilities in the military's mission: the dependence of domestic bases on the civilian electrical grid and the challenge of supplying ample fuel to troops in the field. Though considerable obstacles would accompany such a move -- which the authors openly admit -- the benefits are significant enough to make the idea merit serious consideration. At its heart, a discussion about military uses of small nuclear reactors is really a conversation about securing the nation's war fighting capabilities. Although the point that energy security **is** national security has become almost redundant -- quoted endlessly in government reports, think tank papers, and the like -- it is repeated for good reason. Especially on the domestic front, the need for energy security on military bases is often overlooked. There is no hostile territory in the United States, no need for fuel convoys to constantly supply bases with fuel, and no enemy combatants. However, while bases and energy supplies are not directly vulnerable, the civilian electrical grid on which they depend for 99% of their energy use is -- and that makes domestic installations highly insecure. The U.S. grid, though a technological marvel, is extremely old, brittle, and susceptible to a wide variety of problems that can result in power outages -- the 2003 blackout throughout the Northeast United States is a prime example of this. In the past, these issues were largely limited to accidents including natural disasters or malfunctions, however today, intentional threats such as cyber attacks represent a very real and growing threat to the grid. Advances in U.S. military technology have further increased the risk that a grid blackout poses to the nation's military assets. As pointed out by the Defense Science Board, **critical missions** including national strategic awareness and national command authorities depend on the national transmission grid. Additionally, capabilities vital to troops in the field -- including drones and satellite intelligence/reconnaissance -- are lodged at bases within the United States and their loss due to a blackout would **impair the ability** of troops to operate in forward operating areas. Recognition of these facts led the Defense Science Board to recommend "islanding" U.S. military installations to mitigate the electrical grid's vulnerabilities. Although DOD has undertaken a wide array of energy efficiency programs and sought to construct renewable energy facilities on bases, these endeavors will fall far short of the desired goals and still leave bases unable to function in the event of long-term outages. As the NDU report argues though, small nuclear reactors have the potential to alleviate domestic base grid vulnerabilities. With a capacity of anywhere between 25 and 300 megawatts, small reactors possess sufficient generation capabilities to power any military installation, and most likely some critical services in the areas surrounding bases, should a blackout occur. Moreover, making bases resilient to civilian power outages would reduce the incentive for an opponent to disrupt the grid in the event of a conflict as military capabilities would be unaffected. Military bases are also secure locations, reducing the associated fears that would surely arise from the distribution of reactors across the country. Furthermore, small nuclear reactors, by design, are significantly safer than prior generations of reactors due to passive safety features, simplified designs, sealed reactor cores, and lower operational requirements.

**Conventional wars are inevitable --- ineffectiveness leads to major power aggression and violent competition.**

**Horowitz 9** (Michael C. Horowitz and Dan A. Shalmon, Professor of Political Science @ University of Pennsylvania & Senior Analyst @ Lincoln Group, LLC. *The Future of War and American Military Strategy*, Orbis, Spring 2009)

It is important to recognize at the outset two key points about United States strategy and the potential costs and benefits for the United States in a changing security environment. First, the United States is very likely to remain fully engaged in global affairs. Advocates of restraint or global withdrawal, while popular in some segments of academia, remain on the **margins** of policy debates in Washington D.C. This could always change, of course. However, at present, **it is a given** that the United States will define its interests globally and pursue a strategy that requires capable military forces able to project power around the world. Because ‘‘indirect’’ counter-strategies are the rational choice for actors facing a strong state’s power projection, irregular/asymmetric threats are inevitable given America’s role in the global order.24 Second, the **worst-case scenario** is a loss of U.S. conventional superiority. Losing military control of the sea and the air, ‘‘the global commons,’’25 would render American global strategy **outmoded in an instant**. The idea that the United States must improve its capacity to fight counterinsurgency operations presumes a need to do so beyond defending the homeland and that the United States will have the capacity to intervene in future conflicts around the world. However, while it seems unlikely at present, what if developments in warfare cut down and then eliminated the conventional military superiority of the United States? The loss of conventional military superiority by the United States would probably make the current strategic environment **look like a picnic**.26 For example, currently a Marine unit deploying to Afghanistan or Iraq focuses most on the post-deployment battlefield tasks. However, imagine a world where commanders and soldiers, like their World War II forbears, must fear being sunk on a transport ship or shot out of the sky on the way over, or being targeted by electronic, nanotechnological, or directed energy or precision guided munitions when preparing to search a village for insurgents.27 In such a strategic environment, overseas deployments to win hearts and minds in a low intensity war or wipe out radical jihadi groups would likely—and logically— take a backseat to more ‘‘traditional’’ concerns: convoys, tank battles, air and coastal defenses, and crash programs to build a new generation of naval and air weapons to take back the seas and skies. Meanwhile, in the interim, the United States homeland would be more at risk than at any point since the World War II—arguably more threatened than in its entire history. What John Mearsheimer has called the ‘‘stopping power of water’’ previously functioned to shield the United States, with its oceanic buffers to the east and west, from existential threats. However, in the information age and if the United States no longer controls the waterways of the world, water may not be enough. A world without American conventional military superiority would also **encourage aggression** by regional actors eager to settle scores and take advantage of the fact that the United States could no longer destroy their military forces at a low cost, to say nothing of the global dangers inherent in the **competition among major powers** that could result. The latter scenario is the worst case and it bears mentioning only because it should inform the framework in which any debate about defense strategy occurs. Pg. 307-308

**That competition goes nuclear.**

**Kagan 7** (Frederick Kagan and Michael O’Hanlon 7, Fred’s a resident scholar at AEI, Michael is a senior fellow in foreign policy at Brookings, “The Case for Larger Ground Forces”, April, <http://www.aei.org/files/2007/04/24/20070424_Kagan20070424.pdf>)

We live at a time when wars not only rage in nearly **every region** but threaten to erupt in many places where the current relative calm is tenuous. To view this as a strategic military challenge for the United States is not to espouse a specific theory of America’s role in the world or a certain political philosophy. Such an assessment flows directly from the basic bipartisan view of American foreign policy makers since World War II that overseas threats must be countered before they can directly threaten this country’s shores, that the basic stability of the international system is essential to American peace and prosperity, and that no country besides the United States is in a position to lead the way in countering major challenges to the global order. Let us highlight the threats and their consequences with a few concrete examples, emphasizing those that involve key strategic regions of the world such as the Persian **Gulf** and **East Asia**, or key potential threats to American security, such as the spread of nuclear weapons and the strengthening of the global **Al Qaeda**/jihadist movement. The Iranian government has rejected a series of international demands to halt its efforts at enriching uranium and submit to international inspections. What will happen if the US—or Israeli—government becomes convinced that Tehran is on the verge of fielding a nuclear weapon? **North Korea**, of course, has already done so, and the ripple effects are beginning to spread. **Japan**’s recent election to supreme power of a leader who has promised to rewrite that country’s constitution to support increased armed forces—and, possibly, even nuclear weapons— may well alter the delicate balance of fear in Northeast Asia fundamentally and rapidly. Also, in the background, at least for now, **Sino Taiwanese** tensions continue to flare, as do tensions between **India and Pakistan**, **Pakistan and Afghanistan**, **Venezuela** and the United States, and so on. Meanwhile, the world’s nonintervention in Darfur troubles consciences from Europe to America’s Bible Belt to its bastions of liberalism, yet with no serious international forces on offer, the bloodletting will probably, tragically, continue unabated. And as bad as things are in Iraq today, they could get worse. What would happen if the key Shiite figure, Ali al Sistani, were to die? If another major attack on the scale of the Golden Mosque bombing hit either side (or, perhaps, both sides at the same time)? Such deterioration might convince many Americans that the war there truly was lost—but the costs of reaching such a conclusion would be enormous. Afghanistan is somewhat more stable for the moment, although a major Taliban offensive appears to be in the offing. Sound US grand strategy must proceed from the recognition that, over the next few years and decades, the world is going to be a very unsettled and quite dangerous place, with Al Qaeda and its associated groups as a subset of a much larger set of worries. The only serious response to this international environment is to develop armed forces capable of protecting America’s vital interests throughout this dangerous time. Doing so requires a military capable of a wide range of missions—including not only deterrence of great power conflict in dealing with potential hotspots in Korea, the Taiwan Strait, and the Persian Gulf but also associated with a variety of Special Forces activities and stabilization operations. For today’s US military, which already excels at high technology and is increasingly focused on re-learning the lost art of counterinsurgency, this is first and foremost a question of finding the resources to field a large-enough standing Army and Marine Corps to handle personnel intensive missions such as the ones now under way in Iraq and Afghanistan. Let us hope there will be no such large-scale missions for a while. But preparing for the possibility, while doing whatever we can at this late hour to relieve the pressure on our soldiers and Marines in ongoing operations, is prudent. At worst, the only potential downside to a major program to strengthen the military is the possibility of spending a bit too much money. Recent history shows no link between having a larger military and its overuse; indeed, Ronald Reagan’s time in office was characterized by higher defense budgets and yet much less use of the military, an outcome for which we can hope in the coming years, but hardly guarantee. While the authors disagree between ourselves about proper increases in the size and cost of the military (with O’Hanlon preferring to hold defense to roughly 4 percent of GDP and seeing ground forces increase by a total of perhaps 100,000, and Kagan willing to devote at least 5 percent of GDP to defense as in the Reagan years and increase the Army by at least 250,000), we agree on the need to start expanding ground force capabilities by at least 25,000 a year immediately. Such a measure is not only prudent, it is also badly overdue.

**Academic theory confirms it makes great power conflict inevitable.**

**Felzenberg 11** (\*Alvin S. Felzenberg, Professorial Lecturer at The Elliott School of International Affairs at George Washington University, Presidential Historian and Adjunct Faculty Member at the Annenberg School for Communication at the University of Pennsylvania, former Fellow at the Institute of Politics at the John F. Kennedy School of Government at Harvard University, served as Principal Spokesman for the 9/11 Commission, holds a Ph.D. in Politics from Princeton University, \*\*Alexander B. Gray, Student at the Elliott School of International Affairs at George Washington University and the War Studies Department of King’s College, London, *The New Isolationism*, *The National Review*, January 3rd 2011, http://www.nationalreview.com/articles/print/256150)

Anything Reps. Ron Paul (R., Tex.) and Barney Frank (D., Mass.) both support should give the rest of us pause. Their proposal to slash defense spending by $1 trillion over a decade — only the most recent joint effort by the new isolationists on the Left and Right to curtail American military strength around the world — is as foolhardy as it is unrealistic. Were such a policy enacted, the nation and the world would be set on a path not toward peace, but toward instability, conflict, and a lessening of freedom in many corners of the world.

As the deteriorating situation on the Korean peninsula reminds us, the security concerns of the United States do not disappear in times of economic distress. America’s interests, whether economic, strategic, diplomatic, or moral, cannot be set aside when Congress tires of them. The United States and the world paid a severe price for the ostrich-like behavior too many democratic nations exhibited during the 1920s and 1930s. Reps. Paul and Frank appear determined to repeat this mistake.

The United States continues to face an array of global challenges that require a modern, technologically superior military. It is very much in the interests of the United States to uphold the territorial integrity and economic independence of much of Asia, maintain the security of critical waterways such as the Strait of Hormuz, and protect American trade from pirates and terrorists worldwide. Rather than regard the nation’s defenses as a ready source of money available for diversion to domestic concerns, Congress and the president should identify the challenges America faces and assure that its military is able to meet them.

At its core, the Frank-Paul effort appears to be an attempt to prevent repetitions of wars the two congressmen regard as either unnecessary or faultily executed. But the United States has broader and more important long-run national-security concerns than Iraq and Afghanistan. As the U.S. became bogged down in those two countries, it began feeling strains elsewhere, precipitated by China, Russia, and potentially toxic menaces such as Iran and Venezuela.

Counterinsurgency warfare and Predator-drone strikes against transnational terrorists certainly defined much of the last decade. But the next decade will witness increasing competition among nation-states for control of valuable resources and the exertion of influence worldwide.

Russia, through its control of vital energy pipelines, seeks to draw Western Europe more closely into its orbit, thereby weakening the latter’s historical ties to the United States. By taking a similar approach to Ukraine, Kyrgyzstan, Georgia, the Baltics, and Moldova, Russia is on the verge of re-colonizing economically many of its former satellites.

China, while continuing to upgrade its naval capabilities, grows increasingly assertive. In pursuit of its own Monroe Doctrine for East Asia, Beijing has proclaimed its sovereignty over the entire South China Sea, menaced neighbors from India to Vietnam, used its economic muscle to intimidate Japan, and increased its threats against Taiwan. China’s leaders have been studying the writings of the 19th-century American naval theorist Alfred Thayer Mahan, who demonstrated the connection between sea power and economic strength. At the turn of the last century, Theodore Roosevelt found in Mahan the blueprint for achieving unprecedented American influence in world affairs. His efforts to build both a strong navy and a sound economy ushered in the “American century,” the period in which the United States became a force for good throughout the world and a beacon of hope for those yearning to breathe free.

In pursuing a “blue-water” ocean-going navy capable of supporting their expanding global economic ambitions, the Chinese are acting from a desire to defend their nation’s trade and access to world markets, with a focus on energy supplies. It is critical that the Chinese — who are closely studying both Mahan’s writings and the history of the Monroe Doctrine — and Americans who see Chinese hegemony over Asia as either inevitable or a price they are willing to pay in exchange for slashing defense spending not draw the wrong lessons from history. Both sides should understand that it was not American might that gave the Monroe Doctrine force, but the then all-powerful British navy. For much of the 19th century, Great Britain had reasons of its own for keeping other nations out of the Western Hemisphere and for wanting to see the United States develop internally.

If appropriately funded, the United States Navy has the capacity to play a similar role in China’s rise — perhaps, in the process, influencing how China develops. Should China conclude that the United States intends to remain a visible and active presence in the region, it will respond accordingly. Acting together, the two nations might embark on a series of cooperative ventures designed to help assure a steady flow of trade and an unimpeded exchange of people, goods, and ideas. They can also work together to combat a rise in piracy and terrorism in Asia and elsewhere and to respond to humanitarian crises, like the 2004 Indian Ocean tsunami. For its part, China, should it continue to hold North Korea in check, will achieve some of the status it seeks as a rising world power, with commensurate influence on the world stage.

Should China conclude, on the other hand, that the United States intends to turn inward, it may grow even more ambitious and assertive in its region and beyond, potentially menacing world peace. Its smaller neighbors nervously wait to see how the United States will respond to China’s growing assertiveness. Should they come to believe that the U.S. is in retreat, they will make their own accommodations with Beijing. That result would wreak irreparable damage both to America’s economy and to its security.

Messrs. Frank and Paul and their supporters have taken it into their minds that a reduced American presence in world affairs, particularly where the military is involved, would be a good thing. They had better think again: World politics, like nature, is hardly prone to respect vacuums. Iran and Venezuela remain as bellicose and destabilizing as ever, in spite of two years of Obama “engagement.” Iran squats beside the Strait of Hormuz, through which much of the world’s energy supply travels. Iran has also, the original Monroe Doctrine be damned, extended its military cooperation with Hugo Chávez’s authoritarian regime. Evidence is strong that Venezuela is providing sanctuary for Hezbollah terrorists in South America. The alliance of these two anti-American and increasingly menacing states could pose a threat to the United States of a kind that would make us nostalgic for the Cuban Missile Crisis.

Faced with such challenges, the United States can ill afford military retrenchment as advocated by the new isolationists. While waste in the Pentagon’s budget can and should be cut, the new isolationists want to do it with a chainsaw when a scalpel is needed. In the last decade, the U.S. Navy’s fleet has shrunk to its smallest size since the 19th century, just as potential rivals such as China have not only expanded theirs but have begun to target perceived American maritime vulnerabilities. The U.S. Air Force is fielding an aging and shrinking force, while China is developing an advanced fighter for sale to adversaries of America, including Iran.

A world in which the United States willingly ceded power and influence would both be more dangerous and prove less receptive to values that most Americans share, such as respect for human rights, the need to restrain governments through the rule of law, and the sanctity of contracts. By reducing its military strength to alarmingly low levels, the United States would create dangerous power vacuums around the world that other nations, with entirely different values, would be only too happy to fill. That, as history shows, would make war more, rather than less, likely. Congress and the president would do well to reflect on those lessons and remember their duty to provide a dominant American military presence on land, at sea, and in the air.

### Warming

**Advantage 2---Warming**

**Warming is real, anthropogenic, and reversible if we start mitigation now.**

**Nuccitelli 11** (Dana, An environmental scientist at a private environmental consulting firm in the Sacramento, California area. He has a Bachelor's Degree in astrophysics from the University of California at Berkeley, and a Master's Degree in physics from the University of California at Davis. He has been researching climate science, economics, and solutions as a hobby since 2006, and has contributed to Skeptical Science since September, 2010., Updated 2011, Originally Posted 9/24/2010, *The Big Picture*, http://www.skepticalscience.com/big-picture.html)

The Earth is Warming We know the planet is warming from surface temperature stations and satellites measuring the temperature of the Earth's surface and lower atmosphere. We also have various tools which have measured the warming of the Earth's oceans. Satellites have measured an energy imbalance at the top of the Earth's atmosphere. Glaciers, sea ice, and ice sheets are all receding. Sea levels are rising. Spring is arriving sooner each year. There's simply no doubt - the planet is warming (Figure 1). Global Warming Continues And yes, the warming is continuing. The 2000s were hotter than the 1990s, which were hotter than the 1980s, which were hotter than the 1970s. 2010 tied for the hottest year on record. The 12-month running average global temperature broke the record three times in 2010, according to NASA Goddard Institute for Space Studies (GISS) data. Sea levels are still rising, ice is still receding, spring is still coming earlier, there's still a planetary energy imbalance, etc. etc. Contrary to what some would like us to believe, the planet has not magically stopped warming. Those who argue otherwise are confusing short-term noise with long-term global warming (Figure 2). Foster and Rahmstorf (2011) showed that when we filter out the short-term effects of the sun, volcanoes, and El Niño cycles, the underlying man-made global warming trend becomes even more clear (Figure 3). For as much as atmospheric temperatures are rising, the amount of energy being absorbed by the planet is even more striking when one looks into the deep oceans and the change in the global heat content (Figure 4). Humans are Increasing Atmospheric Greenhouse Gases The amount of greenhouse gases in the atmosphere - particularly carbon dioxide (CO2) - has been rising steadily over the past 150 years. There are a number of lines of evidence which clearly demonstrate that this increase is due to human activities, primarily burning fossil fuels. The most direct of evidence involves simple accounting. Humans are currently emitting approximately 30 billion tons of CO2 per year, and the amount in the atmosphere is increasing by about 15 billion tons per year. Our emissions have to go somewhere - half goes into the atmosphere, while the other half is absorbed by the oceans (which is causing another major problem - ocean acidification). We also know the atmospheric increase is from burning fossil fuels because of the isotopic signature of the carbon in the atmosphere. Carbon comes in three different isotopes, and plants have a preference for the lighter isotopes. So if the fraction of lighter carbon isotopes in the atmosphere is increasing, we know the increase is due to burning plants and fossil fuels, and that is what scientists observe. The fact that humans are responsible for the increase in atmospheric CO2 is settled science. The evidence is clear-cut. Human Greenhouse Gases are Causing Global Warming There is overwhelming evidence that humans are the dominant cause of the recent global warming, mainly due to our greenhouse gas emissions. Based on fundamental physics and math, we can quantify the amount of warming human activity is causing, and verify that we're responsible for essentially all of the global warming over the past 3 decades. The aforementioned Foster and Rahmstorf (2011) found a 0.16°C per decade warming trend since 1979 after filtering out the short-term noise. In fact we expect human greenhouse gas emissions to cause more warming than we've thus far seen, due to the thermal inertia of the oceans (the time it takes to heat them). Human aerosol emissions are also offsetting a significant amount of the warming by causing global dimming. Huber and Knutti (2011) found that human greenhouse gas emissions have caused 66% more global warming than has been observed since the 1950s, because the cooling effect of human aerosol emissions have offset about 44% of that warming. They found that overall, human effects are responsible for approximately 100% of the observed global warming over the past 60 years (Figure 5). There are also numerous 'fingerprints' which we would expect to see from an increased greenhouse effect (i.e. more warming at night, at higher latitudes, upper atmosphere cooling) that we have indeed observed (Figure 6). Climate models have projected the ensuing global warming to a high level of accuracy, verifying that we have a good understanding of the fundamental physics behind climate change. Sometimes people ask "what would it take to falsify the man-made global warming theory?". Well, basically it would require that our fundamental understanding of physics be wrong, because that's what the theory is based on. This fundamental physics has been scrutinized through scientific experiments for decades to centuries. The Warming will Continue We also know that if we continue to emit large amounts of greenhouse gases, the planet will continue to warm. We know that the climate sensitivity to a doubling of atmospheric CO2 from the pre-industrial level of 280 parts per million by volume (ppmv) to 560 ppmv (we're currently at 390 ppmv) will cause 2–4.5°C of warming. And we're headed for 560 ppmv in the mid-to-late 21st century if we continue business-as-usual emissions. The precise sensitivity of the climate to increasing CO2 is still fairly uncertain: 2–4.5°C is a fairly wide range of likely values. However, even if we're lucky and the climate sensitivity is just 2°C for doubled atmospheric CO2, if we continue on our current emissions path, we will commit ourselves to that amount of warming (2°C above pre-industrial levels) within the next 75 years. The Net Result will be Bad There will be some positive results of this continued warming. For example, an open Northwest Passage, enhanced growth for some plants and improved agriculture at high latitudes (though this will require use of more fertilizers), etc. However, the negatives will almost certainly outweigh the positives, by a long shot. We're talking decreased biodiversity, water shortages, increasing heat waves (both in frequency and intensity), decreased crop yields due to these impacts, damage to infrastructure, displacement of millions of people, etc. Arguments to the contrary are superficial One thing I've found in reading skeptic criticisms of climate science is that they're consistently superficial. For example, the criticisms of James Hansen's 1988 global warming projections never go beyond "he was wrong," when in reality it's important to evaluate what caused the discrepancy between his projections and actual climate changes, and what we can learn from this. And those who argue that "it's the Sun" fail to comprehend that we understand the major mechanisms by which the Sun influences the global climate, and that they cannot explain the current global warming trend. And those who argue "it's just a natural cycle" can never seem to identify exactly which natural cycle can explain the current warming, nor can they explain how our understanding of the fundamental climate physics is wrong. There are legitimate unresolved questions Much ado is made out of the expression "the science is settled." The science is settled in terms of knowing that the planet is warming rapidly, and that humans are the dominant cause. There are certainly unresolved issues. As noted above, there's a big difference between a 2°C and a 4.5°C warming for a doubling of atmospheric CO2, and it's an important question to resolve, because we need to know how fast the planet will warm in order to know how fast we need to reduce our greenhouse gas emissions. There are significant uncertainties in some feedbacks which play into this question. For example, will clouds act as a net positive feedback (by trapping more heat, causing more warming) or negative feedback (by reflecting more sunlight, causing a cooling effect) as the planet continues to warm? And exactly how much global warming is being offset by human aerosol emissions? These are the sorts of questions we should be debating, and the issues that most climate scientists are investigating. Unfortunately there is a there is a very vocal contingent of people determined to continue arguing the resolved questions for which the science has already been settled. And when climate scientists are forced to respond to the constant propagation of misinformation on these settled issues, it just detracts from our investigation of the legitimate, unresolved, important questions. Smart Risk Management Means Taking Action People are usually very conservative when it comes to risk management. Some of us buy fire insurance for our homes when the risk of a house fire is less than 1%, for example. When it comes to important objects like cars and homes, we would rather be safe than sorry. But there is arguably no more important object than the global climate. We rely on the climate for our basic requirements, like having enough accessible food and water. Prudent risk management in this case is clear. The scientific evidence discussed above shows indisputably that there is a risk that we are headed towards very harmful climate change. There are uncertainties as to how harmful the consequences will be, but uncertainty is not a valid reason for inaction. There's very high uncertainty whether I'll ever be in a car accident, but it would be foolish of me not to prepare for that possibility by purchasing auto insurance. Moreover, uncertainty cuts both ways, and it's just as likely that the consequences will be worse than we expect as it is that the consequences won't be very bad. We Can Solve the Problem The good news is that we have the tools we need to mitigate the risk posed by climate change. A number of plans have been put forth to achieve the necessary greenhouse gas emissions cuts (i.e. here and here and here). We already have all the technology we need. Opponents often argue that mitigating global warming will hurt the economy, but the opposite is true. Those who argue that reducing emissions will be too expensive ignore the costs of climate change - economic studies have consistently shown that mitigation is several times less costly than trying to adapt to climate change (Figure 7). This is why there is a consensus among economists with expertise in climate that we should put a price on carbon emissions (Figure 8). should US reduce emissions The Big Picture The big picture is that we know the planet is warming, humans are causing it, there is a substantial risk to continuing on our current path, but we don't know exactly how large the risk is. However, uncertainty regarding the magnitude of the risk is not an excuse to ignore it. We also know that if we continue on a business-as-usual path, the risk of catastrophic consequences is very high. In fact, the larger the uncertainty, the greater the potential for the exceptionally high risk scenario to become reality. We need to continue to decrease the uncertainty, but it's also critical to acknowledge what we know and what questions have been resolved, and that taking no action is not an option. The good news is that we know how to solve the problem, and that doing so will minimize the impact not only on the climate, but also on the economy. The bottom line is that from every perspective - scientific, risk management, economic, etc. - there is no reason not to immeditately take serious action to mitigate climate change, and failing to do so would be exceptionally foolish.

**SMRs are the only solution that adresses the magnitude of warming before its too late.**

**Palley 11 (**Reese Palley, The London School of Economics, 2011, The Answer: Why Only Inherently Safe, Mini Nuclear Power Plans Can Save Our World, p. 186-90)

The central investigation of this book has been directed at the scale of the nuclear industry. The book has argued that all anthropogenic challenges that put in question **continued human existence** on Earth are a **matter of scale**. It was nature’s unanticipated success with her human experiment, the evolutionary choice of brains over brawn, setting in motion the underlying scale problems that opened our Pandora’s box of calamities. The history of man on Earth can best be viewed as a race between population and resources in which, for some millennia, population expansion leads and the Earth’s resources have been straining to catch up. When population bloomed from 100 million brainy humans to a billion, the problems of scale emerged as the price we had to pay for success as a species. The conversion of forests to agriculture, responding to the need to feed a burgeoning population, initiated the emerging problem of scale. The elimination of oxygen-emitting forests was mitigated to a large measure in the beginning of our population growth by the slow rate of change of the deforestation, which allowed an absorbable increase of CO2 in the atmosphere. Natural processes, such as the ability of the oceans to take up CO2, tamped down global warming. But as the scale of the release of warming gases exploded a few hundred years ago, our remaining forests and our seas, our first line of defense against CO2 imbalance, could not cope and the level of CO2 has risen alarmingly each year since 1800. When human population climbed from a billion to six billion and these six billion reveled in the enormous energy content of coal, the scenario for **disaster on a global scale** came into play. The impact of the loss of forest paled in comparison to the havoc that the use of fossil fuels represented. In a world that was hungry for energy and, not incidentally, living on a Malthusian edge of food supply, coal burst upon us as manna from heaven. Coal was everywhere, easy to mine, and in enormous, almost unending supply It generated the cheap heat needed to run the engines of early industrialization. An unintended Faustian bargain was struck. The immediate cost of coal in the cities, dirt and pollution, were not out of sync with what urban man had lived with for centuries. It was beyond the science and the understanding of the time that burning vast millennial coal deposits would do little more than discommode the proximate few and benefit many. Again it was not the burning, it was **the scale** of the burning that dumped billions of tons of CO2 into the atmosphere. We are now presented with a horrendous invoice that must be paid if we are to **survive** in anywhere near the comfort to which we have become accustomed. It has been the intent of this book to argue that the **scale of the warming catastrophe** must be viewed primarily in terms of the continuing flow of CO2 into the atmosphere. Every possible source of CO2, no matter how small, must be identified and interdicted, since every fourth molecule of the gas will remain with us as a climate moderator for thousands of years. What we find is that all of the sources of energy including so-called green energy are CO2-culpable and that each, in spite of claims to the contrary, adds its tiny mite or enormous mass to the climate changes looming in man’s future. The book argues that the scale of the consumption of fossil fuels is clearly unsustainable and, more to the point, that the feeble attempts to restrict CO2 production are little more than a glossing over of the problem. Capping but not ending production of greenhouse gases only magnifies the unthinkable future costs of bringing the level of CO2 and other greenhouse gases back into balance. Logic dictates that merely limiting greenhouse gases pushes possible solutions farther and farther into the future and does little to mitigate the difficulties that will arise in the near future. Logic dictates that our reasonably comfortable survival depends on the immediate and total cessation of increases to parts per million of CO2 in the air. Logic dictates that if we are to continue to enjoy the level of comfort, wealth, and ease afforded us since the beginning of the twentieth century we must not only halt the increase but commence the actual decrease of warming gases at work in the atmosphere. That conclusion brings the book to the problems and the solutions inherent in nuclear power, the **only energy source** that can guarantee us a reasonable future that might be resistant to CO2 warming. Here the argument returns once again to the problem of scale of nuclear reactors, especially as the size of these reactors is related to the brief time left to us to get a grip on calamitous climate changes. The beginnings of nuclear energy lay in the demands of war. The battle between good and evil characterized by the Second World War gave hurried birth to a discovery that had the inherent power to both destroy and salvage. The power to destroy required plutonium on an enormous scale, which was projected forward into the postwar development of civilian reactors. The demand for scarce plutonium for the bombs of the cold war defined the type of reactors that were being developed. These were the breeder reactors, which spewed out plutonium measured in tons that had previously been available only in ounces, and would continue to do so when the wartime need was far behind us. What was once precious, rare, and desirable has become dangerous nuclear waste, and the imperfectly perceived scale of the waste problem has seriously inhibited the logical growth and development of nuclear power. By some unthinkable universal coincidence, nuclear power became available to man for war at the same time that it could prove to be the solution to man’s greatest peacetime challenge. But the gigawatt nuclear power plants that emerged from the war had within them the seeds of their own severe limitation. The scale of the risks, real and imagined, grew exponentially as the scale of energy output grew only linearly. These risks, some merely perceived, some dangerously real and some financial, have conspired to restrict the enormous expansion of nuclear power that is needed to quickly replace our present consumption of energy from fossil fuels. The present rate of replacement of fossil with nuclear sources is at a pace that will have little impact on ultimately dealing with the CO2 imbalance. This slow rate of change is compounded of public fears, bureaucratic regulatory mechanisms resistant to novel solutions, and a private capital market that is unable to conjure with the imagined and real risks of the huge gigawatt reactors that dominate the industry. It is a Gordian knot that cannot be unraveled but which can only be cut by a political sword that, alas, still lacks the edge to do the job. By another rare act of cosmic fortuity, there is a parallel existing nuclear technology that, barring political interference, is capable of addressing the scale problems inherent in gigawatt reactors. From the beginning of the nuclear era, researchers such as Weinberg and Wigner and Teller developed small, inherently safe nuclear reactors that did not breed plutonium. This was reason enough for the military, balancing urgent demands on research and development budgets, to consign the concept of “smaller and safer is better” to dusty shelves in our national science attic. This book has argued that small reactors, that produce a tenth of the energy of the giants also generate inordinately less of the risk that inhibits growth of the industry. Construction of small reactors is a fraction of the cost of construction of gigawatt reactors. Thus the number of years that scarce capital is tied up and at risk is substantially reduced. The book argues that a 100 MWe reactor88 is a much bigger hardware bargain than a gigawatt reactor, which, from start to output, can cost $15 billion. It is not only the hardware costs that contribute to the devilish details of risk. The problem is the inability of the market to accurately or even approximately estimate the real cost of the capital that would be tied up for over a decade in a project that, through technological advancements, could be obsolete before it ever joins the grid.

**All alternatives to SMRs are insufficiency in scope --- plus safety concerns are all hype.**

**Nordhaus 12** (Michael Shellenberger, Jessica Lovering, Founder of the Breakthrough Institute, graduate of Earlham College and holds a masters degree in cultural anthropology from the University of California, Santa Cruz, "New Nukes: Why We Need Radical Innovation to Make New Nuclear Energy Cheap", September 11, http://thebreakthrough.org/index.php/programs/energy-and-climate/new-nukes/)

Arguably, the biggest impact of Fukushima on the nuclear debate, ironically, has been to force a growing number of pro-nuclear environmentalists out of the closet, including us. The reaction to the accident by anti-nuclear campaigners and many Western publics put a fine point on the gross misperception of risk that informs so much anti-nuclear fear. Nuclear remains the only proven technology capable of reliably generating zero-carbon energy at a scale that can have any impact on global warming. Climate change -- and, for that matter, the enormous present-day health risks associated with burning coal, oil, and gas -- simply dwarf any legitimate risk associated with the operation of nuclear power plants. About 100,000 people die every year due to exposure to air pollutants from the burning of coal. By contrast, about 4,000 people have died from nuclear energy -- ever -- almost entirely due to Chernobyl. But rather than simply lecturing our fellow environmentalists about their misplaced priorities, and how profoundly inadequate present-day renewables are as substitutes for fossil energy, we would do better to take seriously the real obstacles standing in the way of a serious nuclear renaissance. Many of these obstacles have nothing to do with the fear-mongering of the anti-nuclear movement or, for that matter, the regulatory hurdles imposed by the U.S. Nuclear Regulatory Commission and similar agencies around the world. As long as nuclear technology is characterized by enormous upfront capital costs, it is likely to remain just a hedge against overdependence on lower-cost coal and gas, not the wholesale replacement it needs to be to make a serious dent in climate change. Developing countries need large plants capable of bringing large amounts of new power to their fast-growing economies. But they also need power to be cheap. So long as coal remains the cheapest source of electricity in the developing world, it is likely to remain king. The most worrying threat to the future of nuclear isn't the political fallout from Fukushima -- it's economic reality. Even as new nuclear plants are built in the developing world, old plants are being retired in the developed world. For example, Germany's plan to phase-out nuclear simply relies on allowing existing plants to be shut down when they reach the ends of their lifetime. Given the size and cost of new conventional plants today, those plants are unlikely to be replaced with new ones. As such, the combined political and economic constraints associated with current nuclear energy technologies mean that nuclear energy's share of global energy generation is unlikely to grow in the coming decades, as global energy demand is likely to increase faster than new plants can be deployed. To move the needle on nuclear energy to the point that it might actually be capable of displacing fossil fuels, we'll need new nuclear technologies that are cheaper and smaller. Today, there are a range of nascent, smaller nuclear power plant designs, some of them modifications of the current light-water reactor technologies used on submarines, and others, like thorium fuel and fast breeder reactors, which are based on entirely different nuclear fission technologies. Smaller, modular reactors can be built much faster and cheaper than traditional large-scale nuclear power plants. Next-generation nuclear reactors are designed to be incapable of melting down, produce drastically less radioactive waste, make it very difficult or impossible to produce weapons grade material, use less water, and require less maintenance. Most of these designs still face substantial technical hurdles before they will be ready for commercial demonstration. That means a great deal of research and innovation will be necessary to make these next generation plants viable and capable of displacing coal and gas. The United States could be a leader on developing these technologies, but unfortunately U.S. nuclear policy remains mostly stuck in the past. Rather than creating new solutions, efforts to restart the U.S. nuclear industry have mostly focused on encouraging utilities to build the next generation of large, light-water reactors with loan guarantees and various other subsidies and regulatory fixes. With a few exceptions, this is largely true elsewhere around the world as well. Nuclear has enjoyed bipartisan support in Congress for more than 60 years, but the enthusiasm is running out. The Obama administration deserves credit for authorizing funding for two small modular reactors, which will be built at the Savannah River site in South Carolina. But a much more sweeping reform of U.S. nuclear energy policy is required. At present, the Nuclear Regulatory Commission has little institutional knowledge of anything other than light-water reactors and virtually no capability to review or regulate alternative designs. This affects nuclear innovation in other countries as well, since the NRC remains, despite its many critics, the global gold standard for thorough regulation of nuclear energy. Most other countries follow the NRC's lead when it comes to establishing new technical and operational standards for the design, construction, and operation of nuclear plants. What's needed now is a new national commitment to the development, testing, demonstration, and early stage commercialization of a broad range of new nuclear technologies -- from much smaller light-water reactors to next generation ones -- in search of a few designs that can be mass produced and deployed at a significantly lower cost than current designs. This will require both greater public support for nuclear innovation and an entirely different regulatory framework to review and approve new commercial designs. In the meantime, developing countries will continue to build traditional, large nuclear power plants. But time is of the essence. With the lion's share of future carbon emissions coming from those emerging economic powerhouses, the need to develop smaller and cheaper designs that can scale faster is all the more important. A true nuclear renaissance can't happen overnight. And it won't happen so long as large and expensive light-water reactors remain our only option. But in the end, **there is no credible path to mitigating climate change without a massive global expansion of nuclear energy**. If you care about climate change, nothing is more important than developing the nuclear technologies we will need to get that job done.

**The impact of warming is greater than all others. No humans will survive.**

**Brandenberg 99** (John & Monica Paxson, Visiting Prof. Researcher @ Florida Space Institute, Physicist Ph.D., Science Writer, Dead Mars Dying Earth, Pg 232-233)

The ozone hole expands, driven by a monstrous synergy with global warming that puts more catalytic ice crystals into the stratosphere, but this affects the far north and south and not the major nations’ heartlands. The seas rise, the tropics roast but the media networks no longer cover it. The Amazon rainforest becomes the Amazon desert. Oxygen levels fall, but profits rise for those who can provide it in bottles. An equatorial high-pressure zone forms, forcing drought in central Africa and Brazil, the Nile dries up and the monsoons fail. Then inevitably, at some unlucky point in time, a major unexpected event occurs—a major volcanic eruption, a sudden and dramatic shift in ocean circulation or a large asteroid impact (those who think freakish accidents do not occur have paid little attention to life or Mars), or a nuclear war that starts between Pakistan and India and escalates to involve China and Russia . . . Suddenly the gradual climb in global temperatures goes on a mad excursion as the oceans warm and release large amounts of dissolved carbon dioxide from their lower depths into the atmosphere. Oxygen levels go down precipitously as oxygen replaces lost oceanic carbon dioxide. Asthma cases double and then double again. Now a third of the world fears breathing. As the oceans dump carbon dioxide, the greenhouse effect increases, which further warms the oceans, causing them to dump even more carbon. Because of the heat, plants die and burn in enormous fires, which release more carbon dioxide, and the oceans evaporate, adding more water vapor to the greenhouse. Soon, we are in what is termed a runaway greenhouse effect, as happened to Venus eons ago. The last two surviving scientists inevitably argue, one telling the other, “See! I told you the missing sink was in the ocean!” Earth, as we know it, dies. After this Venusian excursion in temperatures, the oxygen disappears into the soil, the oceans evaporate and are lost and the dead Earth loses its ozone layer completely. Earth is too far from the Sun for it to be the second Venus for long. Its atmosphere is slowly lost—as is its water—because of ultraviolet bombardment breaking up all the molecules apart from carbon dioxide. As the atmosphere becomes thin, the Earth becomes colder. For a short while temperatures are nearly normal, but the ultraviolet sears any life that tries to make a comeback. The carbon dioxide thins out to form a thin veneer with a few wispy clouds and dust devils. Earth becomes the second Mars—red, desolate, with perhaps a few hardy microbes surviving.

**Every increase must be resisted**.

**Pittock 10** (Barrie, Led the Climate Impact Group in CSIRO until his retirement in 1999. He contributed to or was the lead author of all four major reports of the Intergovernmental Panel on Climate Change. He was awarded a Public Service Medal in 1999 and is CSIRO Honorary Fellow, *Climate Change: The Science, Impacts, and Solutions*, 2010, pg. 326)

It isabsolutelycrucial that options for reducing greenhouse gas emissions be pursued with a real sense of urgency. **Every extra tonne** of carbon dioxide placed into the atmosphere increases the very real risk of dangerous climate change**,** and nobody will escape the direct or indirect consequences.We are in danger of **inadvertently** tripping the 'on' switch to disaster, with an inevitably long delay before it can be turned off again. What is done now that enhances climate change cannot be easily undone, so we should **err on the side of caution***.* Butit is not all doom and gloom:we can save theday. As we have seen earlier in this book, the technology already exists to rapidly reduce emissions via large investments in energy efficiency (which saves money) and renewable base-load power (which will rapidly come down in price as it is scaled up). Supplemented later this century by large-scale carbon capture and sequestration and (if necessary) by safe nuclear power, the peak in greenhouse gas concentrations can be minimised and then brought down.We need to reduce carbon emissions**,** and we **need to do it fast.** Although we are facing an emergency**,** with an appropriate allocation of ingenuity and resources**,** together we can do it.We owe that, at least, to our children**.**

**The plan results in global SMR exports – massively reduces emissions.**

**Rosner 11** (Robert – Past Director of the Argonne National Laboratory, The William E. Wrather Distinguished Service Professor @ the Departments of Astronomy and Astrophysics and Physics, Enrico Fermi Institute, and the College, Senior Fellow @ the Computation Institute (CI), Stephen Goldberg – Special assistant to the director at Argonne National Laboratory, *Small Modular Reactors – Key to Future Nuclear Power Generation in the U.S.*, Energy Policy Institute at Chicago The Harris School of Public Policy Studies, Technical Paper, November 2011)

As stated earlier, SMRs have the potential to achieve significant greenhouse gas emission reductions. They could provide alternative baseload power generation to facilitate the retirement of older, smaller, and less efficient coal generation plants that would, otherwise, not be good candidates for retrofitting carbon capture and storage technology. They could be deployed in regions of the U.S. and the world that have less potential for other forms of carbon-free electricity, such as solar or wind energy. There may be technical or market constraints, such as projected electricity demand growth and transmission capacity, which would support SMR deployment but not GW-scale LWRs. From the on-shore manufacturing perspective, a key point is that the manufacturing base needed for SMRs can be developed domestically. Thus, while the large commercial LWR industry is seeking to transplant portions of its supply chain from current foreign sources to the U.S., the SMR industry offers the potential to establish a large domestic manufacturing base building upon already existing U.S. manufacturing infrastructure and capability, including the Naval shipbuilding and underutilized domestic nuclear component and equipment plants. The study team learned that a number of sustainable domestic jobs could be created – that is, the full panoply of design, manufacturing, supplier, and construction activities – if the U.S. can establish itself as a credible and substantial designer and manufacturer of SMRs. While many SMR technologies are being studied around the world, a strong U.S. commercialization program can enable U.S. industry to be first to market SMRs, thereby serving as a fulcrum for export growth as well as a lever in influencing international decisions on deploying both nuclear reactor and nuclear fuel cycle technology. A viable U.S.-centric SMR industry would enable the U.S. to recapture technological leadership in commercial nuclear technology, which has been lost to suppliers in France, Japan, Korea, Russia, and, now rapidly emerging, China.

### Solvency

**Plan --- The United States federal government should obtain, through alternative financing, electricity from small modular reactors for military instillations in the United States and reduce its relevant licensing restrictions on small modular reactors.**

**Contention Three – Solvency**

**Military action is necessary---it shapes technology development and overcomes market failures---that's key to commercialization.**

**Andres 11** (\*Richard B. – Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University, \*\*Hanna L. Breetz – Doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, *Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications*, Strategic Forum, National Defense University, Institute for National Strategic Studies, February 2011, http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

DoD as first Mover Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many un- certainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications. The “Valley of Death.” Given the promise that small reactors hold for military installations and mo- bility, DOD has a compelling interest in ensuring that they make the leap from paper to production. How- ever, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a **variety of market failures**— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities—that impede financing and early adoption and can lock innovative technologies **out of the marketplace**.28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29 Historically, nuclear power has been “the **most clear-cut example** . . . of an important general-purpose technology that in the absence of military and defense-related procurement would not have been developed at all.”30 Government involvement is likely to be **crucial** for innovative, next-generation nuclear technology as well. Despite the widespread revival of interest in nu- clear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, **M**assachusetts **I**nstitute of **T**echnology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nu- clear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32 It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even ar- gued that small reactors could play a key role in the sec- ond nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should **pursue a leadership** role now. Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including dem- onstration effects, technological interdependence, net- work and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the mar- ket. If DOD wants to ensure that its preferred designs are **not locked out**, then it should take a first mover role on small reactors. It is far too early to gauge whether the private market and DOD have aligned interests in reactor de- signs. On one hand, Matthew Bunn and Martin Ma- lin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and set- tings in which they can be used, and it is quite pos- sible that some of those niches will be compatible with DOD’s interests.36 On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and **organizational capabilities** that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37 If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “**picking a winner**” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.

**Alternative financing arrangements uniquely reduces costs and spur commercial spillover.**

**Fitzpatrick 11** (Ryan Fitzpatrick, Senior Policy Advisor for Clean Energy at Third Way, Josh Freed, Vice President for Clean Energy at Third Way, and Mieke Eoyan, Director for National Security at Third Way, *Fighting for Innovation: How DoD Can Advance CleanEnergy Technology... And Why It Has To*, June 2011, content.thirdway.org/publications/414/Third\_Way\_Idea\_Brief\_-\_Fighting\_for\_Innovation.pdf)

The DoD has over $400 billion in annual purchasing power, which meansthe Pentagon could provide a sizeable market for new technologies. This can increase a technology’s scale of production, bringing down costs, and making the product more likely to successfully reach commercial markets. Unfortunately, many potentially significant clean energy innovations never get to the marketplace, due to a lack of capital during the development and demonstration stages. As a result, technologies that could help the military meet its clean energy security and cost goals are being abandoned or co-opted by competetors like China before they are commercially viable here in the U.S. By focusing its purchasing power on innovative products that will help meet its energy goals, DoD can provide more secure and cost-effective energy to the military—producing tremendous long-term savings, while also bringing potentially revolutionary technologies to the public. Currently, many of these technologies are passed over during the procurement process because of higher upfront costs—even if these technologies can reduce life-cycle costs to DoD. The Department has only recently begun to consider life-cycle costs and the “fullyburdened cost of fuel” (FBCF) when making acquisition decisions. However, initial reports from within DoD suggest that the methodology for determining the actual FBCF needs to be refined and made more consistent before it can be successfully used in the acquisition process.32 The Department should fast-track this process to better maximize taxpayer dollars. Congressional appropriators— and the Congressional Budget Office—should also recognize the savings that can be achieved by procuring advanced technologies to promote DoD’s energy goals, even if these procurements come with higher upfront costs. Even if the Pentagon makes procurement of emerging clean energy technologies a higher priority, it still faces real roadblocks in developing relationships with the companies that make them. Many clean energy innovations are developed by small businesses or companies that have no previous experience working with military procurement officers. Conversely, many procurement officers do not know the clean energy sector and are not incentivized to develop relationships with emerging clean energy companies. Given the stakes in developing domestic technologies that would help reduce costs and improve mission success, the Pentagon should develop a program to encourage a better flow of information between procurement officers and clean energy companies—especially small businesses. Leverage Savings From Efficiency and Alternative Financing to Pay for Innovation. In an age of government-wide austerity and tight Pentagon budgets, current congressional appropriations are simply not sufficient to fund clean energy innovation. Until Congress decides to direct additional resources for this purpose, the Defense Department must leverage the money and other tools it already has to help develop clean energy. This can take two forms: repurposing money that was saved through energy efficiency programs for innovation and using alternative methods of financing to reduce the cost to the Pentagon of deploying clean energy. For several decades the military has made modest use alternative financing mechanisms to fund clean energy and efficiency projects when appropriated funds were insufficient. In a 2010 report, GAO found that while only 18% of renewable energy projects on DoD lands used alternative financing, these projects account for 86% of all renewable energy produced on the Department’s property.33 This indicates that alternative financing can be particularly helpful to DoD in terms of bringing larger and more expensive projects to fruition. One advanced financing tool available to DoD is the energy savings performance contract (ESPC). These agreements allow DoD to contract a private firm to make upgrades to a building or other facility that result in energy savings, reducing overall energy costs without appropriated funds. The firm finances the cost, maintenance and operation of these upgrades and recovers a profit over the life of the contract. While mobile applications consume 75% of the Department’s energy,34 DoD is only authorized to enter an ESPC for energy improvements done at stationary sites. As such, Congress should allow DoD to conduct pilot programs in which ESPCs are used to enhance mobile components like aircraft and vehicle engines. This could accelerate the needed replacement or updating of aging equipment and a significant reduction of energy with no upfront cost. To maximize the potential benefits of ESPCs, DoD should work with the Department of Energy to develop additional training and best practices to ensure that terms are carefully negotiated and provide benefits for the federal government throughout the term of the contract.35 This effort could possibly be achieved through the existing memorandum of understanding between these two departments.36 The Pentagon should also consider using any long-term savings realized by these contracts for other energy purposes, including the promotion of innovative technologies to further reduce demand or increase general energy security. In addition to ESPCs, the Pentagon also can enter into extended agreements with utilities to use DoD land to generate electricity, or for the long-term purchase of energy. These innovative financing mechanisms, known respectively as enhanced use leases (EULs) and power purchase agreements (PPAs), provide a **valuable degree of certainty** to third party generators. In exchange, the Department can leverage its **existing resources**—either its land or its purchasing power—to negotiate lower electricity rates and dedicated sources of locallyproduced power with its utility partners. DoD has unique authority among federal agencies to enter extended 30-year PPAs, but only for geothermal energy projects and only with direct approval from the Secretary of Defense. Again, limiting incentives for clean energy generation to just geothermal power inhibits the tremendous potential of other clean energy sources to help meet DoD’s energy goals. Congress should consider opening this incentive up to other forms of clean energy generation, including the production of advanced fuels. Also, given procurement officials’ lack of familiarity with these extended agreements and the cumbersome nature of such a high-level approval process, the unique authority to enter into extended 30-year PPAs is very rarely used.37 DoD should provide officials with additional policy guidance for using extended PPAs and Congress should simplify the process by allowing the secretary of each service to approve these contracts. Congress should also investigate options for encouraging regulated utility markets to permit PPA use by DoD. Finally, when entering these agreements, the Department should make every effort to promote the use of innovative and fledgling technologies in the terms of its EULs and PPAs. CON C L U S ION The Defense Department is in a unique position to foster and deploy innovation in clean energy technologies. This has two enormous benefits for our military: it will make our troops and our facilities more secure and it will reduce the amount of money the Pentagon spends on energy, freeing it up for other mission critical needs. If the right steps are taken by Congress and the Pentagon, the military will be able to put its resources to work developing technologies that will lead to a stronger fighting force, a safer nation, and a critical emerging sector of the American economy. The Defense Department has helped give birth to technologies and new economic sectors dozens of times before. For its own sake and the sake of the economy, it should make clean energy innovation its newest priority.

**Regulatory reform is necessary---it sends a signal to investor that overcomes current barriers.**

**Loris 11** (Nicolas D. Loris – Research Associate in the Roe Institute, Jack Spencer – Research Fellow in Nuclear Energy in the Thomas A. Roe Institute for Economic Policy Studies, Currently is The Heritage Foundation’s senior research fellow in nuclear energy policy, Previously worked on commercial, civilian and military components of nuclear energy at the Babcock & Wilcox Companies, Holds a bachelor's degree in international politics from Frostburg State University and a master's degree from the University of Limerick, *A Big Future for Small Nuclear Reactors?*, February 2nd, http://www.heritage.org/research/reports/2011/02/a-big-future-for-small-nuclear-reactors)

Abstract: More and more companies—in the U.S. and abroad—are investing in new commercial nuclear enterprises, chief among them, small modular reactors (SMRs). The SMR industry is growing, with many promising developments in the works—which is precisely why the government should not interfere, as subsidies and government programs have already resulted in an inefficient system for large reactors. Heritage Foundation nuclear policy experts explain how the future for small reactors can remain bright. Small modular reactors (SMRs) have garnered significant attention in recent years, with companies of all sizes investing in these smaller, safer, and **more cost-efficient** nuclear reactors. Utilities are even forming partnerships with reactor designers to prepare for potential future construction. Perhaps most impressive is that most of this development is occurring without government involvement. Private investors and entrepreneurs are **dedicating resources** to these technologies based on their future prospects, not on government set-asides, mandates, or subsidies, and despite the current regulatory bias in favor of large light water reactors (LWRs). The result is a young, robust, innovative, and growing SMR industry. Multiple technologies are being proposed that each have their own set of characteristics based on price, fuel, waste characteristics, size, and any number of other variables. To continue this growth, policymakers should reject the temptation to offer the same sort of subsidies and government programs that have proven ineffective for large LWRs. While Department of Energy cost-sharing programs and capital subsidies seem attractive, they have yet to net any new reactor construction. Instead, policymakers should focus on the systemic issues that have continued to thwart the expansion of nuclear power in recent years. Specifically, the federal government needs to develop an efficient and **predictable regulatory pathway** to new reactor certification and to develop a sustainable nuclear waste management strategy. Why SMRs? Small modular reactors share many of the attractive qualities of large reactors, such as providing abundant emissions-free power, while adding new features that could make them more appropriate for certain applications, such as providing power to rural communities or for dedicated industrial use. SMRs are not yet positioned to take the place of traditional large LWRs, but they represent an important growth area for the commercial nuclear industry. Indeed, should the promise of small modular reactors be realized, the technology could transform the nuclear industry. That is because these attributes would potentially mitigate some of the financial and regulatory problems that nuclear energy has recently faced. SMRs potentially cost less (at least in up-front capital), are more mobile and multifunctional, provide competition, and can largely be produced by existing domestic infrastructure. Lower Costs Up Front. Large reactors are very expensive to license and construct and require massive up-front capital investments to begin a project. Small reactors, while providing far less power than large reactors, can be built in modules and thus be paid for over time. For example, estimates for larger reactors range from $6 billion to $10 billion and must be financed all at once. The Babcock & Wilcox Company’s modular mPower reactors, alternatively, can be purchased in increments of 125 megawatts (MW), which would allow costs to be spread out over time. Though cost estimates are not yet available for the mPower reactor, its designers have stated that they will be competitive. This should not be used as a reason to refrain from building larger, 1,000-plus MW reactors. Each utility will have its own set of variables that it must consider in choosing a reactor technology, but given that one of the primary justifications for government subsidies is that the high costs of large reactors puts unacceptable strain on utility balance sheets, an option that spreads capital outlays over time should be attractive. Safe Installation in Diverse Locations. Some designs are small enough to produce power for as few as 20,000 homes. One such reactor, Hyperion Power’s HPM (Hyperion Power Module) offers 25 MW of electricity for an advertised cost of $50 million per unit. This makes the HPM a potential power solution for isolated communities or small cities.[1] The Alaskan town of Galena, for example, is planning to power its community with a small reactor designed by Toshiba, while Fairbanks is looking into a small plant constructed by Hyperion.[2] In addition, Western Troy Capital Resources has stated that it will form a private corporation to provide electric power from small reactors for remote locations in Canada.[3] Public utility officials in Grays Harbor, Washington, have spoken with the NuScale Power company about powering the community with eight small nuclear plants;[4] and Hyperion Power has reported a high level of interest in small nuclear reactor designs from islands around the world.[5] Using a small nuclear reactor could cut electricity costs in isolated areas since there would be no need for expensive transmission lines to carry power to remote locations.[6] SMRs could also potentially be integrated into existing energy infrastructure. SMRs could be built into old coal plants, for instance. The reactors would replace the coal boilers and be hooked into the existing turbines and distribution lines. According to the Nuclear Regulatory Commission, these modifications could be completed safely since small reactors will likely be easier to control during times of malfunction.[7] Multi-functionality. SMRs can be used in a variety of applications that have substantial power and heat requirements. The chemical and plastics industries and oil refineries all use massive amounts of natural gas to fuel their operations. Similarly, small reactors could produce the heat needed to extract oil from tar sands, which currently requires large amounts of natural gas. While affordable today, natural gas prices vary significantly over time, so the long-term predictable pricing that nuclear provides could be very attractive. SMRs may also provide a practical solution for desalination plants (which require large amounts of electricity) that can bring fresh water to parts of the world where such supplies are depleting.[8] Perhaps most important, is that SMRs have the potential to bring power and electricity to the 1.6 billion people in the world today that have no access to electricity, and to the 2.4 billion that rely on biomass, such as wood, agricultural residue, and dung for cooking and heating.[9] Competition. While competition among large nuclear-reactor technologies currently exists, small reactors will add a new dimension to nuclear-reactor competition. Multiple small technology designs are set to emerge on the market. Not only will competition among small reactors create a robust market, it will also provide an additional incentive for large reactors to improve. If smaller reactors begin to capture a share of the nuclear market and the energy market at large, it will drive innovation and ultimately lower prices for both new and existing technologies. Domestic Production. Although the nuclear industry necessarily shrank to coincide with decreased demand, much of the domestic infrastructure remains in place today and could support the expansion of small-reactor technologies. Although the industrial and intellectual base has declined over the past three decades, forging production, heavy manufacturing, specialized piping, mining, fuel services, and skilled labor could all be found in the United States. Lehigh Heavy Forge Corporation in Bethlehem, Pennsylvania, could build the forges while Babcock & Wilcox could provide the heavy nuclear components, for instance. AREVA/Northrop Grumman Shipbuilding broke ground on a heavy components manufacturing facility last June.[10] Further, a number of companies are expanding manufacturing, engineering, and uranium enrichment capabilities—all in the United States. If SMRs are so great, where is the construction? While some designs are closer to market introduction than others, the fact is that America’s **regulatory** and policy environment is not sufficient to support a robust expansion of existing nuclear technologies, much less new ones. New reactor designs are difficult to license efficiently, and the lack of a sustainable nuclear waste management policy causes significant risk to private investment. Many politicians are attempting to mitigate these market challenges by offering subsidies, such as loan guarantees. While this approach still enjoys broad support in Congress and industry, the reality is that it has not worked. Despite a lavish suite of subsidies offered in the Energy Policy Act of 2005, including loan guarantees, insurance against government delays, and production tax credits, no new reactors have been permitted, much less constructed. These subsidies are in addition to existing technology development cost-sharing programs that have been in place for years and defer significant research and development costs from industry to the taxpayer. The problem with this approach is that it ignores the larger systemic problems that create the unstable marketplace to begin with. These systemic problems generally fall into three categories: Licensing. The Nuclear Regulatory Commission (NRC) is ill prepared to build the regulatory framework for new reactor technologies, and no reactor can be offered commercially without an NRC license. In a September 2009 interview, former NRC chairman Dale E. Klein said that small nuclear reactors pose a dilemma for the NRC because the commission is uneasy with new and unproven technologies and feels more comfortable with large light water reactors, which have been in operation for years and has a long safety record.[11] The result is that enthusiasm for building non-light-water SMRs is generally squashed at the NRC as potential customers realize that there is little chance that the NRC will permit the project within a timeframe that would promote near-term investment. So, regardless of which attributes an SMR might bring to the market, the **regulatory risk** is such that real progress on commercialization is difficult to attain. This then leaves large light water reactors, and to a lesser extent, small ones, as the least risky option, which pushes potential customers toward that technology, which then undermines long-term progress, competition, and innovation. Nuclear Waste Management. The lack of a sustainable nuclear waste management solution is perhaps the greatest obstacle to a broad expansion of U.S. nuclear power. The federal government has failed to meet its obligations under the 1982 Nuclear Waste Policy Act, as amended, to begin collecting nuclear waste for disposal in Yucca Mountain. The Obama Administration’s attempts to shutter the existing program to put waste in Yucca Mountain without having a backup plan has worsened the situation. This outcome was predictable because the current program is based on the flawed premise that the federal government is the appropriate entity to manage nuclear waste. Under the current system, waste producers are able to largely ignore waste management because the federal government is responsible. The key to a sustainable waste management policy is to directly connect financial responsibility for waste management to waste production. This will increase demand for more waste-efficient reactor technologies and drive innovation on waste-management technologies, such as reprocessing. Because SMRs consume fuel and produce waste differently than LWRs, they could contribute greatly to an economically efficient and sustainable nuclear waste management strategy. Government Intervention. Too many policymakers believe that Washington is equipped to guide the nuclear industry to success. So, instead of creating a stable regulatory environment where the market value of different nuclear technologies can determine their success and evolution, they choose to create programs to help industry succeed. Two recent Senate bills from the 111th Congress, the Nuclear Energy Research Initiative Improvement Act (S. 2052) and the Nuclear Power 2021 Act (S. 2812), are cases in point. Government intervention distorts the normal market processes that, if allowed to work, would yield the most efficient, cost-effective, and appropriate nuclear technologies. Instead, the federal government picks winners and losers through programs where bureaucrats and well-connected lobbyists decide which technologies are permitted, and provides capital subsidies that allow investors to ignore the systemic problems that drive risk and costs artificially high. This approach is especially detrimental to SMRs because subsidies to LWRs distort the relative benefit of other reactor designs by artificially lowering the cost and risk of a more mature technology that already dominates the marketplace. How to Fix a Broken System At the Global Nuclear Renaissance Summit on July 24, 2008, then-NRC chairman Dale Klein said that a nuclear renaissance with regard to small reactors will take “decades to unfold.”[12] If Members of Congress and government agencies do not reform their current approach to nuclear energy, this will most certainly be the case. However, a new, market-based approach could lead to a different outcome. Instead of relying on the policies of the past, Congress, the Department of Energy, and the NRC should pursue a new, 21st-century model for small and alternative reactor technologies by doing the following: Reject additional loan guarantees. Loan guarantee proponents argue that high up-front costs of new large reactors make them unaffordable without loan guarantees. Presumably, then, a smaller, less expensive modular option would be very attractive to private investors even without government intervention. But loan guarantees undermine this advantage by subsidizing the capital costs and risk associated with large reactors. A small reactor industry without loan guarantees would also provide competition and downward price pressure on large light water reactors. At a minimum, Congress should limit guarantees to no more than two plants of any reactor design and limit to two-thirds the amount of any expanded loan guarantee program that can support a single technology. Such eligibility limits will prevent support from going only to a single basic technology, such as large light water reactors.[13] Avoid subsidies. Subsidies do not work if the objective is a diverse and economically sustainable nuclear industry. Despite continued attempts to subsidize the nuclear industry into success, the evidence demonstrates that such efforts invariably fail. The nuclear industry’s success stories are rooted in the free market. Two examples include the efficiency and low costs of today’s existing plants, and the emergence of a private uranium enrichment industry. Government intervention is the problem, as illustrated by the government’s inability to meet its nuclear waste disposal obligations. Build expertise at the Nuclear Regulatory Commission. The NRC is built to regulate large light water reactors. It simply does not have the regulatory capability and resources to efficiently regulate other technologies, and building that expertise takes time. Helping the NRC to develop that expertise now would help bring new technologies into the marketplace more smoothly. Congress should direct and resource the NRC to develop additional broad expertise for liquid metal-cooled, fast reactors and high-temperature, gas-cooled reactors. With its existing expertise in light water technology, this additional expertise would position the NRC to effectively regulate an emerging SMR industry. Establish a new licensing pathway. The current licensing pathway relies on reactor customers to drive the regulatory process. But absent an efficient and predictable regulatory pathway, few customers will pursue these reactor technologies. The problem is that the legal, regulatory, and policy apparatus is built to support large light water reactors, effectively discriminating against other technologies. Establishing an alternative **licensing pathway** that takes the unique attributes of small reactors into consideration could help build the necessary regulatory support on which commercialization ultimately depends.[14] Resolve staffing, security, construction criteria, and fee-structure issues by December 31, 2011. The similarity of U.S. reactors has meant that the NRC could establish a common fee structure and many general regulatory guidelines for areas, such as staffing levels, security requirements, and construction criteria. But these regulations are inappropriate for many SMR designs that often have smaller staff requirements, unique control room specifications, diverse security requirements, and that employ off-site construction techniques. Subjecting SMRs to regulations built for large light water reactors would add cost and result in less effective regulation. The NRC has acknowledged the need for this to be resolved and has committed to doing so, including developing the budget requirements to achieve it. It has not committed to a specific timeline.[15] Congress should demand that these issues be resolved by the end of 2011.

**Absent military involvement SMRs will not come to market.**

**Cohen 12** (Armond, Executive Director – Clean Air Task Force, *DoD: A Model for Energy Innovation?*, http://energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php#2211477)

Recently, the Clean Air Task Force and our colleagues at The Consortium for Science, Policy and Outcomes at Arizona State University, assessed the opportunities and challenges at the U.S. Department of Defense for accelerating a national and even global transition to advanced and clean energy technologies.

Building on background papers, a workshop, new research, and a previous project that articulated foundational principles for federal energy innovation policies, this report identified the sources of DoD’s success in fostering new technology that can be applied to both civilian energy innovation efforts and future defense-related energy efforts.

Unlike most other agencies, including the Energy Department, the Pentagon is the ultimate customer for the new technology it helps create, spending some $200 billion each year on R&D and procurement. The implications of DoD’s role as customer have not been widely appreciated, as:

· DoD, uniquely in government, supports multi-year, billion-dollar “end to end” innovation efforts that produce technology that is continuously tested, deployed and refined on bases and in the field, providing **real world feedback** that leads to **increases in performance** and **reductions in cost**. By contrast, most of the federal government’s civilian energy innovation efforts involve research loosely connected at best with the few commercialization efforts that it supports.

· DoD and its contractors know how to **bring together multiple innovations** to achieve **system-level advances** leading to **big performance gains** (examples range from nuclear submarines to unmanned aircraft to large-scale information systems). This systems approach is precisely what is needed to advance clean energy technologies.

· Relatively stable, multi-year funding allows the Pentagon to pursue “long cycle” innovation that is necessary for large, capital- intensive technologies and supports a highly capable contractor base that can respond to changing national security demands.

· The Pentagon’s scope and budget has allowed it to **experiment** with new and **creative innovation tools** such as the well-known Defense Advanced Projects Research Agency, which has produced extraordinary technological breakthroughs; and the Environmental Security Technology Certification Program, which develops and demonstrates cost-effective improvements in environmental and energy technologies for military installations and equipment.

· Because of DoD’s size and demands for performance and reliability, it is unique among government and private sector organizations as a **demonstration test-bed**. Smart-grid technologies and advanced energy management systems for buildings are already poised to benefit from this aspect of the Pentagon’s innovation system.

· DoD has collaborated effectively with other federal agencies, including the Department of Energy and its predecessors (for example, to advance nuclear energy technologies). Continuing competition and cooperation between DoD and DOE will spur energy innovation.

DoD’s innovation capabilities can enhance U.S. national security, improve U.S. international competitiveness, and spur global energy restructuring and greenhouse gas emissions reductions.

At the same time, while providing enormous opportunities to develop and test energy efficiency technologies and small scale distributed energy appropriate to forward bases, the Pentagon is unlikely to become an all-purpose hub for advancing all categories of clean-energy technologies, because its energy innovation activities will be sustainable only where they can support the nation’s defense capabilities.

Therefore, many other large-scale technologies that are of great importance to improving the environment, such as carbon-free central station generation or zero carbon transportation, may not as easily fit with DoD’s mission. Possible exceptions might include small modular nuclear reactors that can be used for producing independent, non-grid power at military bases, or, conceivably, zero-carbon liquid fuels other than anything resembling current generation biofuels.

In any case, the challenge for military-led energy innovation is to further define and delineate avenues for improved clean-energy performance that are linked to the national strategic mission. History shows that when such linkages are strong, DoD’s innovation capabilities are **second to none**.

But perhaps the more important lesson from this work is that a serious American program of civilian energy innovation could profitably look to Pentagon history for clues about how to succeed. Stable and significant funding; “end to end” thinking on long innovation cycles; procurement of advanced energy technology at commercial scale as well as research and testing; and institutional experimentation and diversity using multiple institutional channels – these have been important reasons that the United States has the most lethal and effective military arsenal in world history. If we’re serious about maintaining American superiority in the energy technology domain, some of this “defense innovation DNA” needs to be replicated or adapted to meet the challenge.

**Funding for SMRs now**

HSNW 9/26—Homeland Security News Wire [September 26, 2012, “DOE promotes small-nuclear reactors (SMRs)” http://www.homelandsecuritynewswire.com/dr20120926-doe-promotes-smallnuclear-reactors-smrs]

South Carolina’s Savannah River Site (SRS) located in Aiken, along with the U.S. Department of Energy (DOE), have announced three partnerships to develop three small modular nuclear reactors (SMRs) at the SRS facility; SMRs produce less energy than a regular reactor, but they produce enough energy to power small cities and remote areas

South Carolina’s Savannah River Site (SRS) located in Aiken, along with the U.S. Department of Energy (DOE), have announced three partnerships to develop three small modular nuclear reactors (SMRs) at the SRS facility.

The DOE released a statement saying the agreement “will help leverage Savannah River’s land assets, energy facilities and nuclear expertise to support potential private sector development, testing and licensing of prototype SMR technologies.”

Helen Belecan, DOE’s deputy assistant manager for infrastructure and environmental stewardship at the SRS facility, told Government Technology the goal of the reactors are “to apply the nuclear knowledge and expertise that we have from over 60 years of supporting the nation in its defense-type operation in nuclear material production and help these companies develop the technology and manufacturing capability in the United States so that the United States can take on a leadership role in the manufacturing of these small modular reactors.”

DOE will focus on the advancing SMRs in the United States. $450 million “will be made available to support first-of its kind engineering, design decertification and licensing for up to two SMR designs over five years, subject to congressional appropriations,” DOE says.

Proposals for funding were received in May and are being reviewed to see which proposal will meet the standards of the Nuclear Regulatory Commission (NRC). The DOE plans to announce the recipients later this year.

A SMR is about one-third the size of a regular nuclear reactor and is built at a fraction of the cost. A traditional single-unit nuclear reactor costs roughly $8 billion dollars to build and that number jumps to $14 billion for twin reactors. SMRs produce less energy than a regular reactor, but they produce enough energy to power small cities and remote areas.

Thomas Sander, an associate laboratory director for the Clean Energy Imitative and the Savannah River National Laboratory, told Government Technology the first SMR will cost almost $1 billion, but the price will drop down the line.

“If you are talking about the 100th, my expectation is that cost is going to be reduced significantly as a result of advance factory manufacturing and just a learning process and the licensing process.”

“If you are going after the old coal replacement market, you are looking at 150 to 200 megawatts on average,” Sander said, “but if you are looking at the Alaskan market for small cities or island market or export market for developing countries, you are talking 45 to 100 megawatts.”

The DOE is beginning to sign off on SMR’s for nuclear energy technology, and the government has began to approve projects around the country. DOE spokeswoman Niketa Kumar told Government Technology these new projects will allow the U.S. to compete with other countries in nuclear energy.

## \*\*\* 2AC

**2AC—Solvency**

**SMRs are cost-effective, safe and can come online in 3 years**

**Szondy 12** David, freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past, February 16, "Feature: Small modular nuclear reactors - the future of energy?", www.gizmag.com/small-modular-nuclear-reactors/20860/

Small Modular Reactors¶ One way of getting around many of these problems is through the development of small modular reactors (SMR). These are reactors capable of generating about 300 megawatts of power or less, which is enough to run 45,000 US homes. Though small, SMRs are proper reactors. They are quite different from the radio-thermal generators (RTG) used in spacecraft and remote lighthouses in Siberia. Nuclear reactors such as SMRs use controlled nuclear fission to generate power while RTGs use natural radioactive decay to power a relatively simple thermoelectric generator that can only produce, at most, about two kilowatts.¶ In terms of power, RTGs are the equivalent of batteries while small nuclear reactors are only "small" when compared to conventional reactors. They are hardly the sort that you would keep in the garage. In reality, SMR power plants would cover the area of a small shopping mall. Still, such an installation is not very large as power plants go and a reactor that only produces 300 megawatts may not seem worth the investment, but the US Department of Energy is offering US$452 million in matching grants to develop SMRs and private investors like the Bill Gates Foundation and the company of Babcock and Wilcox are putting up money for their own modular reactor projects.¶ The 60-year old breakthrough¶ One reason for government and private industry to take an interest in SMRs is that they've been successfully employed for much longer than most people realize. In fact, hundreds have been steaming around the world inside the hulls of nuclear submarines and other warships for sixty years. They've also been used in merchant ships, icebreakers and as research and medical isotope reactors at universities. There was even one installed in the Antarctic at McMurdo Station from 1962 to 1972. Now they're being considered for domestic use.¶ The case for SMRs¶ **SMRs have a number of advantages over conventional reactors**. For one thing, **SMRs are cheaper** to construct and run. This makes them very attractive to poorer, energy-starved countries; small, growing communities that don't require a full-scale plant; and remote locations such as mines or desalination plants. Part of the reason for this is simply that the reactors are smaller. Another is that, not needing to be custom designed in each case, the reactors can be standardized and some types built in factories that are able to employ economies of scale. The factory-built aspect is also important because a factory is more efficient than on-site construction by as much as **eight to one in terms of building time**. Factory construction also allows SMRs to be built, delivered to the site, and then returned to the factory for dismantling at the end of their service lives - eliminating a major problem with old conventional reactors, i.e. how to dispose of them.¶ SMRs also enjoy a good deal of design flexibility. Conventional reactors are usually cooled by water - a great deal of water - which means that the reactors need to be situated near rivers or coastlines**. SMRs, on the other hand, can be cooled by air, gas, low-melting point metals or salt**. This means that SMRs can be placed in remote, inland areas where it isn't possible to site conventional reactors.¶ Safety¶ This cooling system is often passive. In other words, it relies more on the natural circulation of the cooling medium within the reactor's containment flask than on pumps**. This passive cooling is one of the ways that SMRs can improve safety**. Because modular reactors are smaller than conventional ones, they contain less fuel. This means that there's less of a mass to be affected if an accident occurs. If one does happen, there's less radioactive material that can be released into the environment and makes it easier to design emergency systems. Since they are smaller and use less fuel, they are easier to cool effectively, which greatly reduces the likelihood of a catastrophic accident or meltdown in the first place.¶ This also means that accidents proceed much slower in modular reactors than in conventional ones. Where the latter need accident responses in a matter of hours or minutes, SMRs can be responded to in hours or days, **which reduces the chances of an accident resulting in major damage** to the reactor elements.¶ The SMR designs that reject water cooling in favor of gas, metal or salt have their own safety advantages. Unlike water-cooled reactors, these media operate at a lower pressure. One of the hazards of water cooling is that a cracked pipe or a damaged seal can blow radioactive gases out like anti-freeze out of an overheated car radiator. With low-pressure media, there's less force to push gases out and there's less stress placed on the containment vessel. It also eliminates one of the frightening episodes of the Fukushima accident where the water in the vessel broke down into hydrogen and oxygen and then exploded.¶ Another advantage of modular design is that some SMRs are small enough to be installed below ground. That is cheaper, faster to construct and less invasive than building a reinforced concrete containment dome. There is also the point that putting a reactor in the ground makes it **less vulnerable to earthquakes**. Underground installations make modular reactors easier to secure and install in a much smaller footprint. This makes **SMRs particularly attractive to military customers who need to build power plants for bases quickly**. Underground installation also enhances security with fewer sophisticated systems needed, which also helps bring down costs.¶ **SMRs can help with** proliferation, **nuclear waste and fuel supply issues** because, while some modular reactors are based on conventional pressurized water reactors and burn enhanced uranium, others use less conventional fuels. Some, for example, can generate power from what is now regarded as "waste", burning **depleted uranium** and plutonium left over from conventional reactors. Depleted uranium is basically U-238 from which the fissible U-235 has been consumed. It's also much more abundant in nature than U-235, which has the potential of providing the world with energy for thousands of years. Other reactor designs don't even use uranium. Instead, they use thorium. This fuel is also incredibly abundant, is easy to process for use as fuel and has the added bonus of being utterly useless for making weapons, so it can provide power even to areas where security concerns have been raised.¶ But there's still the sticking point that modular reactors are, by definition, small. That may be fine for a submarine or the South Pole, but what about places that need more? Is the alternative conventional nuclear plants? It turns out that the answer is no. Modular reactors don't need to be used singly. They can be set up in batteries of five or six or even more, providing as much power as an area needs. And if one unit needs to be taken off line for repairs or even replacement, it needn't interfere with the operation of the others.

**2AC—ARPA CP**

**Current restrictions make SMR development impossible.**

**Rysavy et al 9** Charles F, partner with the law firm of K&L Gates LLP and has over 15 years of legal experience with the nuclear industry, Stephen K. Rhyne is a partner with the law firm of K&L Gates LLP, Roger P. Shaw is a scientist with the law firm of K&L Gates LLP, has over 30 years of experience with the nuclear industry, and is the former Director of Radiation Protection for the Three Mile Island and Oyster Creek Nuclear Plants, "SMALL MODULAR REACTORS", December, apps.americanbar.org/environ/committees/nuclearpower/docs/SMR-Dec\_2009.pdf

Most SMRs are not merely scaled down versions of large-scale reactors, but rather new in design, siting, construction, operation and decommissioning. Appropriately, the legal and regulatory issues these units will generate will not merely be scaled down versions of the issues faced by their much larger brethren. The NRC’s new reactor licensing regulations in 10 C.F.R. Part 52 are designed to provide a more streamlined process for new generation large-scale reactors. Some facets of this new process will be equally advantageous to SMRs, while others will range from awkward to nearly unworkable when applied to the licensing, construction, and operation of SMRs. Creative navigation of the existing regulations by both the NRC and licensees will solve some problems, but others can be solved only by amending the regulations. ¶ For example, the NRC’s annual fee to operate each licensed nuclear reactor is $4.5M under 10 C.F.R. Part 171, which would likely pose problems for the operation of many SMRs. In March 2009, the NRC published an advanced notice of proposed rulemaking that contemplates a variable fee structure based on thermal limits for each power reactor. 74 Fed. Reg. 12,735 (March 25, 2009). This or a similar **change will** **be necessary to make SMR’s financially viable**. Likewise, the size of the decommissioning fund, insurance, and other liability issues could make SMRs uneconomical if not tailored to the smaller units. Moreover, the form of the combined operating and construction license (COL) must take into consideration that certain sites are likely to start out with a single SMR but later add multiple small reactors as needs evolve. Flexibility is one of the SMR’s primary benefits, and the governing regulatory structure must allow (and preferably embrace) that flexibility, while simultaneously ensuring the safety of these reactors. Another issue to consider is that the current Emergency Planning Programs require a 10-mile Emergency Planning Zone (EPZ) for all reactors, based on the size of existing large-scale reactors. Emergency Plans, 10 C.F.R. § 50.47 (2009). This requirement is almost certainly unjustifiable for a SMR. These smaller reactors are much less powerful, and in many cases the actual containment/reactor system will be placed underground.

**2AC—Gird CP**

**CP leads to more vulnerability**

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A wide variety of motivations exist for launching an attack on the power grid, ranging from economic reasons (e.g., reducing electricity bills), to pranks, and all the way to terrorism (e.g., threatening people by controlling electricity and other life-critical resources). The emerging smart grid, while benefiting the benign participants (consumers, utility companies), also **provides powerful tools for adversaries**. The smart grid will reach every house and building, giving potential attackers easy access to some of the grid components. While incorporating information technology (IT) systems and networks, the smart grid will be exposed to a wide range of security threats [5]. Its large scale also makes it nearly impossible to guarantee security for every single subsystem. Furthermore, the smart grid will be not only large but also very complex. It needs to connect different systems and networks, from generation facilities and distribution equipment to intelligent end points and communication networks, which are possibly deregulated and owned by several entities. It can be expected that the heterogeneity, diversity, and complexity of smart grid components may introduce new vulnerabilities, in addition to the common ones in interconnected networks and stand-alone microgrids [3]. To make the situation even worse, the sophisticated control, estimation, and pricing algorithms incorporated in the grid may also create additional vulnerabilities. The first-ever control system malware called Stuxnet was found in July 2010. This malware, targeting vulnerable SCADA systems, raises new questions about power grid security [6]. SCADA systems are currently isolated, preventing external access. Malware, however, can spread using USB drives and can be specifically crafted to sabotage SCADA systems that control electric grids. Furthermore, increasingly interconnected smart grids will unfortunately provide external access which in turn can lead to compromise and infection of components.

**Effective regulation key.**

**Wallace & Williams 12** (Michael – Comes to CSIS from Constellation Energy, where he served as vice chairman and COO. During his nine years at Constellation Energy, he led many company business activities, including the formation and operation of two joint ventures with EDF related to nuclear energy. Prior to joining Constellation Energy, he was cofounder and managing director of Barrington Energy Partners, LLC, a strategic consulting firm specializing in energy industry transactions and advisory services. Before joining Barrington Energy, he had more than 25 years of senior executive and utility operations experience. He holds a B.S. in electrical engineering from Marquette University and an M.B.A. from the University of Chicago, with a specialization in finance. He also served as a naval officer in the U.S. Navy nuclear submarine force. Member of the National Infrastructure Advisory Council (NIAC), which advises the president on matters related to homeland security. He is also a member of the Nuclear Sector Coordinating Council under the Department of Homeland Security’s National Infrastructure Protection Plan and a member of Business Executives for National Security (BENS), the Naval Historical Foundation Advisory Council, and the Marquette University College of Engineering National Advisory Council, Sarah Williams – program coordinator and research associate in the U.S. Nuclear Energy Project at CSIS. Prior to joining CSIS, she was a Herbert Scoville Jr. peace fellow and program coordinator at the Center for Science, Technology and Security Policy at the American Association for the Advancement of Science (AAAS). She holds an M.A. in global policy studies from the LBJ School of Public Affairs at the University of Texas in Austin and a B.A. in political science from the University of Maryland, *Nuclear Energy in America: Preventing its Early Demise*, http://csis.org/publication/nuclear-energy-america-preventing-its-early-demise)

America’s nuclear energy industry is in decline. Low natural gas prices, financing hurdles, new safety and security requirements, failure to resolve the waste issue and other factors are hastening the day when existing reactors become uneconomic, making it virtually impossible to build new ones.

Two generations after the United States took this wholly new and highly sophisticated technology from laboratory experiment to successful commercialization, our nation is in danger of losing an industry of unique strategic importance, unique potential for misuse, and unique promise for addressing the environmental and energy security demands of the future.

The pace of this decline, moreover, could be more rapid than most policymakers and stakeholders anticipate. With 104 operating reactors and the world’s largest base of installed nuclear capacity, it has been widely assumed that the United States—even without building many new plants—would continue to have a large presence in this industry for some decades to come, especially if existing units receive further license extensions. Instead, current market conditions are such that growing numbers of these units are operating on small or even negative profit margins and could be retired early.

Meanwhile, China, India, Russia, and other countries are looking to significantly expand their nuclear energy commitments. By 2016, China could have 50 nuclear power plants in operation, compared with only 14 in 2011. India could add 8 new plants and Russia 10 in the same time frame. These trends are expected to accelerate out to 2030, by which time China, India, and Russia could account for nearly 40 percent of global nuclear generating capacity.

Meanwhile, several smaller nations, mostly in Asia and the Middle East, are planning to get into the nuclear energy business for the first time. In all, as many as 15 new nations could have this technology within the next two decades. Meanwhile, America’s share of global nuclear generation is expected to shrink, from about 25 percent today to about 14 percent in 2030, and—if current trends continue—to less than 10 percent by mid-century.

With the **center of gravity** for global nuclear investment shifting to a new set of players, the United States and the international community face a difficult set of challenges: stemming the spread of nuclear weapons-usable materials and know-how; preventing further catastrophic nuclear accidents; providing for safe, long-term nuclear waste management; and protecting U.S. energy security and economic competitiveness.

In this context, federal action to reverse the American nuclear industry’s impending decline is a national security imperative. The United States cannot afford to become irrelevant in a new nuclear age.

Our nation’s commercial nuclear industry, its military nuclear capabilities, and its strong **regulatory institutions** can be seen as three legs of a stool. All three legs are needed to support America’s future prosperity and security and to shape an international environment that is conducive to our long-term interests. Three specific aspects of U.S. leadership are particularly important.

First, managing the national and global security risks associated with the spread of nuclear technology to countries that don’t necessarily share the same perspective on issues of nonproliferation and nuclear security or may lack the resources to implement effective safeguards in this area. An approach that relies on influence and involvement through a viable domestic industry is likely to be more effective and less expensive than trying to contain these risks militarily.

Second, setting global norms and standards for safety, security, operations, and emergency response. As the world learned with past nuclear accidents and more recently with Fukushima, a major accident anywhere can have lasting repercussions everywhere. As with nonproliferation and security, America’s ability to exert leadership and influence in this area is **directly linked** to the strength of our domestic industry and our active involvement in the global nuclear enterprise. A strong domestic civilian industry and **regulatory structure** have immediate national security significance in that they help support the nuclear capabilities of the **U.S. Navy**, **national laboratories**, **weapons complex**, and **research institutions**.

Third, in the past, the U.S. government could exert influence by striking export agreements with countries whose **regulatory** and legal frameworks reflected and were consistent with our own nonproliferation standards and commitments. At the same time, our nation set the global standard for effective, independent safety regulation (in the form of the Nuclear Regulatory Commission), led international efforts to reduce proliferation risks (through the 1970 NPT Treaty and other initiatives), and **provided a model** for industry self-regulation.

The results were not perfect, but America’s institutional support for global nonproliferation goals and the regulatory behaviors it modeled clearly helped shape the way nuclear technology was adopted and used elsewhere around the world. This influence seems certain to wane if the United States is no longer a major supplier or user of nuclear technology. With existing nonproliferation and safety and security regimes looking increasingly inadequate in this rapidly changing global nuclear landscape, American leadership and leverage is more important and more central to our national security interests than ever.

To maintain its leadership role in the development, design, and operation of a growing global nuclear energy infrastructure, the next administration, whether Democrat or Republican, must recognize the invaluable role played by the commercial U.S. nuclear industry and take action to prevent its early demise.

**2AC—Elections DA**

**Romney wins- polls, momentum, swing states**

**Stoddard 10-18**

A.B., associate editor of The Hill. “Obama spinning toward a loss”

President **Obama is losing**. So says the latest Gallup poll, and so do those swelling numbers **in key states** like Wisconsin, Florida, Virginia and Ohio. Democrats say wait, he won the second debate. They are holding their breath, hoping polls next week will show that this week's debate brought the herky-jerk of the campaign back full swing, with Obama back to his September lead in the swing states and poised to win. But with two weeks to go, a sudden surge in voter support for a president as unpopular as this one, in an economy this weak, is simply hard to believe. Conservatives like Karl Rove note that this late in October, no candidate with support higher than 50 percent (see Mitt Romney: Gallup) has ever gone on to lose. Perhaps Obama lost the presidency weeks ago, on Oct. 3, when he sleepwalked and scribbled through the first debate and helped make Romney a new candidate overnight. It was Obama's night to finish Romney off; behind in the polls, even Romney likely woke up that morning thinking it was over. But Obama underestimated the task, the challenger and the electorate — all in 90 minutes. So a win this week was critical but perhaps not decisive. There is no obvious reason for Obama's performance to reverse the course of the campaign and blunt Romney now. And though there is one final debate next week, a back-and-forth on national security and foreign policy isn't likely to make the sale for anyone who still cannot make up his or her mind. Romney is arguing Obama has still failed to articulate a reason, plan or purpose for a second term. He is correct. But Obama has indeed, late in the game, come up with a more forceful defense of his first term, and an argument about the economy growing from the middle out instead of the top down. In addition, Democrats finally did their research and came up with some embarrassing changes in policy positions by Romney to debut at the debates and are cutting new flip-flop ads around the clock. Stunned by the loss of female support the Romney debate surge has cost him, Obama is focusing intently on shoring up the votes of suburban women and giving them binders full of reasons not to buy what Romney is selling. Romney too is running new ads about his abortion flexibility, his support for contraception and the job losses among women in the last four years. He has been fortunate that Obama's campaign and the Twitterverse have ignored his giddy prediction of Tuesday night that "We're going to have to have employers in the new economy, in the economy I'm going to bring to play, that are going to be so anxious to get good workers they're going to be anxious to hire women." A clunker, one could argue, even worse than his comment about the "binder full of women" he compiled to locate qualified women for his Cabinet as governor of Massachusetts. Indeed, though President Obama was deemed the debate winner by numerous snap polls this week, the **polls show just how firm Romney's support has grown**. In every poll he beat Obama by a wide margin on who is stronger on the economy. Obama can expect, even if he wins another debate on Oct. 22, that this will remain a tight race or that Romney will begin to **break away** **at the end.** Obama's September surge resulted from an increase in Democratic enthusiasm, which **is waning**. As Romney has **hardened his support** among Republicans, **he is also** **winning over new voters**, leaving Obama with the task of exciting his base of Latinos, women, African-Americans and young voters. Without enough of them he loses. With less than three weeks to go it's hard to see where he finds that excitement.

**Jobs report thumps**

**Satran 10-19**

Richard Satran Political and economist analyst, , CNBC writer, previously worked for Independent, Thomson Reuters, and Fidelity Investments Education BA, Journalism and History at University of Wisconsin-Madison Richard, writer for US News, “How the Last Word of the Election Goes to the Market”

The first Friday in November looms as the biggest day remaining before the presidential election. **With jobs and the economy the most important** **factors** **in deciding votes**, the monthly **employment** **report due** out **November 2** **could eclipse the** presidential **debates** **and campaign appearances** to come. Its result will key the final points the candidates make as campaigning winds to a close. The numbers alone are important, but the reaction of Wall Street also matters. It marks a very big "public vote," just two trading days before the voting booths open. Despite all the bashing of banks and traders, history shows that a healthy Wall Street helps a sitting President enormously. Weaker jobs data seen as likely. **Economists** say they expect October's employment report to yield **unimpressive data** **after a strong report in September** from the Bureau of Labor Statistics lifted stocks and sent anti-Obama conspiracy theorists, led by former General Electric chief Jack Welch, into overdrive saying the administration must have "cooked the books." Economists scoff at the idea. Still, many say September's figures may have **raised expectations too high** for the upcoming report, and could even lead to a reversal in September's gains. Moody's Analytics has predicted **the jobless rate will push back above 8 percent** the months to come. The recent decline in the unemployment rate to 7.8 percent was seen as a coup for Obama, who came to office in the midst of a severe recession that drove unemployment to double digits for the first time since the early 1980s. But few economists see a recovery to prerecession levels (as low as 3.8 percent in 2000) anytime soon. "Whatever you think about the election or crazy conspiracy theories, you have to look at the September data as an outlier and expect that things will return to the normal, slower growth and higher unemployment rate we've been seeing," says Dan Veru, chief investment officer at Palisade Capital Management in Fort Lee, N.J. If that happens, the November report could **be a late-inning setback for Obama's re-election hopes**. Still, a mild market reaction would surely soften the blow. So far, Wall Street's recovery has helped Obama in a big way. The S&P 500 has risen an impressive 70 percent since the day he took office. That's the third-largest percentage return of any four-year presidential term over the last century. (The S&P stood at 850 on Jan. 20, 2009, when he took office, and hit 1457 as of Thursday's close.) Why jobs matter so much. Nothing seems to matter to investors quite as much as jobs—and that's based on more than just television sound bites and debate points in this year's presidential campaign. The Employment Situation, as the report is officially known, is the most significant monthly economic indicator in part because it is the first major data point investors see. It's also a bread-and-butter concern. Obviously, **nothing hits home harder than a job loss, and its impact ripples** through retail sales, home purchases, and overall confidence. Also critical for markets: Jobs have been the main focus of the Federal Reserve in setting monetary policy, which in turn holds sway over interest rates. The Fed's other job, fighting inflation, has not been a factor in recent years of near-zero increases. The link between jobs data and stock prices is decades old—and its impact can be swift. JPMorgan Asset Management's Michael Cembalist in a recent report cited 13 times when the market has risen by 2 percent or more on the day the employment data was released. A Fed study in 2008 concluded that the jobs data was "the most heavily watched" economic figure. Adding to the drama behind jobs data. The data will be picked apart even more this time. Mitt Romney "has been telling people to watch the 'participation rate' [as an indicator of] the 'real rate of unemployment, which is much higher," says Veru. The Romney argument is that the unemployment figure is artificially low because so many people have dropped out of the employment-seeking total. To be sure, if all of the dropouts figured into the data, the unemployment rate would be higher, economists say. From the other side, Obama has been talking about the steady growth of private-sector job creation. That figure has climbed by an average of 150,000 jobs for 24 straight months—a good performance for any period of job growth, and arguably strong today given historic and enduring lows in consumer confidence following the crisis of 2008. The job market exodus, Obama backers argue, reflects natural causes like the rising rate of retirement of aging baby boomers. When **the data** is released **November 2**, the unemployment rate **will be the "snapshot"** most **Americans carry into the** **voting booth**. **Polls taken after last month's drop below 8 percent showed Obama getting a lift.** "Wall Street will look at all of the components, especially job creation—not just the unemployment rate," says Veru. "Unfortunately, Main Street looks only at the rate."

**Zero link --- the plan happens immediately but nuclear plants would not be built till after the election which means no public perception --- AND if their link argument is right Obama would deflect the blame --- PLUS the DOD shields.**

**Davenport 12** (Coral Davenport, energy and environment correspondent for National Journal. Prior to joining National Journal in 2010, Davenport covered energy and environment for Politico, and before that, for Congressional Quarterly. In 2010, she was a fellow with the Metcalf Institute for Marine and Environmental Reporting. From 2001 to 2004, Davenport worked in Athens, Greece, as a correspondent for numerous publications, including the Christian Science Monitor and USA Today, covering politics, economics, international relations and terrorism in southeastern Europe. She also covered the 2004 Olympic Games in Athens, and was a contributing writer to the Fodor’s, Time Out, Eyewitness and Funseekers’ guidebook series. Davenport started her journalism career at the Daily Hampshire Gazette in Northampton, Massachusetts, after graduating from Smith College with a degree in English literature. National Journal, 2/10/12, White House Budget to Expand Clean-Energy Programs Through Pentagon, ProQuest)

The White House believes it has figured out how to get more money for clean-energy programs touted by President Obama without having it become political roadkill in the wake of the Solyndra controversy: Put it in the Pentagon. While details are thin on the ground, lawmakers who work on both energy- and defense-spending policy believe the fiscal 2013 budget request to be delivered to Congress on Monday probably won't include big increases for wind and solar power through the Energy Department, a major target for Republicans since solar-panel maker Solyndra defaulted last year on a $535 million loan guarantee. But they do expect to see increases in spending on alternative energy in the Defense Department, such as programs to replace traditional jet fuel with biofuels, supply troops on the front lines with solar-powered electronic equipment, build hybrid-engine tanks and aircraft carriers, and increase renewable-energy use on military bases. While Republicans will instantly shoot down requests for fresh spending on Energy Department programs that could be likened to the one that funded Solyndra, many support alternative-energy programs for the military. "I do expect to see the spending," said Rep. Jack Kingston, R-Ga., a member of the House Defense Appropriations Subcommittee, when asked about increased investment in alternative-energy programs at the Pentagon. "I think in the past three to five years this has been going on, but that it has grown as a culture and a practice - and it's a good thing." "If Israel attacks Iran, and we have to go to war - and the Straits of Hormuz are closed for a week or a month and the price of fuel is going to be high," Kingston said, "the question is, in the military, what do you replace it with? It's not something you just do for the ozone. It's strategic." Sen. Lindsey Graham, R-S.C., who sits on both the Senate Armed Services Committee and the Defense Appropriations Subcommittee, said, "I don't see what they're doing in DOD as being Solyndra." "We're not talking about putting $500 million into a goofy idea," Graham told National Journal . "We're talking about taking applications of technologies that work and expanding them. I wouldn't be for DOD having a bunch of money to play around with renewable technologies that have no hope. But from what I understand, there are renewables out there that already work." A senior House Democrat noted that this wouldn't be the first time that the Pentagon has been utilized to advance policies that wouldn't otherwise be supported. "They did it in the '90s with medical research," said Rep. Henry Waxman, D-Calif., ranking member of the House Energy and Commerce Committee. In 1993, when funding was frozen for breast-cancer research programs in the National Institutes of Health, Congress boosted the Pentagon's budget for breast-cancer research - to more than double that of the health agency's funding in that area. Politically, the strategy makes sense. Republicans are ready to fire at the first sign of any pet Obama program, and renewable programs at the Energy Department are an exceptionally ripe target. That's because of Solyndra, but also because, in the last two years, the Energy Department received a massive $40 billion infusion in funding for clean-energy programs from the stimulus law, a signature Obama policy. When that money runs out this year, a request for more on top of it would be met with flat-out derision from most congressional Republicans. Increasing renewable-energy initiatives at the Pentagon can also help Obama advance his broader, national goals for transitioning the U.S. economy from fossil fuels to alternative sources. As the largest industrial consumer of energy in the world, the U.S. military can have a significant impact on energy markets - if it demands significant amounts of energy from alternative sources, it could help scale up production and ramp down prices for clean energy on the commercial market. Obama acknowledged those impacts in a speech last month at the Buckley Air Force Base in Colorado. "The Navy is going to purchase enough clean-energy capacity to power a quarter of a million homes a year. And it won't cost taxpayers a dime," Obama said. "What does it mean? It means that the world's largest consumer of energy - the Department of Defense - is making one of the largest commitments to clean energy in history," the president added. "That will grow this market, it will strengthen our energy security." Experts also hope that Pentagon engagement in clean-energy technology could help yield breakthroughs with commercial applications. Kingston acknowledged that the upfront costs for alternative fuels are higher than for conventional oil and gasoline. For example, the Air Force has pursued contracts to purchase biofuels made from algae and camelina, a grass-like plant, but those fuels can cost up to $150 a barrel, compared to oil, which is lately going for around $100 a barrel. Fuel-efficient hybrid tanks can cost $1 million more than conventional tanks - although in the long run they can help lessen the military's oil dependence, Kingston said Republicans recognize that the up-front cost can yield a payoff later. "It wouldn't be dead on arrival. But we'd need to see a two- to three-year payoff on the investment," Kingston said. Military officials - particularly Navy Secretary Ray Mabus, who has made alternative energy a cornerstone of his tenure - have been telling Congress for years that the military's dependence on fossil fuels puts the troops - and the nation's security - at risk. Mabus has focused on meeting an ambitious mandate from a 2007 law to supply 25 percent of the military's electricity from renewable power sources by 2025. (Obama has tried and failed to pass a similar national mandate.) Last June, the DOD rolled out its first department-wide energy policy to coalesce alternative and energy-efficient initiatives across the military services. In January, the department announced that a study of military installations in the western United States found four California desert bases suitable to produce enough solar energy - 7,000 megawatts - to match seven nuclear power plants. And so far, those moves have met with approval from congressional Republicans. Even so, any request for new Pentagon spending will be met with greater scrutiny this year. The Pentagon's budget is already under a microscope, due to $500 billion in automatic cuts to defense spending slated to take effect in 2013. But even with those challenges, clean-energy spending probably won't stand out as much in the military budget as it would in the Energy Department budget. Despite its name, the Energy Department has traditionally had little to do with energy policy - its chief portfolio is maintaining the nation's nuclear weapons arsenal. Without the stimulus money, last year only $1.9 billion of Energy's $32 billion budget went to clean-energy programs. A spending increase of just $1 billion would make a big difference in the agency's bottom line. But it would probably be easier to tuck another $1 billion or $2 billion on clean-energy spending into the

**No vote switching --- Romney supports nuclear too.**

**CSM 8/31** (Obama vs. Romney 101: 7 ways they differ on energy issues, <http://www.csmonitor.com/USA/DC-Decoder/2012/0831/Obama-vs.-Romney-101-7-ways-they-differ-on-energy-issues/Coal-power>)

4. Nuclear power The Department of Energy under Obama has provided billions of dollars in federal loan guarantees for nuclear-power development, as well as wind and other "clean" energy sources. In February, the Nuclear Regulatory Commission approved two new reactors at the Vogtle Electric Generating Plant in Georgia, the first such construction approvals in three decades. Obama regularly cites nuclear power development as part of his energy plan. On his website, Romney says he would streamline federal oversight from the Nuclear Regulatory Commission to ensure that licensing decisions for reactors that are on or adjacent to approved sites, and that use approved designs, are completed within two years. He would also expand NRC capabilities for approving additional new nuclear reactor designs. Romney supports federal loan guarantees for nuclear power, a subsidy said to be critical to its development.

**Jobs and gas prices ensure support, nuclear is not an election issue, and Obama supports it now.**

**Johnson 12** (John, Nuclear Energy Insider, April 25, "US Campaign Trail: is nuclear in the equation?", analysis.nuclearenergyinsider.com/new-build/us-campaign-trail-nuclear-equation)

In the next Presidential election, American voters will be voting with their pockets. We look at how the campaign so far has revealed which candidate will support nuclear R&D, nuclear new-build projects and ultimately preserve and create nuclear sector jobs.¶ As the U.S. Presidential election draws closer, Americans are most concerned about job creation and how the candidates plan to boost the U.S. economy.¶ Alternative energy policies have received a fair amount of publicity from the Obama administration, although nuclear power specifically is rarely mentioned on the campaign trial, primarily due to perceived safety questions.¶ Just the same, the Obama Administration is considered a nuclear supporter, having made several moves to help jumpstart America’s nuclear energy industry.¶ Obama plugged nuclear power during his first State Of The Union speech several years ago, and has generally been upbeat about the energy source’s future in the U.S.¶ ¶ The Campaign¶ ¶ Obama, a Democrat, will face Mitt Romney in the November election. Romney is expected to be named the official Republican nominee in August.¶ ¶ While Romney has not taken a stance on nuclear energy during his campaign, the Obama administration has made significant investments in the sector, including a $450m budget request in March intended to advance the development of American-made small modular reactors (SMRs). Congress still needs to approve the authorization for funding.¶ ¶ The SMRs are expected to be ready for commercial use within 10 years, and are intended for small electric grids and for locations that cannot support large reactors, offering utilities the flexibility to scale production as demand changes.¶ ¶ “The Obama Administration and the Energy Department are committed to an all-of-the-above energy strategy that develops every source of American energy, including nuclear power, and strengthens our competitive edge in the global clean energy race,” U.S. Energy Secretary Steven Chu said when the program was announced. ¶ ¶ “Through the funding for small modular nuclear reactors, the Energy Department and private industry are working to position America as the leader in advanced nuclear energy technology and manufacturing.” ¶ ¶ John Keeley, manager of media relations for the Nuclear Energy Institute, said that the Obama administration has done what it can to support the deployment on new build-outs in the United States to build out nuclear, as well as supporting research and development efforts, such as those in the small reactor space. ¶ ¶ Research support¶ ¶ In addition, the U.S. has invested $170 million in research grants at more than 70 universities, supporting research and development into a full spectrum of technologies, from advanced reactor concepts to enhanced safety design.¶ ¶ “The President was explicit in his State Of The Union speech about the virtues of nuclear as a technology and its role in clean air generation,” said Keeley. “And he has been supportive of developing more nuclear plants in this country. Those initiatives have to be identified as significant evidence of support for the nuclear sector.”¶ ¶ There are currently 104 nuclear power reactors operating in the U.S. in 31 states, operated by 30 different utilities. There are four new nuclear reactors being built in the U.S., including two in George at total expected cost of $14bn. ¶ ¶ In another sign of the U.S support for the industry, the federal government provided utility company Southern with an $8.3bn loan guarantee for the Vogtle Units 3 and 4, the first new nuclear plants to be built in the U.S. in the last 30 years. They are expected to be operational in 2016 and 2017.¶ ¶ The U.S. Energy Department has also supported the Vogtle project and the development of the next generation of nuclear reactors by providing more than $200m through a cost-share agreement to support the licensing reviews for the Westinghouse AP1000 reactor design certification. ¶ ¶ In addition to the Vogtle plants, SCANA, a subsidiary of South Carolina Electric & Gas Co. plans to add two reactors to its nuclear power plant near Jenkinsville, S.C., by 2016 and 2019.¶ ¶ “There is certainly political consensus in support of clean generation, and large scale cultural consensus as well,” said Keeley. ¶ ¶ Political benefits of nuclear support¶ ¶ As gas prices in the U.S. continue to soar, it’s possible that the tide will turn more in favor of nuclear and other clean energy sources, especially as electric cars take a stronger foothold. In addition, the job creation benefits from nuclear could work their way into the political landscape as well.¶ ¶ The two new Vogtle nuclear plants are expected.

**The government subsidizes SMR’s now.**

**Newest surveys show overwhelming support.**

**PR Newswire 11** (11/3, Americans' Support for Nuclear Energy Holds at Majority Level 6 Months After Japan Accident, [www.prnewswire.com/news-releases/americans-support-for-nuclear-energy-holds-at-majority-level-6-months-after-japan-accident-130981293.html](http://www.prnewswire.com/news-releases/americans-support-for-nuclear-energy-holds-at-majority-level-6-months-after-japan-accident-130981293.html))

Six months after the Fukushima Daiichi accident in Japan, solid majorities of Americans still view nuclear energy favorably, still support the extension of operating licenses at existing facilities that meet federal safety standards, and still believe that construction of a new reactor is acceptable at the site of the nearest nuclear power plant that already is operating, a new national survey shows.¶ While support for nuclear energy has declined from the historically high level seen one year ago, support on a variety of measures is holding at the majority levels found consistently in public opinion surveys conducted throughout the past decade.¶ In the new telephone survey of 1,000 U.S. adults, 62 percent of respondents said they favor the use of nuclear energy as one of the ways to provide electricity in the United States, with 35 percent opposed. Those strongly favoring nuclear energy outnumber those strongly opposed by a two-to-one ratio, 28 percent vs. 13 percent, according to the survey conducted Sept. 22-24 by Bisconti Research Inc. with GfK Roper.¶ The survey was sponsored by the Nuclear Energy Institute and has a margin of error of plus or minus three percentage points. Numerous surveys conducted by Bisconti Research over the past decade show that public support for nuclear energy topped 60 percent each year, rising as high as 74 percent of Americans in March 2010.¶ "While there is some evidence of impact of the Fukushima events, support for nuclear energy continues at much higher levels than in earlier decades," company President Ann Bisconti said. "Turmoil in oil-rich areas of the world and hikes in oil prices historically have focused public opinion even more on nuclear energy, and may have helped to preclude serious impact of events in Japan on public attitudes."¶ Despite the Fukushima accident, 67 percent of Americans rate U.S. nuclear power plant safety high. This is identical to the safety rating found in a national survey last February, one month prior to the earthquake and tsunami that caused the Fukushima accident. Eighty-two percent of Americans believe that "we should learn the lessons from the Japanese accident and continue to develop advanced nuclear energy plants to meet America's growing electricity demand," the new survey showed.¶ Nuclear energy supplies electricity to 20 percent of U.S. homes and businesses, even though the 104 nuclear facilities operating in 31 states constitute only 10 percent of the nation's electric generating capacity.¶ Eighty-five percent of those surveyed agree that, "When their original operating licenses expire, we should renew the license of nuclear power plants that continue to meet federal safety standards." Seven months ago, 88 percent of Americans agreed with this statement.¶ In the latest survey, 59 percent of Americans agree, "We should definitely build more nuclear power plants in the future." Thirty-eight percent disagree. Still, 75 percent of Americans agree that, "Electric utilities should prepare now so that new nuclear power plants could be built if needed in the next decade." Twenty-two percent disagree.¶ Two-thirds of Americans (67 percent) say they would find a new reactor acceptable at the site of the nearest nuclear power plant that already is operating, while 28 percent find this unacceptable. Seven months ago, 76 percent of Americans found this expansion acceptable, with 20 percent saying it was not acceptable.¶ "This survey, like other recent surveys, confirms that large majorities of Americans associate nuclear energy with issues they care about, including clean air, reliable and affordable electricity, energy independence, and economic growth and job creation," Bisconti said.

**Winners win.**

**Creamer 12** (Robert, political organizer and strategist, "Why GOP Collapse on the Payroll Tax Could be a Turning Point Moment", 1/2, [www.huffingtonpost.com/robert-creamer/why-gop-collapse-on-the-p\_b\_1167491.html](http://www.huffingtonpost.com/robert-creamer/why-gop-collapse-on-the-p_b_1167491.html))

Strength and victory are enormous political assets. Going into the New Year, they now belong to the President and the Democrats. One of the reasons why the debt ceiling battle inflicted political damage on President Obama is that it made him appear ineffectual - a powerful figure who had been ensnared and held hostage by the Lilliputian pettiness of hundreds of swarming Tea Party ideological zealots. In the last few months -- as he campaigned for the American Jobs Act -- he has shaken free of those bonds. Now voters have just watched James Bond or Indiana Jones escape and turn the tables on his adversary. Great stories are about a protagonist who meets and overcomes a challenge and is victorious. The capitulation of the House Tea Party Republicans is so important because it feels like the beginning of that kind of heroic narrative. Even today most Americans believe that George Bush and the big Wall Street Banks - not by President Obama -- caused the economic crisis. Swing voters have never lost their fondness for the President and don't doubt his sincerity. But they had begun to doubt his effectiveness. They have had increasing doubts that Obama was up to the challenge of leading them back to economic prosperity. The narrative set in motion by the events of the last several weeks could be a turning point in voter perception. It could well begin to convince skeptical voters that Obama is precisely the kind of leader they thought he was back in 2008 - a guy with the ability to lead them out of adversity - a leader with the strength, patience, skill, will and resoluteness to lead them to victory. That now contrasts with the sheer political incompetence of the House Republican Leadership that allowed themselves to be cornered and now find themselves in political disarray. And it certainly contrasts with the political circus we have been watching in the Republican Presidential primary campaign. 3). This victory will inspire the dispirited Democratic base. Inspiration is the feeling of empowerment - the feeling that you are part of something larger than yourself and can personally play a significant role in achieving that goal. It comes from feeling that together you can overcome challenges and win. Nothing will do more to inspire committed Democrats than the sight of their leader -- President Obama - out maneuvering the House Republicans and forcing them into complete capitulation. The events of the last several weeks will send a jolt of electricity through the Progressive community. The right is counting on Progressives to be demoralized and dispirited in the coming election. The President's victory on the payroll tax and unemployment will make it ever more likely that they will be wrong. 4). When you have them on the run, that's the time to chase them. The most important thing about the outcome of the battle over the payroll tax and unemployment is that it shifts the political momentum at a critical time. Momentum is an independent variable in any competitive activity - including politics. In a football or basketball game you can feel the momentum shift. The tide of battle is all about momentum. The same is true in politics. And in politics it is even more important because the "spectators" are also the players - the voters. People follow - and vote -- for winners. The bandwagon effect is enormously important in political decision-making. Human beings like to travel in packs. They like to be at the center of the mainstream. Momentum shifts affect their perceptions of the mainstream. For the last two years, the right wing has been on the offensive. Its Tea Party shock troops took the battle to Democratic Members of Congress. In the Mid-Terms Democrats were routed in district after district. Now the tide has turned. And when the tide turns -when you have them on the run - that's the time to chase them.

**AT: Russia Impx**

**Conflicts are inevitable and won’t escalate.**

**Weitz 11** (Richard, senior fellow at the Hudson Institute and a World Politics Review senior editor 9/27/2011, “Global Insights: Putin not a Game-Changer for U.S.-Russia Ties,” <http://www.scribd.com/doc/66579517/Global-Insights-Putin-not-a-Game-Changer-for-U-S-Russia-Ties>)

Fifth, there will inevitably be areas of conflict between Russia and the United States regardless of who is in the Kremlin. Putin and his entourage can never be happy with having NATO be Europe's most powerful security institution, since Moscow is not a member and cannot become one. Similarly, the Russians will always object to NATO's missile defense efforts since they can neither match them nor join them in any meaningful way. In the case of Iran, Russian officials genuinely perceive less of a threat from Tehran than do most Americans, and Russia has more to lose from a cessation of economic ties with Iran -- as well as from an Iranian-Western reconciliation. On the other hand, these conflicts can be managed, since they will likely remain limited and compartmentalized. Russia and the West do not have fundamentally conflicting vital interests of the kind countries would go to war over. And as the Cold War demonstrated, nuclear weapons are a great pacifier under such conditions. Another novel development is that Russia is much more integrated into the international economy and global society than the Soviet Union was, and Putin's popularity depends heavily on his economic track record. Beyond that, there are objective criteria, such as the smaller size of the Russian population and economy as well as the difficulty of controlling modern means of social communication, that will constrain whoever is in charge of Russia.

**No nuclear strike.**

**Graham 7** (Thomas Graham, senior advisor on Russia in the US National Security Council staff 2002-2007, 2007, "Russia in Global Affairs” The Dialectics of Strength and Weakness http://eng.globalaffairs.ru/numbers/20/1129.html)

An astute historian of Russia, Martin Malia, wrote several years ago that “Russia has at different times been demonized or divinized by Western opinion less because of her real role in Europe than because of the fears and frustrations, or hopes and aspirations, generated within European society by its own domestic problems.” Such is the case today. To be sure, mounting Western concerns about Russia are a consequence of Russian policies that appear to undermine Western interests, but they are also a reflection of declining confidence in our own abilities and the efficacy of our own policies. Ironically, this growing fear and distrust of Russia come at a time when Russia is arguably less threatening to the West, and the United States in particular, than it has been at any time since the end of the Second World War. Russia does not champion a totalitarian ideology intent on our destruction, its military poses no threat to sweep across Europe, its economic growth depends on constructive commercial relations with Europe, and its strategic arsenal – while still capable of annihilating the United States – is under more reliable control than it has been in the past fifteen years and the threat of a strategic strike approaches zero probability. Political gridlock in key Western countries, however, precludes the creativity, risk-taking, and subtlety needed to advance our interests on issues over which we are at odds with Russia while laying the basis for more constructive long-term relations with Russia.

**2AC—Enrichment DA**

**UQ overwhelms --- global expansion is inevitable.**

**Adnani 6/7** (Amir, Founder of Uranium Energy Corp. and has served as the president, CEO and a director since 2005, Under his leadership, Uranium Energy has become North America’s newest uranium-producing company and the first uranium producer in the U.S. in more than seven years. The company has achieved its prime status, including the broad support of major securities analysts and institutional investors, due in large part to Adnani’s early and continuing focus on bringing many of the uranium industry’s most experienced technical personnel into management, *Uranium Investing – Why Nuclear Power Has A Bright Future*, http://oakshirefinancial.com/2012/06/07/uranium-investing-why-nuclear-power-has-a-bright-future/)

If you asked Amir Adnani, chief executive of Uranium Energy Corp., why he was so bullish about uranium in 2007, his answer would be the same as it is today: There is not enough supply to meet demand. Investors might wonder if Fukushima has drawn the curtain on this industry, but Adnani says in this exclusive interview with The Energy Report that this is just the first act for nuclear power. Adnani is taking advantage of what he sees as a once-in-a-lifetime opportunity to grow his Texas-based company, snapping up properties that are now “on sale.”

The Energy Report: More than a year after a tsunami left the Fukushima nuclear reactor in Japan without the ability to sufficiently cool itself, Japan shut down the Tomari 3 nuclear reactor, leaving all 44,200 megawatts (MW) of the country’s nuclear capacity idle with no set date for restart. When investors hear news like that, they might get the impression that nuclear power is a sunset industry. What’s your take?

Amir Adnani: There is no doubt that the nuclear disaster in Japan has been one of the more challenging events facing the industry. Although just a couple weeks after those reactors were taken off-line, a town with two reactors in the western prefecture of Fukui voted in favor of restoring operations. Prime Minister Yoshihiko Noda and the federal government now have to make the final decision and several media outlets are reporting that the government may order the restart of two reactors next week. Many industry observers and analysts are expecting about 20–30 of the reactors to come back on-line over the course of the next year.

Japan is very much dependent on nuclear power. About one-third of Japanese electricity was generated through nuclear power prior to Fukushima. As recently as this February, major industries, like Japan’s steelmakers, have been urging the early restart of nuclear power plants. They fear potential power cuts and the rising costs associated with electricity from fossil fuels could affect their viability. Japan is a major export economy and has very energy-intensive industries to maintain and run competitively. Nuclear power will ultimately, in my opinion, be part of the energy mix in Japan. With time, we’ll see plants come back on-line.

TER: Is that enough to assuage investor concerns? What about what’s happened in Germany, Switzerland and some other European nations that have curtailed energy produced by nuclear reactors?

AA: Certainly investors have sold off uranium holdings based on the situation in Japan and I believe there was both an emotional and political knee-jerk reaction toward the industry. However, if we **take a closer look** at this through a sober vantage point, the effects of Germany phasing its reactors offline by 2022 is not nearly as material as the flip side of it: There remains **significant nuclear growth** in developing markets. Led by China and India, countries like Russia, South Korea and even oil-rich nations like Saudi Arabia and the **U**nited **A**rab **E**mirates are planning to build reactors that would nearly double the world’s installed nuclear capacity by 2030. These countries continue to see nuclear power’s unique ability to generate baseload power in a carbon dioxide-free and low-cost way as a very big advantage in their energy mix.

TER: Where is the growth for nuclear in a post-Fukushima world going to come from?

AA: The growth in the nuclear industry is going to come from exactly where it was going to come from pre-Fukushima. The countries and the economies that are expanding most rapidly are the ones that really need more power. The growth isn’t going to come from the West. In fact, only 3% of the reactors that are under construction right now—there are about 65 reactors under construction—are in G7 countries. The top four markets are China, Russia, India and South Korea. Saudi Arabia plans to build 16 nuclear reactors, which is a $400 billion program. Chinese officials have reiterated the country’s plans to grow its nuclear capacity to about 70 gigawatts (GW) by 2020. India plans to get to about 60–63 GW of installed nuclear capacity by 2030 and it further aims to supply 25% of electricity from nuclear power by 2050.

The plans to develop nuclear power in China and other countries are very much driven by a set of realities that is very different and very acute. People are dying every year in China, literally choking to death, because of all of the nasty toxins that are being put into the environment by burning coal. It takes a lot of infrastructure to get coal into various places in China where some of that infrastructure doesn’t exist yet. No other form of power can match nuclear power’s ability to generate electricity in a low-cost, emission-free manner on a baseload scale.

Having said that, there is incremental growth in the developed world, too. The U.S. Nuclear Regulatory Commission approved four licenses earlier this year for operating nuclear reactors to come on-line in Georgia and South Carolina. They are the first licenses of this type to be issued in the U.S. in almost 30 years. Even in the United Kingdom there have been announcements to build seven or eight new nuclear reactors. It is very positive to see those developments post-Fukushima.

**2ac—DoD Budget Trade Off DA**

**Alternative financing doesn’t spend cash up-front**

**DOE 11** “Funding Federal Energy and Water Projects”, July, <http://www.nrel.gov/docs/fy11osti/52085.pdf>

On-site renewable PPAs allow Federal agencies to fund on-site renewable energy projects with **no** **upfront** capital **costs** incurred. A developer installs a renewable energy system on agency property under an agreement that the agency will purchase the power generated by the system. The agency pays for the system through these power purchase payments **over the life of the contract**. After installation, the developer owns, operates, and maintains the system for the life of the contract. The PPA price is typically determined through a competitive procurement process.

**Doesn’t spend appropriations**

**GAO 8** “Federal Energy Management: Addressing Challenges through Better Plans and Clarifying the Greenhouse Gas Emission Measure Will Help Meet Long-term Goals for Buildings”, September, <http://www.gao.gov/assets/290/282358.html>

Constrained Budgets Limit Agencies' Ability to Undertake Energy Projects, and Agencies Are Turning to Alternative Financing: Meeting long-term energy goals will require major initial capital investment. According to DOE, to meet the energy goals under E.O. 13423, the federal government would have to invest approximately $1.1 billion annually (beginning in fiscal year 2008, based on fiscal year 2007 performance) through 2015 on energy-related projects. In addition, in June 2007, ASE reported that meeting federal energy goals will require an investment of approximately $11 billion from 2009 through 2015, or $1.5 billion annually.[Footnote 23] Paying for this investment up front with appropriated funds may be difficult for agencies because energy projects compete with other budget priorities. As figure 10 shows, from fiscal years 2000 through 2007, upfront funding ranged from approximately $121 million to $335 million annually--well below the $1.1 billion level of investment needed annually to meet future energy goals, according to DOE's estimate. Furthermore, according to draft DOE data for fiscal year 2007, federal agencies will face an estimated $5.3 billion gap in appropriated funding for energy investment from fiscal year 2008 through 2015. Figure 10: Approximate Upfront Funding for Energy Projects, Fiscal Years 2000-2007: This figure is a shaded line graph showing approximate upfront funding for energy projects, fiscal years 2000-2007. The X axis represents the fiscal year, and the Y axis represents the dollars (in millions). Source: GAO analysis of DOE data for 2000-2005 and draft data for 2006 and 2007. [Chart Deleted] Officials from all six agencies we reviewed cited budget constraints as a challenge to meeting future energy goals. For example, only 4 of the 10 military installations we visited have received upfront funding from DOD's Energy Conservation Investment Program since 2003.[Footnote 24] Furthermore, several DOD installation officials told us that they no longer request funding for energy improvements because they do not believe upfront funding will be made available. In our previous work we similarly noted that agency officials had stopped requesting such funding. We also noted that paying for energy efficiency improvements with upfront funding is generally the most cost-effective means of acquiring them.[Footnote 25] Because the total amount of upfront funding is limited, federal officials increasingly rely on alternative financing mechanisms--such as contracts with private companies that initially pay for energy improvements and then receive compensation from the agencies over time from the monetary savings they realize from these projects-- to meet energy goals. Seven of the 11 civilian sites and 9 of the 10 military installations we visited have used, are currently using, or are planning to use alternative financing to implement energy projects. Furthermore, in an August 2007 memo, the White House Council on Environmental Quality directed agency heads to enter into energy savings performance contracts (ESPC) and utility energy savings contracts (UESC) for at least 10 percent of annual energy costs to accomplish energy-related goals.[Footnote 26] It further directed them to report on progress toward finding and developing alternatively financed projects.[Footnote 27] Figure 11 shows the total amount of funding agencies received from upfront funding and alternative financing for UESCs and for ESPCs. As discussed earlier, most agencies met their fiscal year 2007 goals. However, for 2008 onward, if funding stays at the current level, there is an apparent gap between the amount received and the amount estimated to meet energy goals.

**We solve without busting the budget**

**Chang et al. 99** [Ike Y. Chang, Steven Galing, Carolyn Wong, Howell Yee, Elliot I. Axelband, Mark Onesi & Kenneth R Horn, “Use of Public-Private Partnerships to Meet Future Army Needs,” Rand Corporation, Prepared for the United States Army by RAND's Arroyo, 1999

Access to Capital

Access to capital often means access to financing. In this case, the money would be used to help finance a collaborative effort. Access to capital is relevant to infrastructure, intellectual property, and financial arrangement PPPs.

The private sector often borrows money to finance its business expenses. Business expenses could include the expansion of a company's infrastructure, the development of intellectual property, or the launching of a new financial arrangement. A firm may enjoy **excellent credit** with one or more financial institutions that can **extend loans** to the company. These factors indicate that the private¶ sector may have access to capital that could be applied toward collaborative efforts that benefit the Army.

The amount the Army can spend on infrastructure is limited each year by its budget. The Army does not borrow money for infrastructure needs. Hence, the Army does not have the experience or the legal authority to access capital beyond its **budgetary constraints**. Therefore, in infrastructure PPPs, the Army should look to its private sector partner for at least some of the collaborative effort funds.

The Army's S&T budget has been decreasing and is likely to continue to decline. In addition, the Army funds its R&D based on the size of its budget. The Army does not borrow money to fund any project beyond what budget funds will provide for, regardless of how advantageous the project may seem. So the Army has **only one source** of R&D funds, and the level of those funds is often **inadequate** to pay for all the research the Army needs to reach its R&D goals. One way for the Army to leverage its R&D dollars is to enter into collaborative efforts with **leading-edge firms** that have access to capital and share¶ in the funding of dual-use research. 5 pg. 14-15

**O&M Budget expense**

**DoD Financial Management Regulation 8** [“SUMMARY OF MAJOR CHANGES TO DOD 7000.14-R, VOLUME 2A, CHAPTER 1,” Volume 2A, Chapter 1, 􀃋October 2008, pg. http://comptroller.defense.gov/fmr/02a/02a\_01.pdf

0102 FUNDING POLICIES

010201. Criteria for Determining Expense and Investment Costs

A. **Appropriation accounts** form the structure for the President’s budget request and are the basis for congressional action. The appropriations are further organized into budget activities of appropriations with programs, projects or activities of similar purposes. To support **management** of the **D**epartment **o**f **D**efense’s programs, projects or activities, resource requirements should be organized and categorized consistently within the appropriation and budget activity structure. The following sections provide guidance for categorizing resource requirements into the various appropriations.

B. Basic Distinctions Between Expense and Investment Costs. The criteria for cost definitions consider the intrinsic or innate qualities of the item such as durability in the case of an investment cost or consumability in the case of an operating cost and the conditional circumstances under which an item is used or the way it is managed. In all cases where the definitions appear to conflict, the conditional circumstances will prevail. The following guidance is provided to determine whether a cost is **either an expense or an investment**. All costs are classified as either an expense or an investment.

1. Expenses are the costs incurred to operate and maintain the organization, such as personal services, supplies, and utilities.

2. Investments are the costs that result in the **acquisition** of, or an addition to, end items. These costs benefit future periods and generally are of a long-term character such as real property and personal property.

C. Policy for Expense and Investment Costs

1. DoD policy requires cost definition criteria that can be used in determining the content of the programs and activities that comprise the Defense budget. The primary reasons for these distinctions are to allow for more **informed resource allocation decisions** and to establish criteria for determining which costs are appropriate to the various defense appropriations.

2. The cost definition criteria contained in this policy are only applicable to the determination of the appropriation to be used for budgeting and execution. Cost definitions for accounting purposes are contained in Volume I of this regulation.

3. Costs budgeted in the Operation and Maintenance (O&M) and Military Personnel appropriations are considered expenses. Costs budgeted in the **Procurement** and Military Construction appropriations are considered investments. Costs budgeted in the Research, Development, Test and Evaluation (RDT&E), Base Realignment and Closure (BRAC), and Family Housing appropriations include both expenses and investments. Pg. 1-13

**2ac—Multilat DA**

**Pursuit of hegemony’s locked-in.**

**Dorfman 12** (Zach, assistant editor of Ethics and International Affairs, the journal of the Carnegie Council, and co-editor of the Montreal Review, “What We Talk About When We Talk About Isolationism”, May 18, <http://dissentmagazine.org/online.php?id=605>)

The rise of China notwithstanding, the United States remains the world’s sole superpower. Its military (and, to a considerable extent, political) hegemony extends not just over North America or even the Western hemisphere, but also Europe, large swaths of Asia, and Africa. Its interests are global; nothing is outside its potential sphere of influence. There are an estimated 660 to 900 American military bases in roughly forty countries worldwide, although figures on the matter are notoriously difficult to ascertain, largely because of subterfuge on the part of the military. According to official data there are active-duty U.S. military personnel in 148 countries, or over 75 percent of the world’s states. The United States checks Russian power in Europe and Chinese power in South Korea and Japan and Iranian power in Iraq, Afghanistan, and Turkey. In order to maintain a frigid peace between Israel and Egypt, the American government hands the former $2.7 billion in military aid every year, and the latter $1.3 billion. It also gives Pakistan more than $400 million dollars in military aid annually (not including counterinsurgency operations, which would drive the total far higher), Jordan roughly $200 million, and Colombia over $55 million.

U.S. long-term military commitments are also manifold. It is one of the five permanent members of the UN Security Council, the only institution legally permitted to sanction the use of force to combat “threats to international peace and security.” In 1949 the United States helped found NATO, the first peacetime military alliance extending beyond North and South America in U.S. history, which now has twenty-eight member states. The United States also has a trilateral defense treaty with Australia and New Zealand, and bilateral mutual defense treaties with Japan, Taiwan, the Philippines, and South Korea. It is this sort of reach that led Madeleine Albright to call the United States the sole “indispensible power” on the world stage.

The idea that global military dominance and political hegemony is in the U.S. national interest—and the world’s interest—is generally taken for granted domestically. Opposition to it is limited to the libertarian Right and anti-imperialist Left, both groups on the margins of mainstream political discourse. Today, American supremacy is assumed rather than argued for: in an age of tremendous political division, **it is a bipartisan first principle of foreign policy, a presupposition**. In this area at least, one wishes for a little less agreement.

In Promise and Peril: America at the Dawn of a Global Age, Christopher McKnight Nichols provides an erudite account of a period before such a consensus existed, when ideas about America’s role on the world stage were fundamentally contested. As this year’s presidential election approaches, each side will portray the difference between the candidates’ positions on foreign policy as immense. Revisiting Promise and Peril shows us just how narrow the American worldview has become, and how our public discourse has become narrower still.

Nichols focuses on the years between 1890 and 1940, during America’s initial ascent as a global power. He gives special attention to the formative debates surrounding the Spanish-American War, U.S. entry into the First World War, and potential U.S. membership in the League of Nations—debates that were constitutive of larger battles over the nature of American society and its fragile political institutions and freedoms. During this period, foreign and domestic policy were often linked as part of a cohesive political vision for the country. Nichols illustrates this through intellectual profiles of some of the period’s most influential figures, including senators Henry Cabot Lodge and William Borah, socialist leader Eugene Debs, philosopher and psychologist William James, journalist Randolph Bourne, and the peace activist Emily Balch. Each of them interpreted isolationism and internationalism in distinct ways, sometimes deploying the concepts more for rhetorical purposes than as cornerstones of a particular worldview.

Today, isolationism is often portrayed as intellectually bankrupt, a redoubt for idealists, nationalists, xenophobes, and fools. Yet the term now used as a political epithet has deep roots in American political culture. Isolationist principles can be traced back to George Washington’s farewell address, during which he urged his countrymen to steer clear of “foreign entanglements” while actively seeking nonbinding commercial ties. (Whether economic commitments do in fact entail political commitments is another matter.) Thomas Jefferson echoed this sentiment when he urged for “commerce with all nations, [and] alliance with none.” Even the Monroe Doctrine, in which the United States declared itself the regional hegemon and demanded noninterference from European states in the Western hemisphere, was often viewed as a means of isolating the United States from Europe and its messy alliance system.

In Nichols’s telling, however, modern isolationism was born from the debates surrounding the Spanish-American War and the U.S. annexation of the Philippines. Here isolationism began to take on a much more explicitly anti-imperialist bent. Progressive isolationists such as William James found U.S. policy in the Philippines—which it had “liberated” from Spanish rule just to fight a bloody counterinsurgency against Philippine nationalists—anathema to American democratic traditions and ideas about national self-determination.

As Promise and Peril shows, however, “cosmopolitan isolationists” like James never called for “cultural, economic, or complete political separation from the rest of the world.” Rather, they wanted the United States to engage with other nations peacefully and without pretensions of domination. They saw the United States as a potential force for good in the world, but they also placed great value on neutrality and non-entanglement, and wanted America to focus on creating a more just domestic order. James’s anti-imperialism was directly related to his fear of the effects of “bigness.” He argued forcefully against all concentrations of power, especially those between business, political, and military interests. He knew that such vested interests would grow larger and more difficult to control if America became an overseas empire.

Others, such as “isolationist imperialist” Henry Cabot Lodge, the powerful senator from Massachusetts, argued that fighting the Spanish-American War and annexing the Philippines were isolationist actions to their core. First, banishing the Spanish from the Caribbean comported with the Monroe Doctrine; second, adding colonies such as the Philippines would lead to greater economic growth without exposing the United States to the vicissitudes of outside trade. Prior to the Spanish-American War, many feared that the American economy’s rapid growth would lead to a surplus of domestic goods and cause an economic disaster. New markets needed to be opened, and the best way to do so was to dominate a given market—that is, a country—politically. Lodge’s defense of this “large policy” was public and, by today’s standards, quite bald. Other proponents of this policy included Teddy Roosevelt (who also believed that war was good for the national character) and a significant portion of the business class. For Lodge and Roosevelt, “isolationism” meant what is commonly referred to today as “unilateralism”: the ability for the United States to do what it wants, when it wants.

Other “isolationists” espoused principles that we would today call internationalist. Randolph Bourne, a precocious journalist working for the New Republic, passionately opposed American entry into the First World War, much to the detriment of his writing career. He argued that hypernationalism would cause lasting damage to the American social fabric. He was especially repulsed by wartime campaigns to Americanize immigrants. Bourne instead envisioned a “transnational America”: a place that, because of its distinct cultural and political traditions and ethnic diversity, could become an example to the rest of the world. Its respect for plurality at home could influence other countries by example, but also by allowing it to mediate international disputes without becoming a party to them. Bourne wanted an America fully engaged with the world, but not embroiled in military conflicts or alliances.

This was also the case for William Borah, the progressive Republican senator from Idaho. Borah was an agrarian populist and something of a Jeffersonian: he believed axiomatically in local democracy and rejected many forms of federal encroachment. He was opposed to extensive immigration, but not “anti-immigrant.” Borah thought that America was strengthened by its complex ethnic makeup and that an imbalance tilted toward one group or another would have deleterious effects. But it is his famously isolationist foreign policy views for which Borah is best known. As Nichols writes:

He was consistent in an anti-imperialist stance against U.S. domination abroad; yet he was ambivalent in cases involving what he saw as involving obvious national interest….He also without fail argued that any open-ended military alliances were to be avoided at all costs, while arguing that to minimize war abroad as well as conflict at home should always be a top priority for American politicians.

Borah thus cautiously supported entry into the First World War on national interest grounds, but also led a group of senators known as “the irreconcilables” in their successful effort to prevent U.S. entry into the League of Nations. His paramount concern was the collective security agreement in the organization’s charter: he would not assent to a treaty that stipulated that the United States would be obligated to intervene in wars between distant powers where the country had no serious interest at stake.

Borah possessed an alternative vision for a more just and pacific international order. Less than a decade after he helped scuttle American accession to the League, he helped pass the Kellogg-Briand Pact (1928) in a nearly unanimous Senate vote. More than sixty states eventually became party to the pact, which outlawed war between its signatories and required them to settle their disputes through peaceful means. Today, realists sneer at the idealism of Kellogg-Briand, but the Senate was aware of the pact’s limitations and carved out clear exceptions for cases of national defense. Some supporters believed that, if nothing else, the law would help strengthen an emerging international norm against war. (Given what followed, this seems like a sad exercise in wish-fulfillment.) Unlike the League of Nations charter, the treaty faced almost no opposition from the isolationist bloc in the Senate, since it did not require the United States to enter into a collective security agreement or abrogate its sovereignty. This was a kind of internationalism Borah and his irreconcilables could proudly support.

The United States today looks very different from the country in which Borah, let alone William James, lived, both domestically (where political and civil freedoms have been extended to women, African Americans, and gays and lesbians) and internationally (with its leading role in many global institutions). But different strains of isolationism persist. Newt Gingrich has argued for a policy of total “energy independence” (in other words, domestic drilling) while fulminating against President Obama for “bowing” to the Saudi king. While recently driving through an agricultural region of rural Colorado, I saw a giant roadside billboard calling for American withdrawal from the UN.

Yet in the last decade, the Republican Party, with the partial exception of its Ron Paul/libertarian faction, has veered into such a belligerent unilateralism that its graybeards—one of whom, Senator Richard Lugar of Indiana, just lost a primary to a far-right challenger partly because of his reasonableness on foreign affairs—were barely able to ensure Senate ratification of a key nuclear arms reduction treaty with Russia. Many of these same people desire a unilateral war with Iran.

And it isn’t just Republicans. Drone attacks have intensified in Yemen, Pakistan, and elsewhere under the Obama administration. Massive troop deployments continue unabated. We spend over $600 billion dollars a year on our military budget; the next largest is China’s, at “only” around $100 billion. Administrations come and go, but **the national security state appears here to stay**.

## \*\*\* 1AR

### AT: Makhijani Ev

#### Their evidence is wrong.

**Barton 10** Charles, frmr PhD Candidate in History, MA in Philsophy, worked on the LFTR concept for about 2/3eds of his ORNL career and recognized by nuclear bloggers most of whom have technical training, and has been mentioned by the Wall Street Journal, “Arjun Makhijani and the Modular Small Reactor null-hypothesis” October 2, 2010, http://nucleargreen.blogspot.com/2010/10/arjun-makhijani-and-modular-small.html)

Arjun Makhijani (with Michele Boyd) has recently published a fact sheet on Small Modular Reactors which in effect advertises itself as the null-hypothesis to the case I an others have been making for some time on the advantages of small reactors. Small Modular ReactorsNo Solution for the Cost, Safety, and Waste Problems of Nuclear Power, Makhijani's title proclaims. But what is the evidence that backs Makhijani's case up. As it turns out Makhijani offers no empirical data to back up his assertion, so as an example of scientific reasoning, Makhijani's fact sheet rates an F.

### AT: DoD exempt

#### AND—DOD won’t choose to exempt themselves—it would force them to accept liability when they don’t have sufficient personnel or expertise to regulate nuclear power.

Marcus King, LaVar Huntzinger, and Thoi Nguyen, March 2011. CNA Environment and Energy Team, Resource Analysis Division. “Feasibility of Nuclear Power on U.S. Military Installations,” <http://www.cna.org/research/2011/feasibility-nuclear-power-us-military>.

The most basic licensing issue relates to whether NRC will have jurisdiction over potential nuclear reactor sites or whether DoD could be self-regulating. Our conversations with NRC indicate it is the only possible licensing authority for reactors that supply power to the com- mercial grid. However, DOE and DoD are authorized to regulate mission critical nuclear facilities under Section 91b of the Atomic Energy Act. There is some historical precedent for DoD exercising this authority. For example, the Army Nuclear Program was granted exception under this rule with regard to the reactor that operated aboard the Sturgis barge in the 1960s and 1970s [44].¶ It seems unlikely that DoD would pursue exemption under Section 91b in the future.10 Regulating power plants is a function that lies beyond DoD's core mission. The Department and the military ser- vices are unlikely to have personnel with sufficient expertise to act as regulators for nuclear power plants, and it could take considerable time and resources to develop such expertise. Without NRC oversight DoD would bear all associated risks.

### AT: Nuke War Turns Warming

#### A nuclear “autumn” is a more likely probability---comprehensive models and external factors make fallout and smoke effects minimal globally and virtually non-existent on coasts and the southern hemisphere.

Thompson and Schneider 86---Atmospheric scientists, climate theorists, and public policy analysts at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. (Starley L, Thompson, Stephen H. Schneider, “NUCLEAR WINTER REAPPRAISED”, Foreign Affairs, Ebsco)

In the recent NCAR research, we have not adopted any particular detailed war scenario other than the obvious assumption that the smoke and dust would come from the NATO and Warsaw Pact countries.^^ In fact, there is no general consensus on the amount and blackness of smoke that would exist in the atmosphere a few days after tbe start of a major nuclear exchange like the 6,500-megaton war the NAS study used as a baseline. Given this large range of uncertainty, we have used three different amounts of moderately black smoke—20, 60 and 180 million tons—to bracket what is currently thought to be a reasonable range of smoke amount and blackness for a large nuclear war. It should be pointed out that the NAS baseline smoke amount estimate (180 million tons) now appears to lie closer to the plausible upper limit of effective smoke amount than it once was thought to. The war is assumed to take place during a typical day in July, with smoke generated for the first two days.^ The land surface temperatures produced by the three smoke cases are shown in Figure 1. This figure shows that the average temperature changes for the northern hemisphere mid-latitudes are considerably smaller than the original estimates of one-dimensional models, and are about two-thirds of the temperature changes found in our original three-dimensional calculations. These temperature changes more closely describe a nuclear "fall" than a nuclear winter. The reasons for the moderation of temperature compared to the original calculations are well understood: first, the oceans have a large heat capacity, which ameliorates the cooling over land. Second, about three-fourths of the smoke is removed from the model's atmosphere over the course of 30 days. Third, the infrared "greenhouse" effect of the smoke, which was not included in earlier three-dimensional models, does produce a significant mitigation of the surface cooling.^^ We must stress that our results are for July, the month in which the temperature changes are likely to be largest. Similar calculations for January show much less effect simply because at that time it is already winter in the northern hemisphere. The curves in the figures represent averages over all the land areas in wide latitude zones. At any specific location in the model, however, the temperatures are considerably more variable. For example, some large areas in the interiors of the North American and Eurasian continents, particularly in Can- ada and Siberia, fall below freezing intermittently in the two cases of larger amounts of smoke. On the other hand, some areas near coasts experience little effect. Thus, it can be mis- leading to interpret the curves on the figures without taking into account geographic and weather variability as well. Indeed, for certain biological impacts it would be sufficient to have only a few hours of temperature below some critical level—e.g., subfreezing for wheat, or 10-15°C (50-59°F) for rice.^^ The global spread of acute climatic effects is assessed in Figure 2. Previous atmospheric circulation models have supported the notion that smoke would spread upwards and across the equator into the southern hemisphere for a war taking place in the northern hemisphere during the summer. While this has not changed, our current estimate is that the *amount* of smoke thus transported would be relatively small. This is reflected in the temperature curve for the subtropical latitude band 10-30°N, which shows only a small average effect, even for our largest case of 180 million tons of smoke. Equatorial and southern hemispheric temperature effects are very small in all these cases. The much greater severity of effects at high northern latitudes, however, is shown by the results for 50- 70°N.

### No Link

#### PFI uses private sector funds—it is not procurement.

Jankowski 6—Lieutenant Commander in the United States Navy [Patrick Jankowski, Matthew Lehmann (Lieutenant in the United States Navy), & Michael P. McGee (Lieutenant in the United States Navy), “Financing the DOD Acquisition Budget: ¶ Innovative Uses of Public-Private Partnerships,” MBA PROFESSIONAL REPORT, NAVAL ¶ POSTGRADUATE SCHOOL, June 2006]

In recent years federal agencies who control vast real estate portfolios have had good luck with “outleases” and “share-in-savings contracts.” Outleasing involves leasing underutilized properties to private industry. Share-in-savings contracts, on the other hand is a method in which the government pays back the contractor over time utilizing the savings generated by the product. However, DOD is generally more concerned with warfighting capability which does not normally equate to operating efficiencies. Therefore, of the options listed by the GAO, Public-Private Partnerships (PPP) or Private Finance Initiatives (PFI) seems to be the most promising for procurement of new capabilities. A Public-Private Partnership is a situation where private industry is brought in to help finance, or finance and run new government procurement programs. A Private Finance Initiative is a form of PPP where the private sector takes on the risk of financing the government project. Private industry can provide a deluge of capital and management expertise that government agencies do not possess and could not purchase with limited near term budget authority. The DOT found:

Expanding the private sector role allows the public agencies to tap private sector technical, management and financial resources in new ways to achieve certain public agency objectives such as greater cost and schedule certainty, supplementing in-house staff, innovate technology applications, specialized expertise or access to private capital (DOT 1). Pg. 4