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# 1AC

### 1AC – Hegemony Advantage

**CONTENTION 1: HEGEMONY**

**Scenario 1---Cyber-terrorism**

**Cyber-attack’s coming now---actors are probing US electricity weaknesses**

**Reed 10/11** John, Reports on the frontiers of cyber war and the latest in military technology for Killer Apps at Foreign Policy, "U.S. energy companies victims of potentially destructive cyber intrusions", 2012, killerapps.foreignpolicy.com/posts/2012/10/11/us\_energy\_companies\_victims\_of\_potentially\_destructive\_cyber\_attacks

Foreign actors are probing the networks of key American companies in an attempt to gain control of industrial facilities and transportation systems, Defense Secretary Leon Panetta revealed tonight.¶ "We know that foreign **cyber actors are probing America's critical infrastructure networks**," said Panetta, disclosing previously classified information during a speech in New York laying out the Pentagon's role in protecting the U.S. from cyber attacks. "They are targeting the computer control systems that operate chemical, **electricity** and water plants, and those that guide transportation thorough the country."¶ He went on to say that the U.S. government knows of "specific instances where intruders have gained access" to these systems -- frequently known as Supervisory Control and Data Acquisition (or SCADA) systems -- and that "they are seeking to create advanced tools to attack these systems and cause panic, destruction and even the loss of life," according to an advance copy of his prepared remarks.¶ The secretary said that **a coordinated attack on enough critical infrastructure could be a "cyber Pearl Harbor" that would "cause physical destruction and loss of life, paralyze and shock the nation, and create a profound new sense of vulnerability.**"¶ While there have been reports of criminals using 'spear phishing' email attacks aimed at stealing information about American utilties, Panetta's remarks seemed to suggest more sophisticated, nation-state backed attempts to actually gain control of and damage power-generating equipment. ¶ Panetta's comments regarding the penetration of American utilities echo those of a private sector cyber security expert Killer Apps spoke with last week **who said that the networks of American electric companies were penetrated, perhaps in preparation for a Stuxnet-style attack**.¶ Stuxnet is the famous cyber weapon that infected Iran's uranium-enrichment centrifuges in 2009 and 2010. Stuxnet is believed to have caused some of the machines to spin erratically, thereby destroying them.¶ "**There is hard evidence** that there has been penetration of our power companies, and given Stuxnet, that is a staging step before destruction" of electricity-generating equipment, the expert told Killer Apps. Because uranium centrifuges and power turbines are both spinning machines, "**the attack is identical -- the one to take out the centrifuges and the one to take out our power systems is the same attack**."¶ "If a centrifuge running at the wrong speed can blow apart" so can a power generator, said the expert. "If you do, in fact, spin them at the wrong speeds, you can blow up any rotating device."¶ Cyber security expert Eugene Kaspersky said two weeks ago that one of his greatest fears is someone reverse-engineering a sophisticated cyber weapon like Stuxnet **-- a relatively easy task** -- and he noted that Stuxnet itself passed through power plants on its way to Iran. "Stuxnet infected thousands of computer systems all around the globe, I know there were power plants infected by Stuxnet very far away from Iran," Kaspersky said.

**Key military operations depend on a vulnerable grid---SMRs are essential to prevent cyber-terrorism and grid collapse**

**Robitaille 12** George E, Department of Army Civilian, March 21, "Small Modular Reactors: The Army’s Secure Source of Energy?", [www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA561802](http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA561802)

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.

**Grid attack takes out C and C---causes retaliation and nuclear war**

**Tilford 12** Robert, Graduate US Army Airborne School, Ft. Benning, Georgia, “Cyber attackers could shut down the electric grid for the entire east coast” 2012, <http://www.examiner.com/article/cyber-attackers-could-easily-shut-down-the-electric-grid-for-the-entire-east-coa>

To make matters worse a cyber attack that can take out a civilian power grid, for example could also cripple the U.S. military.¶ The senator notes that is that the same power grids that supply cities and towns, stores and gas stations, cell towers and heart monitors also power “every military base in our country.”¶ “Although bases would be prepared to weather a short power outage with backup diesel generators, within hours, not days, fuel supplies would run out”, he said.¶ Which means military **command and control centers could go dark**.¶ Radar systems that detect air threats to our country **would shut Down completely**.¶ “Communication between commanders and their troops would also go silent. And many weapons systems would be left without either fuel or electric power”, said Senator Grassley.¶ “So in a few short hours or days, the mightiest military in the world would be left scrambling to maintain base functions”, he said.¶ We contacted the Pentagon and officials confirmed the threat of a cyber attack is something very real.¶ Top national security officials—including the Chairman of the Joint Chiefs, the Director of the National Security Agency, the Secretary of Defense, and the CIA Director— have said, “preventing a cyber attack and improving the nation’s electric grids is among the most urgent priorities of our country” (source: Congressional Record).¶ So how serious is the Pentagon taking all this?¶ Enough to start, or end a war over it, for sure (see video: Pentagon declares war on cyber attacks http://www.youtube.com/watch?v=\_kVQrp\_D0kY&feature=relmfu ).¶ A cyber attack today against the US could very well be seen as an “Act of War” and could be met with a “full scale” US military response.¶ That could include the use **of “nuclear weapons**”, if authorized by the President.

**Old defense doesn’t apply---Stuxnet changed the game**

**Gross 11** Michael Joseph, Vanity Fair contributing editor, he covers topics including politics, technology, and national security, has also written extensively for The New York Times, The Boston Globe, and GQ, attended Williams College, and later studied at Princeton Theological Seminary. After graduating, he wrote speeches for Massachusetts Governor William Weld, “A Declaration of Cyber-War”, April, http://www.vanityfair.com/culture/features/2011/04/stuxnet-201104?currentPage=all

Regardless of how well it worked, there is no question that Stuxnet is something new under the sun. At the very least, it is a blueprint for a new way of **attacking industrial-control systems**. In the end, the most important thing now publicly known about Stuxnet is that Stuxnet is **now publicly known.** That knowledge is, on the simplest level, a warning: **America’s own critical infrastructure is a sitting target for attacks like this**. That aside, if Stuxnet really did attack Iran’s nuclear program, it could be called the first unattributable act of war. The implications of that concept are confounding. Because cyber-weapons pose an almost **unsolvable problem of sourcing**—who pulled the trigger?—war could evolve into something **more and more like terror**. Cyber-conflict makes military action more like a **never-ending game of uncle**, where the fingers of weaker nations are perpetually bent back. The wars would often be secret, waged by members of anonymous, elite brain trusts, none of whom would ever have to look an enemy in the eye. For people whose lives are connected to the targets, the results could be **as catastrophic as a bombing** **raid, but would be even more disorienting**. People would suffer, but would never be certain whom to blame.¶ **Stuxnet is the Hiroshima of cyber-war**. That is its true significance, and all the speculation about its target and its source should not blind us to that larger reality. **We have crossed a threshold, and there is no turning back**.

#### SMRs on bases secures them from attack

Galloway 10 Brigadier General Gerald E, Former Dean of the Academic Board, US Military Academy and Dean of the Faculty and Academic Programs, Industrial College of the Armed Forces, "On the Need for Creative Energy Solutions", Summer, www.cna.org/sites/default/files/research/WEB%2007%2027%2010%20MAB%20Powering%20America%27s%20Economy.pdf

Based on the progress made in technology, and on the findings of a study he chaired for the National Academies, General Galloway believes it may be time for the Army to revisit the initiative and consider paradigm shifting technologies like small, modular nuclear reactors. “In 1999, our report on logistics for the future Army recommended looking once again into small nuclear plants. It found that now there are additional benefits, like producing hydrogen for fuel cells. Today, small nuclear reactors are being marketed in the U.S. It’s probably time to think more about this,” General Galloway says. “No one’s envisioned bringing them out in combat zones, but they could provide energy in theater at large staging areas.”¶ General Galloway sees a special role for DOD in demonstrating these reactors in the United States. “The challenge at many military facilities is that they’re tied to the grid. We’ve seen the grid go down. At the same time, energy demands are rising. Putting a small reactor on a military installation not only provides a reliable and sustainable power source and a test bed to define its long term utility, but also places the plant in a secure location. Within the United States, it’s hard to find a more physically secure place than a military installation,” says General Galloway. “If the tests go well on bases in the United States, these small reactors could be used to support overseas military operations or disaster recovery activities.”

**Scenario 2---Drones**

**Grid shutdown makes drones ineffective**

**Robyn 10** Dr. Dorothy, Deputy Under Secretary of Defense for Installations and Environment, 1/27/10, Statement before the Senate Homeland Security and Governmental Affairs Committee, Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security, http://www.acq.osd.mil/ie/download/robyn\_testimony\_27jan10.pdf

A final challenge is grid vulnerability. DoD’s reliance on a fragile commercial grid to deliver electricity to its 500-plus installations places the continuity of critical missions at risk. Most installations lack the ability to manage their demand for and supply of electrical power and are thus vulnerable to intermittent and/or prolonged power disruption due to natural disasters, cyberattacks and sheer overload of the grid. **Because** of **U.S. combat forces’** increasing **reliance on “reachback” support from installations in the U**nited **S**tates, power failures at those installations could adversely affect our power projection and homeland defense mission capability. For example, we operate Predator drones in Afghanistan from a facility in Nevada and analyze battlefield intelligence at data centers here at home. This means that **an energy threat to bases at home can be a threat to operations abroad**.

**Drones maintain heg--- prevents escalation**

**Bruntstetter 12** Daniel, Assistance Professor of Political Science at the School of Social Sciences at the University of California, "Drones: The Future of Warfare?", April 10, www.e-ir.info/2012/04/10/drones-the-future-of-warfare/

Since President Obama took office, the use of and hype surrounding drones has greatly increased. Obama has conducted more than three times as many drone strikes per year compared to his predecessor in the White House.[1] The increase use of drones points to a potential revolution in warfare, or at least a shift in the perspective of how wars will be fought in the future. As robotics expert P.W. Singer argues, “the introduction of unmanned systems to the battlefield doesn’t change simply how we fight, but for the first time changes who fights at the most fundamental level. It transforms the very agent of war, rather than just its capabilities.”[2]¶ The three major reasons **drones are seen as the future of warfare** are: **they remove the risk to our soldiers, they make fewer mistakes than other weapons platforms, and technology will continue to improve such that drones become even more precise, efficient, and infallible in the future, thus rendering less precise, efficient and fallible human forms of war obsolete**. Drones are thus seen as marking “a step forward in humanitarian technology,” and viewed as “a weapon of choice for future presidents, future administrations, in **future conflicts and circumstances of self-defense and vital national security** of the United States.”[3]¶ Yet, there has been much criticism of these assertions. Journalists challenge the claim that there are diminished civilian deaths from drone strikes, while just war scholars suggest that drones loosen the moral restraints on the use of force and legal scholars grapple with the relation between drones and international law.[4] Notwithstanding these ethical and legal challenges, and despite what advocates say about their place in the future of armed combat, drones are, like any weapons platform, inherently limited in what they can do.¶ In this brief article, I make three claims to contextualize the idea that **drones are the future of war** to shed light on the circumscribed role they might play in the foreseeable future. First, that drones are an improvement – in terms of providing surveillance capabilities and satisfying the rules of war – compared to previous technology. Their technical advantages (loitering capacity, removal of risk to pilots, and precision) **make them an important addition to any military arsenal**. Second, however, drones are nevertheless limited in their potential. While perhaps the best option to fight Al Qaeda, they will not, due to their technical and tactical limitations, fully replace weapons with greater destructive and evasive capabilities because they are not equipped to respond to all scenarios within the subset of international crises. Third, the extent to which drones are the weapon of the future, they will not, despite the imagination of some pundits, remove entirely the human element from the future of war. Rather, humans, despite the hype surrounding drones, remain an essential piece of the future of war, and are subject to the inevitable risks associated with war.¶ Technical Advantages of Drones¶ The advantages of drones compared to other military options are well publicized, and fall into two categories.[5] In terms of surveillance, drones are capable of slipping across international borders with relative ease without putting human personnel at risk. Their ability to loiter over targets allows them to observe “patterns of life” to provide surveillance data 24/7, identify and track potential targets, and determine the best time to strike to avoid civilian casualties.[6] This leads to the second advantage: drones are claimed to be highly effective at satisfying the rules of war.¶ In terms of lethal use of force, the pinpoint accuracy of their missiles and computer software that models the blast area of each proposed strike greatly reduces collateral damage compared to other weapons systems, and potentially could even **eliminate it.** In the words of one proponent, **drones provide a “limited, pinprick, covert strike” in order “to avoid a wider war**.”[7] Moreover, the removal of pilots from the zone of combat – drones are operated from a facility well removed from where the fighting takes place –arguably **eliminates the threat to our soldiers** and allows drone operators to make better targeting decisions because they do not fear for their own safety. All of this adds up to considerably diminished number of civilian casualties. According to one scholar, **these advantages lead to an “ethical obligation” to employ drones** instead of other more risky tactics. [8]¶ These advantages have, thus far, dictated the use of drones by the United States. Despite a UN Special Committee Review on drones in 2009, and two hearings hosted by the U.S. House of Representatives in 2010 to discuss the moral and legal implications of drones, they have been the weapon of choice in Obama’s “war on Al Qaeda.” Yet, it is important to remember that this success in fighting terrorism should not be taken as evidence of drone effectiveness in all situations.

**Drones defeat terrorists and stop militant rise in Pakistan**

**Nadim 12** Hussain, visiting scholar at the Woodrow Wilson Center, "How Drones Changed the Game in Pakistan", August 8, nationalinterest.org/how-drones-changed-the-game-pakistan-7290

Regardless of what the news agencies in Pakistan claim about the negative effects of drone strikes**, the weapon is proving to be a game changer for the U.S. war on terrorism**. And surprisingly, the Pakistani Army quietly admits to this fact. Just the way Stinger missiles shifted the balance of power in favor of the United States in the 1980s, drones are producing the same results.¶ The critics of unmanned strikes, who claim that drones are contributing to growing radicalization in Pakistan, haven’t looked around enough—or they **would realize that much of the radicalization already was established** by the Taliban in the 1990s. The real tragedy is that it is acceptable for the Taliban to radicalize and kill, but it is considered a breach of sovereignty for the United States, in pursuit of those radicalizing Pakistan’s people, to do the same.¶ **There is so much protest over the drones because the media reports about them are biased**. Although people on ground in war zones contend that the drone strikes have very few civilian casualties and, with time, have become extremely precise, the media presents quite a different story to boost its ratings.¶ Many in Pakistan, especially in the army, understand the positive impact of this weapon. Drones are coming in handy for two reasons: **their precision and psychological effect**. Many analysts of this subject have been concerned only with the military aspect, such as whether or not drones are precise enough and the casualties they incur. But part of what works in favor of the United States is the psychological impact—the fear that drones have instilled in the militants. The fact that the United States might strike day or night, inside the militant compound or outside while traveling in the convoys, **works to deter militants and restrict their operations**. This tilts the balance of power in favor of the United States.¶ Most of the people in the Pakistani Army whom I interviewed on the subject were positive about the drone strikes and their direct correlation with a decrease in terrorist attacks in Pakistan. The majority focused on the psychological impact of the drones and how they **have put militants on the run**, forcing them to sleep under trees at night, though it must be said that army officials showed some concern about cases in which the same psychological impact is experienced by civilians.¶ Locals I talked to are frustrated over the fear that they might get hit by a drone if the militants are hiding in their neighborhood. But this frustration may have a positive impact as it motivates civilians to flush out and close doors to militants who seek refuge in their areas.¶ Surprisingly, there isn’t as much anti-Americanism as one would suspect in areas where the United States is conducting drone strikes**, largely because the locals are fed up with the influx of militants** in their areas **and have suffered because of terrorism**. However, urban centers, which have suffered the least from terrorism, are far more radicalized and anti-American. Hence, we see large anti-drone rallies in the cities of Punjab, where people have little first-hand experience with drones. The anti-American lot in these places will start a rally for any reason at all as long as they get to burn a few American flags.

**Terrorism causes extinction**

**Hellman 8** [Martin E. Hellman, emeritus prof of engineering @ Stanford, “Risk Analysis of Nuclear Deterrence” SPRING 2008 THE BENT OF TAU BETA PI, http://www.nuclearrisk.org/paper.pdf]

The threat of nuclear terrorism looms much larger in the public’s mind than the threat of a full-scale nuclear war, yet this article focuses primarily on the latter. An explanation is therefore in order before proceeding. A terrorist attack involving a nuclear weapon would be a catastrophe of immense proportions: “A 10-kiloton bomb detonated at Grand Central Station on a typical work day would likely kill some half a million people, and inflict over a trillion dollars in direct economic damage. America and its way of life would be changed forever.” [Bunn 2003, pages viii-ix]. The likelihood of such an attack is also significant. Former Secretary of Defense William Perry has estimated the chance of a nuclear terrorist incident within the next decade to be roughly 50 percent [Bunn 2007, page 15]. David Albright, a former weapons inspector in Iraq, estimates those odds at less than one percent, but notes, “We would never accept a situation where the chance of a major nuclear accident like Chernobyl would be anywhere near 1% .... A nuclear terrorism attack is a low-probability event, but we can’t live in a world where it’s anything but extremely low-probability.” [Hegland 2005]. In a survey of 85 national security experts, Senator Richard Lugar found a median estimate of 20 percent for the “probability of an attack involving a nuclear explosion occurring somewhere in the world in the next 10 years,” with 79 percent of the respondents believing “it more likely to be carried out by terrorists” than by a government [Lugar 2005, pp. 14-15]. I support increased efforts to reduce the threat of nuclear terrorism, but that is not inconsistent with the approach of this article. Because terrorism is one of the potential trigger mechanisms for a full-scale nuclear war, the risk analyses proposed herein will include estimating the risk of nuclear terrorism as one component of the overall risk. If that risk, the overall risk, or both are found to be unacceptable, then the proposed remedies would be directed to reduce which- ever risk(s) warrant attention. Similar remarks apply to a number of other threats (e.g., nuclear war between the U.S. and China over Taiwan). his article would be incomplete if it only dealt with the threat of nuclear terrorism and neglected the threat of full- scale nuclear war. If both risks are unacceptable, an effort to reduce only the terrorist component would leave humanity in great peril. In fact, society’s almost total neglect of the threat of full-scale nuclear war makes studying that risk all the more important. The cosT of World War iii The danger associated with nuclear deterrence depends on both the cost of a failure and the failure rate.3 This section explores the cost of a failure of nuclear deterrence, and the next section is concerned with the failure rate. While other definitions are possible, this article defines a failure of deterrence to mean a full-scale exchange of all nuclear weapons available to the U.S. and Russia, an event that will be termed World War III. Approximately 20 million people died as a result of the first World War. World War II’s fatalities were double or triple that number—chaos prevented a more precise deter- mination. In both cases humanity recovered, and the world today bears few scars that attest to the horror of those two wars. Many people therefore implicitly believe that a third World War would be horrible but survivable, an extrapola- tion of the effects of the first two global wars. In that view, World War III, while horrible, is something that humanity may just have to face and from which it will then have to recover. In contrast, some of those most qualified to assess the situation hold a very different view. In a 1961 speech to a joint session of the Philippine Con- gress, General Douglas MacArthur, stated, “Global war has become a Frankenstein to destroy both sides. … If you lose, you are annihilated. If you win, you stand only to lose. No longer does it possess even the chance of the winner of a duel. It contains now only the germs of double suicide.” Former Secretary of Defense Robert McNamara ex- pressed a similar view: “If deterrence fails and conflict develops, the present U.S. and NATO strategy carries with it a high risk that Western civilization will be destroyed” [McNamara 1986, page 6]. More recently, George Shultz, William Perry, Henry Kissinger, and Sam Nunn4 echoed those concerns when they quoted President Reagan’s belief that nuclear weapons were “totally irrational, totally inhu- mane, good for nothing but killing, possibly destructive of life on earth and civilization.” [Shultz 2007] Official studies, while couched in less emotional terms, still convey the horrendous toll that World War III would exact: “The resulting deaths would be far beyond any precedent. Executive branch calculations show a range of U.S. deaths from 35 to 77 percent (i.e., 79-160 million dead) … a change in targeting could kill somewhere between 20 million and 30 million additional people on each side .... These calculations reflect only deaths during the first 30 days. Additional millions would be injured, and many would eventually die from lack of adequate medical care … millions of people might starve or freeze during the follow- ing winter, but it is not possible to estimate how many. … further millions … might eventually die of latent radiation effects.” [OTA 1979, page 8] This OTA report also noted the possibility of serious ecological damage [OTA 1979, page 9], a concern that as- sumed a new potentiality when the TTAPS report [TTAPS 1983] proposed that the ash and dust from so many nearly simultaneous nuclear explosions and their resultant fire- storms could usher in a nuclear winter that might erase homo sapiens from the face of the earth, much as many scientists now believe the K-T Extinction that wiped out the dinosaurs resulted from an impact winter caused by ash and dust from a large asteroid or comet striking Earth. The TTAPS report produced a heated debate, and there is still no scientific consensus on whether a nuclear winter would follow a full-scale nuclear war. Recent work [Robock 2007, Toon 2007] suggests that even a limited nuclear exchange or one between newer nuclear-weapon states, such as India and Pakistan, could have devastating long-lasting climatic consequences due to the large volumes of smoke that would be generated by fires in modern megacities. While it is uncertain how destructive World War III would be, prudence dictates that we apply the same engi- neering conservatism that saved the Golden Gate Bridge from collapsing on its 50th anniversary and assume that preventing World War III is a necessity—not an option.

**Militant rise in Pakistan causes nuclear war**

**Pitt 9** William, a New York Times and internationally bestselling author of two books: "War on Iraq: What Team Bush Doesn't Want You to Know" and "The Greatest Sedition Is Silence”, 5/8, “Unstable Pakistan Threatens the World,” http://www.arabamericannews.com/news/index.php?mod=article&cat=commentary&article=2183

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But a suicide bomber in Pakistan rammed a car packed with explosives into a jeep filled with troops today, killing five and wounding as many as 21, including several children who were waiting for a ride to school. Residents of the region where the attack took place are fleeing in terror as gunfire rings out around them, and government forces have been unable to quell the violence. Two regional government officials were beheaded by militants in retaliation for the killing of other militants by government forces. As familiar as this sounds, it did not take place where we have come to expect such terrible events. This, unfortunately, is a whole new ballgame. It is part of another conflict that is brewing, one which puts what is happening in Iraq and Afghanistan in deep shade, and which represents a grave and growing threat to us all. **Pakistan is now trembling on the edge of violent chaos, and is doing so with nuclear weapons in its hip pocket, right in the middle of one of the most dangerous neighborhoods in the world.** The situation in brief: Pakistan for years has been a nation in turmoil, run by a shaky government supported by a corrupted system, dominated by a blatantly criminal security service, and threatened by a large fundamentalist Islamic population with deep ties to the Taliban in Afghanistan. All this is piled atop an ongoing standoff with neighboring India that has been the center of political gravity in the region for more than half a century. The fact that Pakistan, and **India, and Russia, and China all possess nuclear weapons** and share the same space means any ongoing or escalating violence over there has the real potential to crack open the very gates of Hell itself. Recently, the Taliban made a military push into the northwest Pakistani region around the Swat Valley. According to a recent Reuters report: The (Pakistani) army deployed troops in Swat in October 2007 and used artillery and gunship helicopters to reassert control. But insecurity mounted after a civilian government came to power last year and tried to reach a negotiated settlement. A peace accord fell apart in May 2008. After that, hundreds — including soldiers, militants and civilians — died in battles. Militants unleashed a reign of terror, killing and beheading politicians, singers, soldiers and opponents. They banned female education and destroyed nearly 200 girls' schools. About 1,200 people were killed since late 2007 and 250,000 to 500,000 fled, leaving the militants in virtual control. Pakistan offered on February 16 to introduce Islamic law in the Swat valley and neighboring areas in a bid to take the steam out of the insurgency. The militants announced an indefinite cease-fire after the army said it was halting operations in the region. President Asif Ali Zardari signed a regulation imposing sharia in the area last month. But the Taliban refused to give up their guns and pushed into Buner and another district adjacent to Swat, intent on spreading their rule. The United States, already embroiled in a war against Taliban forces in Afghanistan, must now face the possibility that Pakistan could collapse under the mounting threat of Taliban forces there. Military and diplomatic advisers to President Obama, uncertain how best to proceed, now face one of the great nightmare scenarios of our time. "Recent militant gains in Pakistan," reported The New York Times on Monday, "have so alarmed the White House that the national security adviser, Gen. James L. Jones, **described the situation as 'one of the very most serious problems we face**.'" "Security was deteriorating rapidly," reported The Washington Post on Monday, "particularly in the mountains along the Afghan border that harbor al-Qaeda and the Taliban, intelligence chiefs reported, and there were signs that those groups were working with indigenous extremists in Pakistan's populous Punjabi heartland. The Pakistani government was mired in political bickering. The army, still fixated on its historical adversary India, remained ill-equipped and unwilling to throw its full weight into the counterinsurgency fight. But despite the threat the intelligence conveyed, Obama has only limited options for dealing with it. Anti-American feeling in Pakistan is high, and a U.S. combat presence is prohibited. The United States is fighting Pakistan-based extremists by proxy, through an army over which it has little control, in alliance with a government in which it has little confidence." It is believed Pakistan is currently in possession of between 60 and 100 nuclear weapons. Because Pakistan's stability is threatened by the wide swath of its population that shares ethnic, cultural and religious connections to the fundamentalist Islamic populace of Afghanistan, fears over what could happen to those nuclear weapons if the Pakistani government collapses are very real. "As the insurgency of the Taliban and Al Qaeda spreads in Pakistan," reported the Times last week, "senior American officials say they are increasingly concerned about new vulnerabilities for Pakistan's nuclear arsenal, including the potential for **militants to snatch a weapon** in transport or to insert sympathizers into laboratories or fuel-production facilities. In public, the administration has only hinted at those concerns, repeating the formulation that the Bush administration used: that it has faith in the Pakistani Army. But that cooperation, according to officials who would not speak for attribution because of the sensitivity surrounding the exchanges between Washington and Islamabad, has been sharply limited when the subject has turned to the vulnerabilities in the Pakistani nuclear infrastructure." "The prospect of turmoil in Pakistan sends shivers up the spines of those U.S. officials charged with keeping tabs on foreign nuclear weapons," reported Time Magazine last month. "Pakistan is thought to possess about 100 — the U.S. isn't sure of the total, and may not know where all of them are. Still, if Pakistan collapses, the U.S. military is primed to enter the country and secure as many of those weapons as it can, according to U.S. officials. Pakistani officials insist their personnel safeguards are stringent, but a sleeper cell could cause big trouble, U.S. officials say." In other words, a shaky Pakistan spells trouble for everyone, especially if America loses the footrace to secure those weapons in the event of the worst-case scenario. **If** Pakistani **militants** ever **succeed in toppling the government**, several very dangerous events could happen at once. Nuclear-armed **India could be galvanized into military action of some kind, as could nuclear-armed China or nuclear-armed Russia**. If the Pakistani government does fall, and all those Pakistani nukes are not immediately accounted for and secured, the specter (or reality) of **loose nukes falling into the hands of terrorist organizations could place the entire world on a collision course with unimaginable disaster**. We have all been paying a great deal of attention to Iraq and Afghanistan, and rightly so. The developing situation in Pakistan, however, needs to be placed immediately on the front burner. The Obama administration appears to be gravely serious about addressing the situation. So should we all.

**Scenario 3---Net-Centric Warfare**

**Adversaries attack information systems---wrecks netwar capabilities**

**DSB 7** Defense Science Board, Federal Advisory Committee established to provide independent

advice to the Secretary of Defense, "2006 Summer Study on Information Management for Net-Centric Operations", April, www.acq.osd.mil/dsb/reports/ADA467538.pdf

The military's ever increasing reliance on information networks and its ability to provide wider access to information to support collaboration has transformed and improved the forces' capabilities and effectiveness in executing operations. **Future challenges** and the need to maintain adequate levels of security, integrity, and reliability will place **new demands** on information networks, processes, and personnel. The Defense Science- Board was asked to assess the department's strategy, scope, and progress toward achieving a robust and adaptive net-centric information management capability for the Department of Defense (DOD).¶ It is well accepted that improved information at all levels will improve operational effectiveness, but, of course, that comes with some risk and penalties. The task force was asked to examine the operational value of the proposed information network and to pay special attention to the emerging missions it is designed to support—that is, counterinsurgency, counterterrorism, stabilization and reconstruction, response to catastrophic disasters, and defense of the nation against attack.¶ Over the past five years the Assistant Secretary of Defense for Networks and Information Integration (ASD [Nil]) and Chief Information Officer (CIO) organizations within DOD have done a significant and remarkable job assembling an underlying framework and architecture based on commercial Internet Protocol (IP) technology, which has the potential to bring the department, at all levels of the enterprise, significant information capability and operational value. The task force was charged with evaluating the framework, architecture, processes, and organizational structures being pursued to deliver the power of information networks to the DOD enterprise, as well as to external partners.¶ Risks are associated with execution of programs to implement the network, as well as with meeting quality of service, availability, security, and integrity expectations for all missions and users. The task force was to assess cost/risk trades and technical network issues associated with the enterprise. Lastly, the task force considered knowledge management in support of department goals. "Googling" for access to particular information is now a familiar activity, but it is not the appropriate application for the war fighter in the tactical battlefield who is seeking information in the middle of a firefight. Therefore, identifying effective methods to provide robust, useful information at all levels—from strategic decision-makers to the tactical user—was a major focus of this study. The focus would be on information discovery, sharing, collaboration, visualization, comprehension, and storage—all of which support the distribution of knowledge that will ultimately support the missions and users in making effective decisions.¶ The following operational scenarios derived from the threat assessment prepared for the most recent Quadrennial Defense Review were the basis for the task force:¶ ■ prevent and protect the United States against catastrophic attack¶ ■ conduct large-scale counter-insurgency operations including¶ stabilization and reconstruction¶ ■ conduct global distributed, small-scale operations including¶ counter-terrorism and humanitarian relief¶ ■ enable large-scale operations against near peer adversaries¶ As depicted in figure 1, these scenarios today have a very different battle management paradigm with a stealthy enemy dispersed in a civilian urban setting, as opposed to clearly defined, uniformed combatants and battle lines for engagement as in previous wars. Under all scenarios a sophisticated and "state of the art" information management capability is required. Information systems technology has proliferated across the globe, driven primarily by the global economy and the Internet. The United States no longer holds a significant advantage in information systems technology. Today, more hardware and software is being built offshore than in the U.S., and that percentage continues to grow rapidly.¶ Potential adversaries are technically very capable and are able to move information rapidly**. Adversaries also clearly understand the importance of information to winning in combat and will therefore commit themselves to attacking U.S. command and control, communications, and information systems**. These attacks may be kinetic attacks and/or non-kinetic attacks. The threat to the information system will continue to evolve as globalization and the information revolution force changes in structure and technology.¶ In our lifetimes, the information revolution has moved the world from a place where data can be moved at about 30 words per minute over field phones and 60 words per minute over radios to one in which it can be moved at roughly 1.5 trillion words per minute over wideband data links. At the same time, data acquisition through means such as satellites and data storage capabilities has increased at a similar rate. The impact of this revolution on information management capability on the national security environment is enormous. **It would be especially detrimental if there is not a U.S. national** and DOD **commitment to keep pace with** almost "**speed of light" advancements in information technology**.¶ Globalization has radically changed the national security paradigm. Movement has been from a relatively isolated environment of the Industrial Age of the 20\* century, where security meant "defense" and "containment," to the information age of the 21" century, a much more integrated environment with a smaller world (due to speed of light transmissions) where information is shared globally in very near real time, and national security is more complex and dynamic. Maintaining "national security" is no longer just a matter of protecting international borders. For example, "borders" in **cyberspace must also be protected**. At the same time, there are more active global hotspots; the threat is increasingly using asymmetric tactics; and interoperability is still an issue with U.S. forces, as well as with many of U.S. coalition partners.¶ The evolving threat characteristics considered during the course of the study include:¶ ■ dynamic and ever changing¶ ■ highly mobile and regularly move across international borders¶ ■ highly distributed¶ ■ stealthy¶ ■ adaptive and amorphous¶ ■ asymmetric¶ ■ when viewed in isolation—low value targets¶ **Adversaries have become very skilled at neutralizing U.S. operational advantages**. Two critical concerns evolved during the study:¶ 1. U.S. adversaries are not only using their many skills in information technology to move information rapidly, but also they may develop a significant capability to **attack U.S. information systems**.

**Netwar is critical to hegemony**

**Arquilla 10** John, Professor of defense analysis at the U.S. Naval Postgraduate School, MARCH/APRIL 2010, “The New Rules of War”, http://www.foreignpolicy.com/articles/2010/02/22/the\_new\_rules\_of\_war

The irony, however, is that the U.S. military has never been in a better position to gain acceptance for truly transformational change. Neither party in Congress can afford to be portrayed as standing in the way of strategic progress, and so, whatever the Pentagon asks for, it gets. As for defense contractors, far from driving the agenda, they are much too willing to give their military customers exactly what they demand (rather than, perhaps, something better). If the U.S. armed forces call for smaller, smarter weapons and systems to support swarming, they will get them. Beyond the United States, other countries' security forces are beginning to think along the lines of "many and small," are crafting better ways to "find," and are learning to swarm. Chinese naval thought today is clearly moving in this direction. Russian ground forces are, too. Needless to say, terrorist networks are still in the lead, and not just al Qaeda. Hezbollah gave quite a demonstration of all three of the new rules of war in its summer 2006 conflict with Israel, a virtual laboratory test of nation versus network -- in which the network more than held its own. For the U.S. military, failing a great leap forward in self-awareness of the need for radical change, a downward budgetary nudge is probably the best approach -- despite President Barack Obama's unwillingness to extend his fiscal austerity program to security-related expenditures. This could take the form of a freeze on defense spending levels, to be followed by several years of, say, 10 percent annual reductions. To focus the redesign effort, a moratorium would be declared on all legacy-like systems (think aircraft carriers, other big ships, advanced fighters, tanks, etc.) while they are subjected to searching review. It should not be assumed that the huge sums invested in national defense have been wisely spent. To most Americans who think that being strong on defense means devoting more resources and building bigger systems, this suggestion to cut spending will sound outrageous. But being smarter about defense might lower costs even as effectiveness improves. This pattern has held throughout the transformations of the last few decades, whether in farming or in industry. Why should the military be exempt? There's real urgency to this debate. Not only has history not ended with the Cold War and the advent of commerce-driven globalization, but conflict and violence have persisted -- even grown -- into a new postmodern scourge. Indeed, it is ironic that, in an era in which the attraction to persuasive "soft power" has grown dramatically, coercive "hard power" continues to dominate in world affairs. This is no surprise in the case of rogue nations hellbent on developing nuclear arsenals to ensure their security, nor when it comes to terrorist networks that think their essential nature is revealed in and sustained by violent acts. But this primary reliance on coercive capabilities is also on display across a range of countries great and small, most notably the United States, whose defense policy has over the past decade largely become its foreign policy. From the wars in Iraq and Afghanistan, to simmering crises with North Korea and Iran, and on to longer-range strategic concerns about East Asian and Central European security, the United States today is heavily invested in hard-power solutions. And it will continue to be. But if the radical adjustments in strategy, organization, and doctrine implied by the new rules of war are ignored, Americans will go on spending more and getting less when it comes to national defense. Networks will persist until they have the capability to land nuclear blows. Other countries will leapfrog ahead of the United States militarily, and concepts like "deterrence" and "containment" of aggression **will blow away like leaves in the wind**. So it has always been. Every era of technological change has resulted in profound shifts in military and strategic affairs. History tells us that these developments were inevitable, but soldiers and statesmen were almost always too late in embracing them -- and tragedies upon tragedies ensued. There is still time to be counted among the exceptions, like the Byzantines who, after the fall of Rome, radically redesigned their military and preserved their empire for another thousand years. The U.S. goal should be to join the ranks of those who, in their eras, caught glimpses of the future and acted in time to shape it, **saving the world from darkness**.

**Independently, NCW prevents all future conflict**

**Chang-hee 5** Chang-hee Nam, professor of Inha University, South Korea, who formerly worked for the Korea Institute f or Defense Analysis, “The Realignment of the USFK in the Military Transformation and South Korea's Defense Reform 2020”, <http://www.nids.go.jp/english/event/symposium/pdf/2005/e2005_05.pdf>

By contrast with the LPP, the relocation of the 2 nd Infantry Division to the OsanPyeongtaek area has more to do with a fundamental change in the Pentagon’s global strategy. The foremost locomotive behind the structural realignment of the USFK comes from Secretary Rumsfeld’s military transformation initiative, which gained more salience in the Pentagon’s war on terrorism after the September 11 attacks. Secretary of Defense Rumsfeld strongly argues that the U.S. military should adapt to new threats coming from terrorist groups who might use weapons of mass destruction. He believes that the old-fashioned basing of the U.S. forces during the Cold War-era has now become obsolete and can no longer help defend American interests from attacks in unexpected times and places. He contends, “The Pentagon decided to move away from the old ‘threat-based’ strategy that had dominated our country’s defense planning for the early half a century and adopt a new ‘capabilities-based’ approach -- one that focuses less on who might threaten us, or where, and more on how we might be threatened and what is needed to deter and defend against such threats.” 4 The disastrous damage inflicted on Americans by the unprecedented attacks of September 11 awakened the American military thinkers to devise genuinely new ways of thinking. The White House hinted that America now needs a so-called third round of transformation in constructing its national security strategy -- as it did after the British invasion of the early 19 th century and at the advent of the Cold War. 5 The U.S. military now needs to reconfigure its military machine to be able to deal with elusive enemies whose activities are small in size, transnational and ubiquitous. The proponents of Revolution in Military Affairs (RMA) in the American military provided a timely solution for adapting to the new types of threats. Notably, the RMA refers to a fundamental transformation in military strategy and operations that transpired in the process of amplifying combat effectiveness by linking Intelligence, Surveillance and Reconnaissance (ISR) and Precision Guided Munitions (PGMS) with highly sophisticated C4I (Command and Control, Communication, Computer and Intelligence). This network-centric system-of-systems, which gathers accurate information through sophisticated battlefield awareness capabilities, relaying it to the shooter, has been proving its effectiveness in the most recent U.S.-led wars. Arthur Cebrowski, a retired admiral and a former Director of the Office of Force Transformation in the Pentagon, came up with the new concept of “Network-Centric Warfare (NCW).” Cebrowski’s men **suggested a network-centric warfare for dramatically amplified war fighting effectiveness,** which could be applied to suffocating by maximum vigilance of the terrorist groups to neutralization. A global network of real-time sensor-shooter linkage supported by agile and mobile forces dispersed around key nodes would successfully discourage any country to allow a haven for terrorist groups. “Network-centric warfare is characterized by the ability of geographically dispersed forces to attain a high level of shared battle-space awareness that is exploited to achieve massed effects swiftly without the physical massing of forces required in the past.” 6 This global rapid response system necessitates the reduction and relocation of forces still surrounding the Russian Federation following the old containment strategy. The Pentagon needed to find relevant force projection space to replace that of the past in its reconfiguration of the U.S. ground forces stationed around the globe. In the eyes of the Pentagon’s transformation planners, large contingents of U.S. ground forces on the Korean peninsula, equipped with heavily armored vehicles, impeding mobility, look somewhat outdated and less adaptable to the requirements of new missions in America’s war on terrorism. Other encouraging changes include enhanced lift capabilities and improved deployability of Rapid Deployment Forces (RDF). Transport aircraft like the C-17 now allow for rapid airlift of soldiers and even armored vehicles, reducing the need for advance deployment of large-scale ground forces. The Stryker Brigade Combat Team (SBCT), a crucial component of the Army’s multifunctional Unit of Action (UA) under future chain of command such as UEx and UEy, will replace the army brigades. The future combat team of light infantry troops can be dispatched together with light armored vehicles to any part of the world. This attests to the desire of the U.S. Department of Defense for a global basing system that would reshape U.S. troops overseas to be smaller, modular, mobile, and thus adaptable to carrying out network-centric warfare against scattered and invisible enemies. Rumsfeld has specially emphasized speed, noting that, “In order to defend the American cities, allies, and deployed forces the United States is required to have rapidly deployable, fully-integrated, **forces capable of reaching distant theaters quickly and working with air and sea forces to strike adversaries swiftly and with devastating effect.”** 7 Accordingly, the Pentagon’s Office of Force Transformation laid out their requirements in the Global Defense Posture Review (GPR), noting that only forces oriented around “speed” are able to define or alter the initial conditions on terms favorable to the U.S. interests, effectively dissuading and defeating asymmetric threats of non-state adversaries. 8 Their report again proudly states, “The U.S. military is developing an enhanced forward deterrent posture through the integration of new combinations of immediately employable, forward stationed and deployed forces; globally available reconnaissance, strike, and command and control (C2) assets; information operations capabilities; and rapidly deployable, highly lethal, and sustainable forces that may come from outside a theater of operations.” 9 According to the transformation research team, **ubiquitous, seamlessly joint, and virtually omniscient forces with capabilities for overcoming distance are expected to effectively break the will or otherwise shape the behavior of the elusive enemy**. 10 Allowing no safe, hardened sanctuary anywhere in the globe, **the potential adversary would no longer retain the will to fight**, or would be so disoriented that they can no longer fight or react coherently.

**Plan solves grid collapse---SMRs make mission critical bases resilient and deters attack**

**Andres and Breetz 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 and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", 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 energy with an eye toward cutting costs, decreasing carbon emissions, and reducing energy-related vulnerabilities. These actions have resulted in programs that have significantly reduced DOD energy consumption and greenhouse 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 report sponsored by the Department of Homeland Security suggests that a coordinated cyberattack 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 function 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 blackout 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 efforts 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 renewables, 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 demands 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.

**Grid failure wrecks US critical mission operations**

**Stockton 11** Paul, assistant secretary of defense for Homeland Defense and Americas’ Security Affairs, “Ten Years After 9/11: Challenges for the Decade to Come”, <http://www.hsaj.org/?fullarticle=7.2.11>

The cyber threat to the DIB is only part of a much larger challenge to DoD. Potential adversaries are seeking asymmetric means to cripple our force projection, warfighting, and sustainment capabilities, by targeting the critical civilian and defense supporting assets (within the United States and abroad) on which our forces depend. This challenge is not limited to man-made threats; DoD must also execute its mission-essential functions in the face of disruptions caused by naturally occurring hazards.20 Threats and hazards to DoD mission execution include incidents such as earthquakes, naturally occurring pandemics, solar weather events, and industrial accidents, as well as kinetic or virtual attacks by state or non-state actors. Threats can also emanate from insiders with ties to foreign counterintelligence organizations, homegrown terrorists, or individuals with a malicious agenda. From a DoD perspective, this global convergence of unprecedented threats and hazards, and vulnerabilities and consequences, is a particularly problematic reality of the post-Cold War world. Successfully deploying and sustaining our military forces are increasingly a function of interdependent supply chains and privately owned infrastructure within the United States and abroad, including transportation networks, cyber systems, commercial corridors, communications pathways, and energy grids. This infrastructure largely falls outside DoD direct control. Adversary actions to destroy, disrupt, or manipulate this highly vulnerable homeland- and foreign-based infrastructure may be relatively easy to achieve and extremely tough to counter. Attacking such “soft,” diffuse infrastructure systems could significantly affect our military forces globally – potentially blinding them, neutering their command and control, degrading their mobility, and isolating them from their principal sources of logistics support. The Defense Critical Infrastructure Program (DCIP) under Mission Assurance seeks to improve execution of DoD assigned missions to make them more resilient. This is accomplished through the assessment of the supporting commercial infrastructure relied upon by key nodes during execution. By building resilience into the system and ensuring this support is well maintained, DoD aims to ensure it can "take a punch as well as deliver one."21 It also provides the department the means to prioritize investments across all DoD components and assigned missions to the most critical issues faced by the department through the use of risk decision packages (RDP).22 The commercial power supply on which DoD depends exemplifies both the novel challenges we face and the great progress we are making with other federal agencies and the private sector. Today’s commercial electric power grid has a great deal of resilience against the sort of disruptive events that have traditionally been factored into the grid’s design. Yet, the grid will increasingly confront threats beyond that traditional design basis. This complex risk environment includes: disruptive or deliberate attacks, either physical or cyber in nature; severe natural hazards such as geomagnetic storms and natural disasters with cascading regional and national impacts (as in NLE 11); long supply chain lead times for key replacement electric power equipment; transition to automated control systems and other smart grid technologies without robust security; and more frequent interruptions in fuel supplies to electricity-generating plants. These risks are magnified by globalization, urbanization, and the highly interconnected nature of people, economies, information, and infrastructure systems. The department is highly dependent on commercial power grids and energy sources. As the largest consumer of energy in the United States, DoD is dependent on commercial electricity sources outside its ownership and control for secure, uninterrupted power to support critical missions. In fact, approximately 99 percent of the electricity consumed by DoD facilities originates offsite, while approximately 85 percent of critical electricity infrastructure itself is commercially owned. This situation only underscores the importance of our partnership with DHS and its work to protect the nation’s critical infrastructure – a mission that serves not only the national defense but also the larger national purpose of sustaining our economic health and competitiveness. DoD has traditionally assumed that the commercial grid will be subject only to infrequent, weather-related, and short-term disruptions, and that available backup power is sufficient to meet critical mission needs. As noted in the February 2008 Report of the Defense Science Board Task Force on DoD Energy Strategy, “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.”23 Similarly, a 2009 GAO Report on Actions Needed to Improve the Identification and Management of Electrical Power Risks and Vulnerabilities to DoD Critical Assets stated that DoD mission-critical assets rely primarily on commercial electric power and are vulnerable to disruptions in electric power supplies.24 Moreover, these vulnerabilities may cascade into other critical infrastructure that uses the grid – communications, water, transportation, and pipelines – that, in turn, is needed for the normal operation of the grid, as well as its quick recovery in emergency situations. To remedy this situation, the Defense Science Board (DSB) Task Force recommended that DoD take a broad-based approach, including a focused analysis of critical functions and supporting assets, a more realistic assessment of electricity outage cause and duration, and an integrated approach to risk management that includes greater efficiency, renewable resources, distributed generation, and increased reliability. DoD Mission Assurance is designed to carry forward the DSB recommendations. Yet, for a variety of reasons – technical, financial, regulatory, and legal – DoD has limited ability to manage electrical power demand and supply on its installations. As noted above, DHS is the lead agency for critical infrastructure protection by law and pursuant to Homeland Security Presidential Directive 7. The Department of Energy (DOE) is the lead agency on energy matters. And within DoD, energy and energy security roles and responsibilities are distributed and shared, with different entities managing security against physical, nuclear, and cyber threats; cost and regulatory compliance; and the response to natural disasters. And of course, production and delivery of electric power to most DoD installations are controlled by commercial entities that are regulated by state and local utility commissions. The resulting paradox: DoD is dependent on a commercial power system over which it does not – and never will – exercise control.

**Loss of mission effectiveness results in nuclear war in every hotspot**

**Kagan and O’Hanlon 7** Frederick, resident scholar at AEI and Michael, senior fellow in foreign policy at Brookings, “The Case for Larger Ground Forces”, April 2007, 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.

**Hegemony prevents extinction**

**Barnett 11** (Thomas P.M., Former Senior Strategic Researcher and Professor in the Warfare Analysis & Research Department, Center for Naval Warfare Studies, U.S. Naval War College American military geostrategist and Chief Analyst at Wikistrat., worked as the Assistant for Strategic Futures in the Office of Force Transformation in the Department of Defense, “The New Rules: Leadership Fatigue Puts U.S., and Globalization, at Crossroads,” March 7 <http://www.worldpoliticsreview.com/articles/8099/the-new-rules-leadership-fatigue-puts-u-s-and-globalization-at-crossroads>)

Events in Libya are a further reminder for Americans that we **stand at a crossroads in our continuing evolution as the world's sole full-service superpower**. Unfortunately, we are increasingly seeking change without cost, and shirking from risk because we are tired of the responsibility. We don't know who we are anymore, and our president is a big part of that problem. Instead of leading us, he explains to us. Barack Obama would have us believe that he is practicing strategic patience. But many experts and ordinary citizens alike have concluded that he is actually beset by strategic incoherence -- in effect, a man overmatched by the job. It is worth first examining the larger picture: We live in a time of arguably **the greatest structural change in the global order yet endured**, with this historical moment's most amazing feature being its relative and absolute **lack of mass violence**. That is something to consider when Americans contemplate military intervention in Libya, because if we do take the step to prevent larger-scale killing by engaging in some killing of our own, we will not be adding to some fantastically imagined global death count stemming from the ongoing "megalomania" and "evil" of American "empire." We'll be engaging in the same sort of system-administering activity that has marked our stunningly successful stewardship of global order since World War II. Let me be more blunt: As the **guardian of globalization**, the U.S. military has been the **greatest force for peace the world has ever known**. Had America been removed from the global dynamics that governed the 20th century, the **mass murder never would have ended**. Indeed, it's entirely conceivable **there would now be no identifiable human civilization left, once nuclear weapons entered the killing equation.**  But the world did not keep sliding down that **path of perpetual war**. Instead, America stepped up and changed everything by **ushering in our now-perpetual great-power peace**. We introduced the **international liberal trade order known as globalization** and played loyal Leviathan over its spread. What resulted was the collapse of empires, **an explosion of democracy**, the **persistent spread of human rights**, the liberation of women, **the doubling of life expectancy**, a roughly **10-fold increase in adjusted global GDP** and a **profound and persistent reduction in** battle deaths from **state-based conflicts.** That is what American "hubris" actually delivered. Please remember that the next time some TV pundit sells you the image of "unbridled" American military power as the cause of global disorder instead of its cure. With self-deprecation bordering on self-loathing, we now imagine a post-American world that is anything but. Just watch who scatters and who steps up as the Facebook revolutions erupt across the Arab world. While we might imagine ourselves the status quo power, we remain the world's most vigorously revisionist force. As for the sheer "evil" that is our military-industrial complex, again, let's examine what the world looked like before that establishment reared its ugly head. The last great period of global structural change was the first half of the 20th century, a period that saw a death toll of about 100 million across two world wars. That comes to an average of 2 million deaths a year in a world of approximately 2 billion souls. Today, with far more comprehensive worldwide reporting, researchers report an average of less than 100,000 battle deaths annually in a world fast approaching 7 billion people. Though admittedly crude, these calculations suggest a 90 percent absolute drop and a 99 percent relative drop in deaths due to war. We are clearly headed for a world order characterized by multipolarity, something the American-birthed system was designed to both encourage and accommodate. But given how things turned out the last time we collectively faced such a fluid structure, we would do well to keep U.S. power, in all of its forms, deeply embedded in the geometry to come. To continue the historical survey, after salvaging Western Europe from its half-century of civil war, the U.S. emerged as the progenitor of a new, far more just form of globalization -- one based on actual free trade rather than colonialism. America then successfully replicated globalization further in East Asia over the second half of the 20th century, setting the stage for the Pacific Century now unfolding.

**SMRs create reliable power--- ensures effective missions**

**King et al 11** Marcus, Associate Director of Research at The George Washington University's Elliott School of International Affairs, with a concurrent appointment as Associate Research Professor of International Affairs, LaVar Huntzinger and Thoi Nguyen, "Feasibility of Nuclear Power on U.S. Military Installations", March, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

**Having a reliable source of electricity is critically important for many DoD installations**. Fort Meade, Maryland, which hosts the National Security Agency’s power intensive computers, is an example of where electricity is mission critical. Installations need to be more robust against interruptions caused by natural forces or intentional attack. Most installations currently rely on the commercial electricity grid and backup generators.¶ **Reliance on generators presents** some **limitations**. A building dedicated generator only provides electricity to a specific building when there is a power outage. Typically, diesel standby generators have an availability of 85 percent when operated for more than 24 hours [38]. Most DoD installations keep less than a 5-day supply of fuel.¶ **Small nuclear power plants could contribute to electrical energy surety and survivability**. Having nuclear power plants networked with the grid and other backup generating systems5 could give DoD installations higher power availability during extemded utility power outages and more days of utility-independent operation. Existing large commercial nuclear power plants have an availability of over 90 percent.¶ **When a small nuclear power plant is networked** with existing backup generating systems and the grid, overall **availability values could be as high as 99.6 percent** [39]. Since proposed small reactors have long refueling intervals (from 4 to 30 years), if power from the commercial grid became unavailable, **a small reactor could provide years of electrical power independent of the commercial grid** [4].¶ Power assurance to DoD installations also involves three infrastructure aspects of electricity delivery: electrical power transmission, electricity distribution, and electricity control (of distribution and transmission). Electric power transmission is the bulk transfer of electrical energy from generating plants to substations located near population centers. Electricity distribution networks carry electricity from the substations to consumers. Electricity control is the management of switches and connections to control the flow of electricity through transmission and distribution networks.¶ Typically, transmission lines transfer electricity at high voltages over long distances to minimize loss; electricity distribution systems carry medium voltages. For electrical power transmission, very little additional infrastructure is required to incorporate small nuclear power plants because they would be located on or near the DoD installation being serviced. However, redundancy in transmission lines would make the overall network more robust.¶ Electricity control capabilities, such as self-healing6 and optimization of assets to increase operational efficiency, could improve overall power availability; however, they are not necessary for the integration of small nuclear power plants. Key components for improving electricity control include advanced electricity meters and electricity meter data management. These tools are needed in order to establish islanding, a condition in which a portion of the utility system, which contains both load and generation, is isolated from the remainder of the utility system and continues to operate. Since the power generation capacities of small nuclear power plants are larger than required for most DoD bases, islanding could extend to adjacent communities if sufficient technical upgrades were performed to systems outside of the installation. This contributes to DoD missions because civilians and service members working on the installation often live with their families in adjacent communities**. The power would ensure that critical services such as emergency response, waste water treatment, and hospitals could be maintained.**

### 1AC – Plan

#### The Executive Branch of the United States should acquire small modular nuclear reactors on mission critical military installations in the United States.

### 1AC – Solvency

#### CONTENTION 2: SOLVENCY

#### Plan’s key to ensure availability of SMRs for the military and doesn’t pick winners

Andres and Breetz 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 and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", 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 uncertainties 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 mobility, DOD has a compelling interest in ensuring that they make the leap from paper to production. However, 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 nuclear 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, Massachusetts Institute of Technology 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 nuclear 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 argued that small reactors could play a key role in the second 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 demonstration effects, technological interdependence, network 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 market. **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 designs. On one hand, Matthew Bunn and Martin Malin 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 settings in which they can be used, and it is quite possible 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.

#### Military has unique capabilities to advance SMRs---innovative financing

Cohen 12 Armond, Executive Director for the Clean Air Task Force, "DoD: A Model for Energy Innovation?", May 21, energy.nationaljournal.com/2012/05/powering-our-military-whats-th.php

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.

#### SMRs are awesome---feasible, cheaper, safer and solve other nuclear downsides

Ringle 10 John, Professor Emeritus of Nuclear Engineering at Oregon State University, "Reintroduction of reactors in US a major win", November 13, robertmayer.wordpress.com/2010/11/21/reintroduction-of-reactors-in-us-a-major-win/

Small nuclear reactors will probably be the mechanism that ushers in nuclear power’s renaissance in the U.S.¶ Nuclear plants currently supply about 20 percent of the nation’s electricity and more than 70 percent of our carbon-free energy. But large nuclear plants cost $8 billion to $10 billion and utilities are having second thoughts about how to finance these plants.¶ A small modular reactor (SMR) has several advantages over the conventional 1,000-megawatt plant:¶ 1. It ranges in size from 25 to 140 megawatts, hence only costs about a tenth as much as a large plant.¶ 2. It uses a cookie-cutter standardized design to reduce construction costs and can be built in a factory and shipped to the site by truck, railroad or barge.¶ 3. The major parts can be built in U.S. factories, unlike some parts for the larger reactors that must be fabricated overseas.¶ 4. Because of the factory-line production, the SMR could be built in three years with one-third of the workforce of a large plant.¶ 5. More than one SMR could be clustered together to form a larger power plant complex. This provides versatility in operation, particularly in connection with large wind farms. With the variability of wind, one or more SMRs could be run or shut down to provide a constant base load supply of electricity.¶ 6. A cluster of SMRs should be very reliable. One unit could be taken out of service for maintenance or repair without affecting the operation of the other units. And since they are all of a common design, replacement parts could satisfy all units. France has already proved the reliability of standardized plants.¶ At least half a dozen companies are developing SMRs, including NuScale in Oregon. NuScale is American-owned and its 45-megawatt design has some unique features. It is inherently safe. It could be located partially or totally below ground, and with its natural convection cooling system, it does not rely on an elaborate system of pumps and valves to provide safety. There is no scenario in which a loss-of-coolant accident could occur.

#### SMR incentives now but they’re insufficient

DOD Energy Blog 11 “Good Things in Small Packages: Small Reactors for Military Power”, February 16, dodenergy.blogspot.com/2011/02/good-things-in-small-packagessmall.html

They conclude that DOD should lead the charge for small reactors to meet their own needs as well as to make sure that the US leads that industry’s development. When first written the paper mentioned that most of the technology was stymied somewhere between the drawing board and production. But there is good news in the President’s 2011 Budget for nukes. The New York Times reported that the budget contains $500 million over five years for DOE to complete two designs and secure National Regulatory Commission (NRC) approval. The reactors will be built entirely in a factory and trucked to the site, like “modular homes”. Sounds just like what Dr. Andres ordered. Only problem is that $500 million is only about half of the cost to get to NRC approval. Actual production is in the $2 billion neighborhood, and that is a pricey neighborhood. Enter Amory Lovins. Amory has often derided the cost for nuclear power as an unnecessary expenditure. His argument is that micropower is the way of the future, not big honking gigawatt nuclear power plants. Although there has been a resurgence in the interest in nuclear power, it is still difficult to find private investments willing to underwrite the expense. Maybe the development of small nukes for national security reasons will lead to cost effective small nukes for distributed micropower nationwide. Small reactors for FOBs are more problematic. Even Bagram only needs about 25 MW with other FOBS being smaller. Security will be the first concern. If someone tries a smash and grab at Fort Hood they have to go through a couple of armored divisions and have a long way to got to get away. Kabul to Peshawar is only 128 miles. Cost shouldn’t be an overriding factor in considering secure power, but even at a 75% cost reduction in production, half a billion for 25MW is a bit much. Of course if you could produce a 300MW system, Bagram could air condition Kabul! The real soft power. My buddy, T.C. the fighter pilot, would tell you that DOD's mission is to fight and win the Nation's wars, not spark business recovery. DOD needs to focus on conserving energy. “Reducing the consumption at Miramar by 50% might save a lot of fuel and money, but I'd rather reduce consumption by 50% at PB Jugroom even though the savings in gallons and dollars are tiny.” Reducing demand reduces risk. All that being said, it may well be worth DOE and DOD efforts to explore the potential. It is something that may be beyond the means of commercial entities, but not government (See China). If there is going to be a market here, let us not be left behind as we have been with other alternative energy production means.

# 2AC

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### U – Yes Cyber-Attack

#### The threat of cyber-attack is real---countries and terrorists acquiring capabilities---collapses ag and water

Habiger 10 (Eugue, Retired Air Force General, Cyberwarfare and Cyberterrorism, The Cyber Security Institute, 2/1, p. 11-19)

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 cyberattacks 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 cyberwar 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 cyberwarfare 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 cyberterror 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 powergrids, 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 cybermercenaries 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 **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 cyberattack 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**.

#### Ag collapse causes extinction

Lugar 2k | Chairman of the Senator Foreign Relations Committee and Member/Former Chair of the Senate Agriculture Committee (Richard, a US Senator from Indiana, is Chairman of the Senate Foreign Relations Committee, and a member and former chairman of the Senate Agriculture Committee. “calls for a new green revolution to combat global warming and reduce world instability,” http://www.unep.org/OurPlanet/imgversn/143/lugar.html

In a world confronted by global terrorism, turmoil in the Middle East, burgeoning nuclear threats and other crises, it is easy to lose sight of the long-range challenges. But we do so at our peril. One of the most daunting of them is meeting the world’s need for food and energy in this century. At stake is not only preventing starvation and saving the environment, but also world peace and security. History tells us that states may go to war over access to resources, and that poverty and famine have often bred fanaticism and terrorism. Working to feed the world will minimize factors that contribute to global instability and the proliferation of [WMDs] weapons of mass destruction. With the world population expected to grow from 6 billion people today to 9 billion by mid-century, the demand for affordable food will increase well beyond current international production levels. People in rapidly developing nations will have the means greatly to improve their standard of living and caloric intake. Inevitably, that means eating more meat. This will raise demand for feed grain at the same time that the growing world population will need vastly more basic food to eat. Complicating a solution to this problem is a dynamic that must be better understood in the West: developing countries often use limited arable land to expand cities to house their growing populations. As good land disappears, people destroy timber resources and even rainforests as they try to create more arable land to feed themselves. The long-term environmental consequences could be disastrous for the entire globe. Productivity revolution To meet the expected demand for food over the next 50 years, we in the United States will have to grow roughly three times more food on the land we have. That’s a tall order. My farm in Marion County, Indiana, for example, yields on average 8.3 to 8.6 tonnes of corn per hectare – typical for a farm in central Indiana. To triple our production by 2050, we will have to produce an annual average of 25 tonnes per hectare. Can we possibly boost output that much? Well, it’s been done before. Advances in the use of fertilizer and water, improved machinery and better tilling techniques combined to generate a threefold increase in yields since 1935 – on our farm back then, my dad produced 2.8 to 3 tonnes per hectare. Much US agriculture has seen similar increases. But of course there is no guarantee that we can achieve those results again. Given the urgency of expanding food production to meet world demand, we must invest much more in scientific research and target that money toward projects that promise to have significant national and global impact. For the United States, that will mean a major shift in the way we conduct and fund agricultural science. Fundamental research will generate the innovations that will be necessary to feed the world. The United States can take a leading position in a productivity revolution. And our success at increasing food production may play a decisive humanitarian role in the survival of billions of people and the health of our planet.

### 2AC DoD Command

#### DOD experience lets it protect defense infrastructure

Newmeyer 12 Kevin P, Assistant Professor in the Center for Hemispheric Defense Studies at the National Defense University, "Who Should Lead U.S. Cybersecurity Efforts?" PRISM 3, No. 2, Mar 2012, www.ndu.edu/chds/docuploaded/Newmeyer\_Prism115\_126.pdf

Option B (2): Placing the Department of Defense in Charge. Others suggested that DOD be given the leadership role for cybersecurity across the government. Defense already has responsibility for defending its own systems and has been forward leaning in establishing policy and making organizational changes for cybersecurity. Among the initiatives was the establishment of U.S. Cyber Command to have overall responsibility within the military for cyber defense and attack issues. The department has also established relationships with the private sector through its defense industrial base cybersecurity pilot initiatives, which fall under its responsibility for defense-related critical infrastructure protection. Much of the argument for giving cybersecurity leadership responsibility to DOD is based on its combination of experience and manpower. 16 NSA has extensive experience and capability for monitoring and protecting networks. In October 2010, Homeland Security and DOD signed a memorandum of understanding that allowed NSA to support Homeland Security cybersecurity efforts and established a personnel exchange between the agencies. 17

### AT: Grid Resilient

#### Grid’s vulnerable and threats are growing---insiders vote aff

Merica 12 Dan, CNN, "DoD official: Vulnerability of U.S. electrical grid is a dire concern", July 27, security.blogs.cnn.com/2012/07/27/dod-official-vulnerability-of-u-s-electrical-grid-is-a-dire-concern/

Speaking candidly at the Aspen Security Forum, one defense department official expressed great concern about the possibility of a terrorist attack on the U.S. electric grid that would cause a “long term, large scale outage.”¶ Paul Stockton, assistant secretary for Homeland Defense and Americas’ Security Affairs at the Department of Defense, said such an attack would affect critical defense infrastructure at home and abroad – a thought that Stockton said was keeping him up at night.¶ “The DOD depends on infrastructure in order to be able to operate abroad. And to make those operations function, we depend on the electric grid,” Stockton said.¶ The concern, Stockton continued, was that America’s adversaries would avoid attacking “the pointy end of the spear,” meaning combat troops, and would instead look for homeland, possibly non-military, targets.¶ “Our adversaries, state and non-state, are not stupid. They are clever and adaptive,” Stockton said. “There is a risk that they will adopt a profoundly asymmetric strategy, reach around and attack us here at home, the critical infrastructure that is not owned by the Department of Defense.”¶ But Stockton’s concerns were not solely limited to terrorist attacks. Other concerning scenarios, said the assistant secretary, include geomagnetic disturbances, earthquakes and other natural disasters that could take down the grid.¶ According to Stockton, a recurrence of a massive earthquake, like the New Madrid earthquake of 1812, “would cause a power outage for weeks to months across a multi-state area, rolling blackouts in the East Coast…”

## Solvency

### SMRs Feasible/Cheap/Safe

#### SMRs are awesome---feasible, cheaper, safer and solve other nuclear downsides

Ringle 10 John, Professor Emeritus of Nuclear Engineering at Oregon State University, "Reintroduction of reactors in US a major win", November 13, robertmayer.wordpress.com/2010/11/21/reintroduction-of-reactors-in-us-a-major-win/

Small nuclear reactors will probably be the mechanism that ushers in nuclear power’s renaissance in the U.S.¶ Nuclear plants currently supply about 20 percent of the nation’s electricity and more than 70 percent of our carbon-free energy. But large nuclear plants cost $8 billion to $10 billion and utilities are having second thoughts about how to finance these plants.¶ A small modular reactor (SMR) has several advantages over the conventional 1,000-megawatt plant:¶ 1. It ranges in size from 25 to 140 megawatts, hence only costs about a tenth as much as a large plant.¶ 2. It uses a cookie-cutter standardized design to reduce construction costs and can be built in a factory and shipped to the site by truck, railroad or barge.¶ 3. The major parts can be built in U.S. factories, unlike some parts for the larger reactors that must be fabricated overseas.¶ 4. Because of the factory-line production, the SMR could be built in three years with one-third of the workforce of a large plant.¶ 5. More than one SMR could be clustered together to form a larger power plant complex. This provides versatility in operation, particularly in connection with large wind farms. With the variability of wind, one or more SMRs could be run or shut down to provide a constant base load supply of electricity.¶ 6. A cluster of SMRs should be very reliable. One unit could be taken out of service for maintenance or repair without affecting the operation of the other units. And since they are all of a common design, replacement parts could satisfy all units. France has already proved the reliability of standardized plants.¶ At least half a dozen companies are developing SMRs, including NuScale in Oregon. NuScale is American-owned and its 45-megawatt design has some unique features. It is inherently safe. It could be located partially or totally below ground, and with its natural convection cooling system, it does not rely on an elaborate system of pumps and valves to provide safety. There is no scenario in which a loss-of-coolant accident could occur.

### AT: NG

#### New nuclear is cheaper than gas even at present prices

Conca 12 James, Forbes, 8/11, "Nuclear Waste Confidence -- NRC Ruling No Big Deal", www.forbes.com/sites/jamesconca/2012/08/11/nuclear-waste-confidence-nrc-ruling-no-big-deal/print/

Huh? Re-licensing nuclear reactors is the absolute cheapest form of energy, about 2¢/kWhr for 20 years. They are obviously referring to new natural gas plants versus new nuclear GenIII plants which is not impacted by this ruling at all. New nuclear is actually cheaper than new gas in the long run, e.g., 20 years or more, even at present gas prices, but our society doesn’t like to plan for the long-term so it usually gets these things wrong. And why anyone thinks gas plants are environmentally preferable to nuclear is odd from a carbon-emissions standpoint.

## T

### 2AC T – Production

#### C/I – energy production includes all stages from resource location through distribution

Koplow 4 Doug Koplow is the founder of Earth Track in Cambridge, MA. He has worked on natural resource subsidy issues for 20 years, primarily in the energy sector "Subsidies to Energy Industries" Encyclopedia of Energy Vol 5 2004www.earthtrack.net/files/Energy%20Encyclopedia,%20wv.pdf

3. SUBSIDIES THROUGH THE FUEL CYCLE

Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety).

3.1 Preproduction

Preproduction activities include research into new technologies, improving existing technologies, and market assessments to identify the location and quality of energy resources.

3.1.1 Research and Development

R&D subsidies to energy are common worldwide, generally through government-funded research or tax breaks. Proponents of R&D subsidies argue that because a portion of the financial returns from successful innovations cannot be captured by the innovator, the private sector will spend less than is appropriate given the aggregate returns to society. Empirical data assembled by Margolis and Kammen supported this claim, suggesting average social returns on R&D of 50% versus private returns of only 20 to 30%.

However, the general concept masks several potential concerns regarding energy R&D. First, ideas near commercialization have much lower spillover than does basic research, making subsidies harder to justify. Second, politics is often an important factor in R&D choices, especially regarding how the research plans are structured and the support for follow-on funding for existing projects.

Allocation bias is also a concern. Historical data on energy R&D (Table III) demonstrate that R&D spending has heavily favored nuclear and fossil energy across many countries. Although efficiency, renewables, and conservation have captured a higher share of public funds during recent years, the overall support remains skewed to a degree that may well have influenced the relative competitiveness of energy technologies. Extensive public support for energy R&D may also reduce the incentive for firms to invest themselves. U.S. company spending on R&D for the petroleum refining and extraction sector was roughly one-third the multi-industry average during the 1956-1998 period based on survey data from the U.S. National Science Foundation. For the electric, gas, and sanitary services sector, the value was one-twentieth, albeit during the more limited 1995-1998 period.

3.1.2 Resource Location

Governments frequently conduct surveys to identify the location and composition of energy resources. Although these have addressed wind or geothermal resources on occasion, they most often involve oil and gas. Plant siting is another area where public funds are used, primarily to assess risks from natural disasters such as earthquakes for large hydroelectric or nuclear installations. Survey information can be important to evaluate energy security risks and to support mineral leasing auctions, especially when bidders do not operate competitively. However, costs should be offset from lease sale revenues when evaluating the public return on these sales. Similarly, the costs of siting studies should be recovered from the beneficiary industries.

3.2 Production

Energy production includes all stages from the point of resource location through distribution to the final consumers. Specific items examined here include resource extraction, resource conversion (including electricity), the various distribution links to bring the energy resource to the point of final use, and accident risks.

3.2.1 Extraction of Energy Resources

General procedures for leasing access to energy minerals on public lands and more general subsidies for promoting energy extraction both are important areas to evaluate. Extraction-related subsidies are most common for oil and gas production, although they also support nuclear fission (due to uranium mining), geothermal, and coal.

3.2.1.1 Accessing Publicly Owned Energy Resources Terms of access for energy minerals on public lands can be a source of enormous subsidies. In countries where leases or concessions are granted through graft rather than competitive bidding, wealth transfers worth billions of dollars can occur. Although there are not good statistics on the losses, the problem appears to be large. Oxfam America finds that states most dependent on oil tend to have very low Human Development Index (HDI) rankings. The HDI, developed by the UN Development Program, ranks states according to a combined measure of income, health, and education. Transparency International finds strong linkages between large mining and petroleum sectors as well as elevated levels of bribery and corruption. Low-cost access to energy minerals also tends to remove the incentive for careful management because profits can be had even with inefficient operation. Lease operation can also generate subsidies such as when self-reported royalties are calculated improperly. The Project on Government Oversight has documented state and federal court awards in excess of $10 billion in response to litigation in the United States over oil and gas royalty underpayments.

3.2.1.2 Promoting Extraction Activities Policies to reduce the cost of extraction are widespread and often take the form of tax or loan subsidies or royalty concessions. They are found at both the national and state levels. Particular market niches may be targeted, from geographical (e.g., deep sea recovery of oil, timbering in a particular forest), to technological (e.g., tax breaks for more advanced oil drilling or coal gasification), to life cycle related (e.g., lower royalties on idle wells that are restarted). In some cases, baseline tax policy may be applied by firms in creative ways to generate large subsidies. U.S.-based multinationals receive a tax credit for foreign taxes paid to avoid double taxation of foreign income. Yet in many oil-producing regions with low or no corporate income taxes, foreign governments have reclassified royalty payments into corporate taxes, generating a tax write-off estimated by Koplow and Martin at between $0.5 billion and $1.1 billion annually.

However, many subsidies to extraction are not restricted to particular market niches. Percentage depletion allowances in the United States allow most firms mining oil, gas, uranium, or coal to deduct more costs from their taxable income than they have actually incurred. Accelerated write-offs of extraction-related investments are also common. For example, many multiyear costs in the U.S. oil and gas industry may be deducted immediately (ex-pensed) rather than over the useful lives of the investments. All of these special provisions tend to reduce the effective tax rate on benefiting energy industries. Data collected by the Energy Information Administration (EIA) suggest that the major U.S. energy firms paid federal taxes that were one-quarter to one-half the prevailing nominal rates between 1977 and 1995.

3.2.2 Conversion

Raw energy materials normally go through some conversion prior to consumption. Crude oil is refined into a wide range of specialized products such as gasoline and heating oil. Coal may be pulverized or cleaned prior to use. A combination of heat and machinery converts raw fuels (including wind and solar) into electricity. Common government supports to the conversion stage include capital subsidies, production tax credits or purchase requirements, and exemptions from appropriate protections for environmental quality, worker health, and accident risks. Because this third category affects multiple phases of the fuel cycle, it is addressed in a separate section.¶ 3.2.2.1 Capital Subsidies Subsidies to capital formation, usually through accelerated depreciation or investment tax credits, are common. Although applicable to multiple economic sectors, they are often of great benefit to energy producers. This is due both to their relative capital intensity and to provisions in the tax code that grant special accelerated depreciation schedules for energy-related assets. For example, in the United States, three sectors of relevance to energy—electric light and power, gas facilities, and mining, shafts, and wells—have allow- able depreciation schedules that are 28, 45, and 44% faster, respectively, than the actual economic depreciation of their assets according to data compiled by the U.S. Treasury. Capital subsidies are of greatest benefit to large-scale generation assets with long construction times (nuclear, hydro, and coal) and are of greatest detriment to energy resources that conserve capital (most prominently energy conservation).

3.2.2.2 Tax Credits/Purchase Mandates A second class of subsidies to the conversion stage are tax credits or purchase mandates for certain types of energy. These subsidies occur at both the federal and the state/provincial levels and most often support emerging power sources such as solar, wind, and biomass-based electricity. Whereas many of the subsidies to conventional power sources are expen- sive regardless of whether the energy investments ultimately succeed, the tax credits and purchase mandates tend to be more efficient. For example, federal tax credits for wind energy in the United States cost taxpayers nothing unless a private investor is successful in getting a wind plant operating. If the plant goes offline, so too do the credits. Renewable portfolio standards (RPSs), a common form of purchase mandates adopted by many U.S. states, are even more efficient. In addition to providing no subsidy unless the power is delivered, RPSs often compete eligible power sources against each other, driving down the unit subsidy as technologies improve. Despite their benefits, these approaches have run into some political problems. Specifically, as the subsidies have grown, so too has lobbying pressure to expand the range of eligible sources. Federal tax credits now include poultry waste, a great benefit to the handful of very large chicken processors. At the state level, unsustainable biomass sources are sometimes included, as are waste-to-energy and landfill gas systems. Thus, although energy diversification goals are still being met, the supply is not necessarily renewable or particularly clean.

3.2.3 Transportation and Distribution

Fuel cycles may involve multiple transportation steps, including movement of raw fuels to point of refining, refined fuels to the point of consumption, and movement of wastes to disposal sites. Relevant modes of transport include road, rail, water, pipelines, and transmission lines.

Although specific energy resources vary widely in their transport intensity and in the modes of transportation and distribution on which they rely (Table IV), there are some common themes. Government construction, maintenance, and operation of transportation infrastructure frequently give rise to subsidies when user fees do not cover costs. These subsidies are often understated because municipalities might not properly cost the resources being consumed. For example, tax exemptions on transportation bonds used to finance roads are routinely ignored, as are the free grants of rights-of-ways for rail, road, pipeline, and transmission links. So too is the opportunity cost of land covered by roadways and parking facilities. Although this space occupies 1.7, 2.1, and 3.5% of the total land area in the United States, Germany, and Japan, respectively, Todd Litman of the Victoria Transport Policy Institute noted that no property tax is paid on the vast majority of this space. This understates the direct costs of the infrastructure and the rights to use it.

Cross-subsidies between user groups may further distort relative prices. Large trucks pay less in highway fees than the damage they cause, generating an incremental subsidy to deliveries of refined fuels such as gasoline. Deep-berth ships such as large oil tankers may be the primary drivers of channel- or port-deepening projects, yet they often contribute to costs based only on volume of shipments. In the electricity sector, transmission tariffs may represent broad averages of the cost of service rather than rising as the distance traveled and density of users decline. By delivering subsidized electricity to remote users, transmission cross-subsidies mask the cost of line maintenance and new construction. This can destroy niche markets in which off-grid technologies (often renewable) would otherwise have been able to compete. Cross-subsidies between peak pricing and low demand periods are also common in electricity markets because real-time metering is not widely used at the retail level. This can dampen retail investments in demand-side management.

Power sources such as wind and solar require no shipment of input fuels or waste. Improved energy efficiency and some off-grid technologies require no transmission grid either. As a result, subsidies to energy transport can increase the barriers to renewable energy and efficiency. A major U.S. study conducted by Cone and colleagues in 1978 found that an estimated $15.2 billion in federal money subsidized transport of U.S. oil stocks between 1950 and 1977. The policies generating these subsidies have continued during the ensuing quarter-century or so.

3.2.4 Accident Risks

A handful of energy activities have the potential to cause catastrophic harm, including large oil spills, dam failures, and nuclear accidents. Many governments cap, shift, or ignore the potential liabilities from these activities. Functioning insurance markets and litigation would normally help to drive up prices for the more dangerous energy sources or particularly negligent operators. Government policies that mask these signals impede substitution to safer alternatives.

3.2.4.1 Large Oil Spills Within the United States, the Oil Pollution Act of 1990 stipulates use of commercial insurance for a first tier of insurance. A public trust fund financed by levies on oil sales provides supplemental coverage, although payments out of the fund are capped at $1 billion per incident. Based on empirical assessments of spill cleanup costs by Anderson and Talley, at least five spills over the past three decades or so would have exceeded the $1 billion cap, although most spills will be adequately covered. Internationally, the 1992 Civil Liability Convention governs liability for oil spills, also using a two-tier system. Insurance held by the vessel owner provides the first tier. Levies on cargo owners feeds the second tier, with receipts held in the International Oil Pollution Compensation Fund. The maximum compensation available from both tiers is roughly $174 million, a level shown to be insufficient by spills occurring in both 1997 and 1999. Although the caps are likely to be raised by 50%, Alfred Popp, chairman of the group working on the latest rounds of reforms, noted that concerns about liability shortfalls persist. The subsidy value of these caps is not known.

3.2.4.2 Dam Failures Many activities that would pose a very large potential risk if accident scenarios materialized rely on a system of strict liability. Strict liability focuses only on magnitude of the potential damages rather than on the intent, negligence, or degree of care of the operator. Although the failure of a large dam near a populated area can cause catastrophic loss of life, assurance for such potential liabilities is poorly characterized. Although loss of life from a dam failure will likely trigger widespread litigation, the rules of that litigation are predominantly set at the state level. Analysis by Denis Binder for the Association of State Dam Safety Officials indicates that a slight majority of states reject strict liability in dam failures. Furthermore, the piecemeal approach to coverage within the United States makes it difficult to evaluate whether existing coverages are adequate. Poor characterization of the risks extends to the international arena as well. To the extent that liability insurance is not in place or is too low, subsidies to hydroelectricity would result.

3.2.4.3 Nuclear Accidents Nuclear accidents can expose large populations to dangerous levels of radioactivity, triggering enormous liabilities for the firm responsible. Caps on nuclear liability are common throughout the world. The United States, under the Price-Anderson Act, has a two-tier system of indemnification: a first tier of commercial insurance ($300 million per reactor) plus a second pooled tier (maximum of $83.9 million per reactor) funded by retroactive assessments on all reactors in case any reactor has an accident. Japanese nuclear operators must provide financial security of $520 million; damages above that amount will be paid by the government. In China, the limit is roughly $36 million. In Ukraine, it is roughly $70 million.

International efforts to standardize liability under the Convention on Supplementary Compensation for Nuclear Damage would establish minimum liability coverage worldwide, although for many countries this would also constitute the maximum. Under the convention, operators would directly face a first tier of liability. A country fund would provide secondary coverage. Because country payments rely on a sovereign guaranty rather than a prefunded instrument such as a trust fund, they may be at some risk.

Aggregate coverage under the U.S. system is estimated at roughly $9.2 billion per accident, although most of this is paid out over nearly 9 years by utilities, so the present value of the coverage is substantially lower. Liability levels established under the convention would provide less than $900 million per accident. Loss statistics from the Insurance Services Office and from the Disaster Insurance Information Office provide some context. Since 1950, there have been approximately 20 hurricanes with adjusted damages in excess of the convention cap, and both Hurricane Andrew and the Northridge earthquake had damages that exceeded the Price-Anderson cap even before adjusting retroactive premiums to present values.

Subsidies arise when government caps fall below expected damages from an incident and caps under both Price-Anderson and the convention are likely to do so. Damages above that level are, in effect, shifted to the state or to the affected population. Heyes estimated that the subsidy to reactors under Price-Anderson ranges between 2 and 3 cents per kilowatt-hour, a value that would roughly double the operating costs of nuclear plants. In addition, there are incremental subsidies associated with indemnification for nuclear contractors and government-owned facilities. Because other countries have lower liability caps and weaker inspection regimes, they likely have higher liability subsidies as well.

3.3. CONSUMPTION

Government support for energy consumption falls into three main categories: poverty alleviation, economy-wide below-market pricing, and targeted subsidies for certain classes of consumers.

3.3.1 PovertyAlleviation

Subsidies to heat and power for poorer citizens are common, frequently in the form of a lump-sum grant or reduced cost access to municipal resources. Often consumption oriented, these subsidies may miss opportunities to implement conservation measures among the target populations. Targeting can be a problem as well, with funds not reaching the groups most in need. According to the International Energy Agency (IEA), the poorest citizens often rely on noncommercial fuels such as dung (biomass comprises as much as 80% of the energy market in rural countries with a high reliance on subsistence agriculture) or live outside the reach of the subsidized electrical grid.

3.3.2 General Subsidies

Nations with large domestic energy industries sometimes institute policies that keep local prices well below world levels. These subsidies may protect antiquated energy-consuming industries that otherwise would be unable to compete, or they may serve as ''rewards'' to the electorate for supporting a particular official. For example, price gap data for Venezuela and Iran compiled by the Organization for Economic Cooperation and Development (OECD) and IEA show that these large oil producers heavily subsidize both industrial and residential use of petroleum. Subsidies are also common in many service areas close to large municipal hydroelectric generating stations. For example, rates to customers of the Power Marketing Administration dams in the United States were long heavily subsidized. Although the quantities of power or oil flowing through these regions make these subsidies seem costless, they are not. Domestic sales at subsidized rates forgo energy export revenues, increase local pollution, and contribute to a production base that is increasingly noncompetitive with that deployed elsewhere in the world.

3.3.3 Targeted Exemptions

Most OECD countries exempt coal and heavy fuel oils used in industry, as well as aviation fuels used on international flights, from the baseline levies on energy. Excise tax rates on coal used in the industrial or power sector are often lower than those on much cleaner natural gas. The OECD noted that these exemptions ''effectively mean that a large proportion of total carbon emissions in OECD countries is untaxed,'' generating weaker incentives to adopt even low-cost abatement options.

3.4 Postproduction Activities

Energy production and conversion require large facilities, often located in remote or pristine environments. Postoperational cleanup can be complex. Decommissioning addresses removal of physical infrastructure, whereas remediation and reclamation address problems with land and water. For markets to make accurate decisions about the relative cost of energy resources, the cost of these postproduction activities must be included in energy prices during the operating life of the facility in much the same way that the cost of an employee pension would be. Indeed, failure to accrue funds for postclosure costs during operations would make public subsidy likely given that revenues often drop to zero on plant closure.

3.4.1 Decommissioning

Decommissioning subsidies arise when infrastructure removal costs are ignored or underestimated or when accrued funds are mismanaged. Costs can be significant at large-scale energy installations such as hydroelectric dams and oil refineries. Where installations are remote (e.g., offshore oil rigs), radioactive (e.g., nuclear plants), or widely dispersed (e.g., gathering pipelines), costs per unit of capacity can be particularly high. Requirements for long-term environmental or safety monitoring (e.g., nuclear plants and some mines) can drive costs up further.

Pipelines and hydroelectric dams provide examples of costs being ignored entirely. Koplow and Martin made inquiries to many U.S. officials regarding pipeline closure. They found that although there are regulations governing proper abandonment, advance funding of closures was not required. The risks of insolvency appeared to be fairly high, especially for the smaller companies that often own older gathering pipelines. Regarding dams, the U.S. Federal Energy Regulatory Commission indicated in a 1994 policy statement that it will ''not generically impose decommissioning funding requirements on licensees'' but rather will stipulate them on a case-by-case basis at the time of relicensing. According to Andrew Fahlund of American Rivers, this policy has been implemented such that if a ''dam owner is too poor, it is too burdensome to require them to maintain a fund, and if they are rich, they will have plenty of money available for such an eventuality.''

Underestimating decommissioning requirements is of great concern with nuclear plants. IEA data indicate that the anticipated cost per unit of power capacity can vary by a factor of 10 across plants. IEA multicountry data suggest median decommissioning values of between 21 and 37% of the overnight capital cost (i.e., before financing) to build the plant. If funds are not properly accumulated during the plant's operating life, taxpayer burdens will be large. Inadequate provision for closure is also apparent in the oil and gas sector. Koplow and Martin found shortfalls in funding to plug and abandon oil wells in the United States approaching $600 million per year, of which approximately 75% represented insufficient bonding at wells still in operation.

Public bailouts can also be required if accrued funds for postclosure activities are lost through negligence, bankruptcy, or theft. If funds are retained within the firm, bankruptcy is a significant risk, especially given the 40- to 60-year time frame between fund collection and use. Increased segregation of each energy asset into its own company (now becoming the norm in the U.S. nuclear industry) greatly increases this risk. Loss through negligence is less likely where regulations preclude speculative investing. Nuclear decommissioning trusts within the United States are held outside the firm and are subject to conservative investment requirements to reduce the likelihood of loss.

3.4.2 Reclamation and Remediation Small subsidies to site reclamation and remediation may arise through government-sponsored research into remediation technologies or through regulatory oversight of extraction activities that are not recovered via user fees. Much larger subsidies are associated with remediation of government-owned energy-related installations or where reclamation bonding has been insufficient to pay for the damage caused by private operators. James Boyd at Resources for the Future pointed to widespread inadequacy of reclamation bonding levels. For example, in the U.S. states of Indiana, Kentucky, and Tennessee, reclamation of coal mine sites is below 20%. Reclamation bond levels have generally been inadequate. Estimated liability for high priority (public health and safety concerns) coal mine remediation in the United States is $6.6 billion, according to the U.S. Office of Surface Mining Reclamation and Enforcement. Many mining regions around the world have unreliable, incomplete, or nonexistent data on abandoned mines and their associated costs. These shortfalls may be made up by general tax revenues. However, more often, resource damage is not mitigated and continuing environ-mental releases are not controlled. Spending to address environmental concerns at nuclear energy-related infrastructure owned by the U.S. government has run approximately $500 million per year, much of which is paid by general taxpayers.

3.5 Energy Externalities

External costs of energy production and consumption can include pollution, land degradation, health impairments, congestion, and energy security. This article differentiates between two types of subsidies. The first involves existing government spending to address recognized problems associated with particular energy resources. Included here would be public funding to protect energy supplies and assets; public absorption of energy worker health care costs; and/or public subsidies to pollution control or abatement. Because this spending involves actual outlays, it is counted as a fiscal subsidy. A second class of policies involves loopholes in regulatory controls that allow additional damages to human health or the environment to continue without compensation. This second group is often difficult to quantify and is segregated as an externality.

3.5.1 Energy Security Energy plays a central role in industrialized economies, and supply disruptions can trigger widespread economic dislocations. Geopolitical problems, accidents, and terrorism all are potential triggers. Lovins and Lovins identified a handful of factors that drive security concerns. These include long distribution channels, geographically concentrated delivery or production systems, interconnected systems that can spread failures, specialized labor and control systems to operate capital-intensive facilities that are very difficult to replace, and dangerous materials that can elevate the severity of any breach.

Energy security strategies include protection of energy-related assets and supply routes, stockpiling of vulnerable resources, and supply diversification. Where costs of these responses are borne by the general public rather than by the appropriate energy producers and/or consumers, the market incentive to build a more resilient, decentralized, and diversified supply system is reduced. Security subsidies tend to benefit oil the most, with particularly high transfers to imported oil from unstable regions such as the Persian Gulf. Additional beneficiaries are centralized electricity and natural gas. Off-grid power and conservation are the sources most disadvantaged. Subsidies to protecting energy installations and stockpiling are explored in detail in the following subsections.

3.5.1.1 Protection of Assets and Supply Links

The larger the energy installation, the greater the target and the bigger the dislocation that an attack or accident would cause. Defending energy-related assets is an increasing concern of governments around the world. Pipeline defense is listed as its own objective within Georgia s defense and security strategy. The United States has become involved with training the Colombian military to defend oil pipelines in that country, pushing for funding of $98 million to support the effort. Within the United States, core assets include the Trans-Alaska Pipeline System (TAPS), through which nearly 25% of total U.S. crude production flows, and nuclear plants. In response to inquiries from Koplow and Martin, Alaskan and federal officials said that no public funds were spent ensuring TAPS security. Nonetheless, the military has historically conducted training and planning exercises around the pipeline. In the nuclear sector, increased public subsidies have come through rising deployment of state-level security or National Guard troops around plants during periods of high terrorist alerts. However, surveys of nuclear plant workers by the Project on Government Oversight reveal employee concerns that training and spending levels are still insufficient. Although these anecdotes indicate that public expenditures in the area of protecting energy-related assets are likely large, data to quantify the subsidies are generally unavailable.

The costs of defending oil shipments through the Persian Gulf is an exception. As one of three central missions for the U.S. military in the region, there have been multiple efforts to value the subsidy to oil. Koplow and Martin reviewed eight historical studies of these costs and found general agreement that this presence is of great benefit to oil supply security. Disagreements centered on cost attribution. Some assessments attributed an extremely small portion of the military cost to oil, arguing that the same basic force structure would be needed for the other missions. Koplow and Martin pointed out that equivalent arguments could be made for each mission area given that the common costs of the vessels and personnel are what are most expensive.

They argued instead for treating the military presence through the lens of joint costs and allocating a reasonable portion (in this case, one-third) to the oil sector. This approach yields a subsidy to the oil sector in the range of $11.1 billion to $27.4 billion per year (roughly $1.65-$3.65/barrel originating from the region), depending on which of the detailed costing studies are used. Although funded by U.S. taxpayers, the benefits accrue to oil consumers in Europe and Japan as well. Recovering this cost via an excise fee on shipments would help to encourage increased supply diversification.

3.5.1.2 Stockpiling Petroleum has been the main focus of stockpiling efforts given its importance to world transport and military readiness. Under the terms of the IEA, oil-importing member states are required to hold stocks equal to 90 days of the previous year's net oil imports as a buffer against short-term supply disruptions. Subsidies arise if the costs of stockpiling are borne by taxpayers rather than by oil consumers. Relevant expenses include constructing and operating the stockpiles, interest costs on oil inventories and infrastructure, and any payments to third parties for nongovernmental stockpiling (two-thirds of IEA-mandated stocks are held commercially).

Buffer stocks for oil within the United States are held within the publicly owned Strategic Petroleum Reserve (SPR). The SPR has incomplete cost accounting, most prominently ignoring the interest costs associated with more than $16 billion it has spent to purchase its oil inventory since the reserve's inception. Private firms must finance all working capital, including inventory, in their operations, and cost savings from reducing inventory levels can be large. Public oil stockpiles are no different; capital tied up in the enterprise much be borrowed, at interest, through Treasury bond markets. Analysis by Koplow and Martin for 1995 estimated annual subsidies to the SPR at between $1.7 billion and $6.l billion, depending on whether unpaid interest on oil inventories is compounded. Because carrying costs are sensitive to the cost of capital, declining interest rates during recent years mean that current SPR subsidies will be lower than they were during the mid-1990s. Although the details of stockpile financing in other countries are not easy to discern (the IEA collects data only on physical flows, not on financial flows), some countries do recover at least a portion of their stockpiling costs from consumers. These include Japan, France, Germany, Korea, and Taiwan.

Subsidies to stockpiles slow transition to less vulnerable, more diversified supplies. Formal tracking of stockpile finance by the IEA, as well as the formalization of accounting rules for calculating costs, would leverage market forces for improved supply security.

3.5.2 Environmental, Health, and Safety Externalities

Externalities involve damages associated with energy production or use that are imposed on surrounding populations or ecosystems without compensation. These may include environmental damage, materials damage, human health effects, and nuisance factors such as bad smells and loud noises. Worker health is sometimes not counted as an externality under the argument that workers are compensated for the added risks of their jobs through higher wages. Such a conclusion requires that workers have some degree of choice in whether or not to accept jobs and that employers can be taken to task retroactively for gross negligence. This is not the case in many countries around the world. As a result, it is reasonable to consider as subsidies high levels of occupational illness, especially when the costs of maintaining those workers falls on the general taxpayers.

Governments are routinely involved with efforts to make certain energy-related activities safer for workers. This is most prominent regarding coal and nuclear fuel cycles, where dedicated government agencies exist to inspect and educate mines and production sites. If these costs are not paid entirely by the producers or consumers of the affected energy type, subsidies ensue. Public responsibility for workers' health care and/or pension costs also constitute subsidies. This has been quite common in the area of coal. For example, government payments to U.S. coal miners afflicted with black lung have exceeded $30 billion. Black lung levels are now rising (or are being better documented) in other countries such as Russia, Ukraine, and China. Coal mine fatalities continue at extremely high levels in many of these countries as well.

### 2AC T – Financial Incentive

#### We meet – plan is a financial incentive, not R+D – acquiring is T

US Code 3 Legal Information Institute, “41 USC § 131 – Acquisition”, November 24, <http://www.law.cornell.edu/uscode/text/41/131?quicktabs_8=1#quicktabs-8>

In division B, the term “acquisition”—¶ (1) means the process of acquiring, with appropriated amounts, by contract for purchase or lease, property or services (including construction) that support the missions and goals of an executive agency, from the point at which the requirements of the executive agency are established in consultation with the chief acquisition officer of the executive agency; and¶ (2) includes—¶ (A) the process of acquiring property or services that are already in existence, or that must be created, developed, demonstrated, and evaluated;¶ (B) the description of requirements to satisfy agency needs;¶ (C) solicitation and selection of sources;¶ (D) award of contracts;¶ (E) contract performance;¶ (F) contract financing;¶ (G) management and measurement of contract performance through final delivery and payment; and¶ (H) technical and management functions directly related to the process of fulfilling agency requirements by contract.

#### C/I – Financial incentives induce behaviors---that includes plan

Webb 93 – lecturer in the Faculty of Law at the University of Ottawa (Kernaghan, “Thumbs, Fingers, and Pushing on String: Legal Accountability in the Use of Federal Financial Incentives”, 31 Alta. L. Rev. 501 (1993) Hein Online)

In this paper, "financial incentives" are taken to mean disbursements 18 of public funds or contingent commitments to individuals and organizations, intended to encourage, support or induce certain behaviours in accordance with express public policy objectives. They take the form of grants, contributions, repayable contributions, loans, loan guarantees and insurance, subsidies, procurement contracts and tax expenditures.19 Needless to say, the ability of government to achieve desired behaviour may vary with the type of incentive in use: up-front disbursements of funds (such as with contributions and procurement contracts) may put government in a better position to dictate the terms upon which assistance is provided than contingent disbursements such as loan guarantees and insurance. In some cases, the incentive aspects of the funding come from the conditions attached to use of the monies.20 In others, the mere existence of a program providing financial assistance for a particular activity (eg. low interest loans for a nuclear power plant, or a pulp mill) may be taken as government approval of that activity, and in that sense, an incentive to encourage that type of activity has been created.21 Given the wide variety of incentive types, it will not be possible in a paper of this length to provide anything more than a cursory discussion of some of the main incentives used.22 And, needless to say, the comments made herein concerning accountability apply to differing degrees depending upon the type of incentive under consideration.¶ By limiting the definition of financial incentives to initiatives where *public funds are either disbursed or contingently committed*, a large number of regulatory programs with incentive *effects* which exist, but in which no money is forthcoming,23 are excluded from direct examination in this paper. Such programs might be referred to as *indirect* incentives. Through elimination of indirect incentives from the scope of discussion, thedefinition of the incentive instrument becomes both more manageable and more particular. Nevertheless, it is possible that much of the approach taken here may be usefully applied to these types of indirect incentives as well.24 Also excluded from discussion here are social assistance programs such as welfare and *ad hoc* industry bailout initiatives because such programs are not designed primarily to *encourage* behaviours in furtherance of specific public policy objectives. In effect, these programs are assistance, but they are not incentives.

## CP

### 2AC Commission CP

#### Certainty is key – crucial for investment

Trembath 11 Alex, Policy associate in the Energy and Climate Program at Breakthrough. He is the lead or co-author of several Breakthrough publications, including the 2012 report, 2/4/11, [Nuclear Power and the Future of Post-Partisan Energy Policy](http://leadenergy.org/2011/02/the-nuclear-option-in-a-post-partisan-approach-on-energy/), "Beyond Boom and Bust: Putting Clean Tech on a Path to Subsidy Independence" and "Where the Shale Gas Revolution Came From”, <http://leadenergy.org/2011/02/the-nuclear-option-in-a-post-partisan-approach-on-energy/>

If there is one field of the energy sector for which certainty of political will and government policy is essential, it is nuclear power. High up front costs for the private industry, extreme regulatory oversight and public wariness necessitate a committed government partner for private firms investing in nuclear technology. In a new [report](http://www.thirdway.org/publications/370) on the potential for a “nuclear renaissance,” Third Way references the failed cap-and-trade bill, delaying tactics in the House vis-a-vis EPA regulations on CO₂, and the recent election results to emphasize the difficult current political environment for advancing new nuclear policy. The report, “The Future of Nuclear Energy,” makes the case for political certainty: “It is difficult for energy producers and users to estimate the relative price for nuclear-generated energy compared to fossil fuel alternatives (e.g. natural gas)–an essential consideration in making the major capital investment decision necessary for new energy production that will be in place for decades.” Are our politicians willing to match the level of certainty that the nuclear industry demands? Lacking a suitable price on carbon that may have been achieved by a cap-and-trade bill removes one primary policy instrument for making nuclear power more cost-competitive with fossil fuels. The impetus on Congress, therefore, will be to shift from demand-side “pull” energy policies (that increase demand for clean tech by raising the price of dirty energy) to [supply-side “push” policies](http://leadenergy.org/2010/09/supply-demand-energy-innovation/), or industrial and innovation policies. Fortunately, there are signals from political and thought leaders that a package of policies may emerge to incentivize alternative energy sources that include nuclear power. One place to start is the recently deceased American Power Act, addressed above, authored originally by Senators Kerry, Graham and Lieberman. Before its final and disappointing incarnation, the bill [included](http://www.huffingtonpost.com/2010/05/12/american-power-act-photos_n_573643.html#s90041&title=undefined) provisions to increase loan guarantees for nuclear power plant construction in addition to other tax incentives. Loan guarantees are probably the most important method of government involvement in new plant construction, given the high capital costs of development. One wonders what the fate of the bill, or a less ambitious set of its provisions, would have been had Republican Senator Graham not abdicated and removed any hope of Republican co-sponsorship. But that was last year. The changing of the guard in Congress makes this a whole different game, and the once feasible support for nuclear technology on either side of the aisle must be reevaluated. A New York Times [piece](http://www.nytimes.com/2010/11/17/business/energy-environment/17NUCLEAR.html) in the aftermath of the elections forecast a difficult road ahead for nuclear energy policy, but did note Republican support for programs like a waste disposal site and loan guarantees. Republican support for nuclear energy has roots in the most significant recent energy legislation, the Energy Policy Act of 2005, which passed provisions for nuclear power with wide bipartisan support. Reaching out to Republicans on policies they have supported in the past should be a goal of Democrats who wish to form a foundational debate on moving the policy forward. There are also signals that key Republicans, notably [Lindsey Graham](http://washingtonindependent.com/99171/graham-circulating-clean-energy-standard) and [Richard Lugar](http://www.plattsenergyweektv.com/story.aspx?storyid=132784&catid=293), would throw their support behind a clean energy standard that includes nuclear and CCS. Republicans in Congress will find intellectual support from a group that AEL’s Teryn Norris coined [“innovation hawks,”](http://leadenergy.org/2011/01/the-rise-of-innovation-hawks/) among them Steven Hayward, David Brooks and George Will. Will has been [particularly outspoken](http://www.newsweek.com/2010/04/08/this-nuclear-option-is-nuclear.html) in support of nuclear energy, writing in 2010 that “it is a travesty that the nation that first harnessed nuclear energy has neglected it so long because fads about supposed ‘green energy’ and superstitions about nuclear power’s dangers.” The extreme reluctance of Republicans to cooperate with Democrats over the last two years is only the first step, as any legislation will have to overcome Democrats’ traditional opposition to nuclear energy. However, here again there is reason for optimism. Barbara Boxer and John Kerry bucked their party’s long-time aversion to nuclear in a precursor bill to APA, and Kerry continued working on the issue during 2010. Jeff Bingaman, in a speech earlier this week, reversed his position on the issue by calling for the inclusion of nuclear energy provisions in a clean energy standard. The Huffington Post [reports](http://www.huffingtonpost.com/2011/02/01/sen-jeff-bingaman-backs-n_n_816864.html) that “the White House reached out to his committee [Senate Energy] to help develop the clean energy plan through legislation.” This development in itself potentially mitigates two of the largest obstacle standing in the way of progress on comprehensive energy legislation: lack of a bill, and lack of high profile sponsors. Democrats can also direct [Section 48C](http://leadenergy.org/2010/12/clean-energy-financing-first-steps-towards-post-partisan-effort/#more-3320) of the American Recovery and Reinvestment Act of 2009 towards nuclear technology, which provides a tax credit for companies that engage in clean tech manufacturing. Democrats should not give up on their policy goals simply because they no longer enjoy broad majorities in both Houses, and Republicans should not spend all their time holding symbolic repeal votes on the Obama Administration’s accomplishments. The lame-duck votes in December on “Don’t Ask, Don’t Tell,” the tax cut deal and START indicate that at least a few Republicans are willing to work together with Democrats in a divided Congress, and that is precisely what nuclear energy needs moving forward. It will require an agressive push from the White House, and a concerted effort from both parties’ leadership, but the road for forging bipartisan legislation is not an impassable one. The politician with perhaps the single greatest leverage over the future of nuclear energy is President Obama, and his rhetoric matches the challenge posed by our aging and poisonous energy infrastructure. “This is our generation’s Sputnik moment,” announced Obama recently. Echoing the calls of presidents past, the President used his [State of the Union](http://www.slate.com/id/2281847/) podium to signal a newly invigorated industrialism in the United States. He advocated broadly for renewed investment in infrastructure, education, and technological innovation. And he did so in a room with many more members of the opposition party than at any point during the first half of his term. The eagerness of the President to combine left and right agendas can hopefully match the hyper-partisan bitterness that dominates our political culture, and nuclear power maybe one sector of our economy to benefit from his political leadership.

#### DoD will block

King 11 Marcus King, Ph.D., Center for Naval Analyses Project Director and Research Analyst for the Environment and Energy Team LaVar Huntzinger, Thoi Nguyen, March 2011, Feasibility of Nuclear Power on U.S.Military Installations, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

The most significant risk for SMR power plants is associated with being an early adoptor of new technology. From a DoD perspective, economic feasibility depends on negotiating arrangements for the project that ensure DoD is not responsible for FOAK expenses. Having contractor owners and operators would reduce operating risks associated with being an early adoptor. If partners can’t be found who are willing to bear the FOAK and early adoptor risks then DoD should not undertake such a project. The recent MOU between DOE and DoD identifies a framework for cooperation and partnership for sharing risks associated with this type of project.

#### Should means oughtHoward 5

Taylor and Howard, 05 - Resources for the Future, Partnership to Cut Hunger and Poverty in Africa (Michael and Julie, “Investing in Africa's future: U.S. Agricultural development assistance for Sub-Saharan Africa”, 9/12, http://www.sarpn.org.za/documents/d0001784/5-US-agric\_Sept2005\_Chap2.pdf)
Other legislated DA earmarks in the FY2005 appropriations bill are smaller and more targeted: plant biotechnology research and development ($25 million), the American Schools and Hospitals Abroad program ($20 million), women’s leadership capacity ($15 million), the International Fertilizer Development Center ($2.3 million), and clean water treatment ($2 million). Interestingly, in the wording of the bill, Congress uses the term shall in connection with only two of these eight earmarks; the others say that USAID should make the prescribed amount available. The difference between shall and should may have legal significance—one is clearly mandatory while the other is a strong admonition—but it makes little practical difference in USAID’s need to comply with the congressional directive to the best of its ability.

## K

### 2AC Death K

#### Death reps cause an empathic shift---this is especially crucial in the context of policy debates and advocacy simulations

Recuber 11 Timothy Recuber is a doctoral candidate in sociology at the Graduate Center of the City. University of New York. He has taught at Hunter College in Manhattan "CONSUMING CATASTROPHE: AUTHENTICITY AND EMOTION IN MASS-MEDIATED DISASTER" gradworks.umi.com/3477831.pdf

Perhaps, then, what distant consumers express when they sit glued to the television watching a disaster replayed over and over, when they buy t-shirts or snow globes, when they mail teddy bears to a memorial, or when they tour a disaster site, is a deep, maybe subconscious, longing for those age-old forms of community and real human compassion that emerge in a place when disaster has struck. It is a longing in some ways so alien to the world we currently live in that it requires catastrophe to call it forth, even in our imaginations. Nevertheless, the actions of unadulterated goodwill that become commonplace in harrowing conditions represent the truly authentic form of humanity that all of us, to one degree or another, chase after in contemporary consumer culture every day. And while it is certainly a bit foolhardy to seek authentic humanity through disaster-related media and culture, the sheer strength of that desire has been evident in the public’s response to all the disasters, crises and catastrophes to hit the United States in the past decade. The millions of television viewers who cried on September 11, or during Hurricane Katrina and the Virginia Tech shootings, and the thousands upon thousands who volunteered their time, labor, money, and even their blood, as well as the countless others who created art, contributed to memorials, or adorned their cars or bodies with disaster-related paraphernalia— despite the fact that many knew no one who had been personally affected by any of these disasters—all attest to a desire for real human community and compassion that is woefully unfulfilled by American life under normal conditions today. ¶ In the end, the consumption of disaster doesn’t make us unable or unwilling to engage with disasters on a communal level, or towards progressive political ends—it makes us feel as if we already have, simply by consuming. It is ultimately less a form of political anesthesia than a simulation of politics, a Potemkin village of communal sentiment, that fills our longing for a more just and humane world with disparate acts of cathartic consumption. Still, the positive political potential underlying such consumption—the desire for real forms of connection and community—remains the most redeeming feature of disaster consumerism. Though that desire is frequently warped when various media lenses refract it, diffuse it, or reframe it to fit a political agenda, its overwhelming strength should nonetheless serve notice that people want a different world than the one in which we currently live, with a different way of understanding and responding to disasters. They want a world where risk is not leveraged for profit or political gain, but sensibly planned for with the needs of all socio-economic groups in mind. They want a world where preemptive strategies are used to anticipate the real threats posed by global climate change and global inequality, rather than to invent fears of ethnic others and justify unnecessary wars. They want a world where people can come together not simply as a market, but as a public, to exert real agency over the policies made in the name of their safety and security. And, when disaster does strike, they want a world where the goodwill and compassion shown by their neighbors, by strangers in their communities, and even by distant spectators and consumers, will be matched by their own government. Though this vision of the world is utopian, it is not unreasonable, and if contemporary American culture is ever to give us more than just an illusion of safety, or empathy, or authenticity, then it is this vision that we must advocate on a daily basis, not only when disaster strikes.

#### The K causes genocide

Dollimore 98 (Jonathan, Sociologist at University of Sussex, 1998 Death, Desire and Loss in Western Culture. Page 221)

The ideology of death is the corollary of the ideology of God, in that it is invoked to justify not only unfreedom, (renunciation, quietism, defeatism), but also, and inseparably, domination: the ‘masochistic’ exaltation of one’s own death, says Marcuse, entails also the death of others. Moreover, the ideology of death implies acceptance of an existing repressive political order, and marks the birth of a philosophical morality which rationalizes it. In this respect, although Marcuse implausibly imagines that the ontological affirmation of death comes to a close in the philosophy of Heidegger, he anticipates a prolonged later debate when he discerns in Heidegger’s work an ‘ideological exhortation to death’ appearing ‘at the very time when the political ground was prepared for the corresponding reality of death – the gas chambers and concentration camps of Auschwitz, Buchenwald, Dachau, and Bergen-Belsen’ (p.69)

## DA

### Incentives Now

#### SMR incentives now but they’re insufficient

DOD Energy Blog 11 “Good Things in Small Packages: Small Reactors for Military Power”, February 16, dodenergy.blogspot.com/2011/02/good-things-in-small-packagessmall.html

They conclude that DOD should lead the charge for small reactors to meet their own needs as well as to make sure that the US leads that industry’s development. When first written the paper mentioned that most of the technology was stymied somewhere between the drawing board and production. But there is good news in the President’s 2011 Budget for nukes. The New York Times reported that the budget contains $500 million over five years for DOE to complete two designs and secure National Regulatory Commission (NRC) approval. The reactors will be built entirely in a factory and trucked to the site, like “modular homes”. Sounds just like what Dr. Andres ordered. Only problem is that $500 million is only about half of the cost to get to NRC approval. Actual production is in the $2 billion neighborhood, and that is a pricey neighborhood. Enter Amory Lovins. Amory has often derided the cost for nuclear power as an unnecessary expenditure. His argument is that micropower is the way of the future, not big honking gigawatt nuclear power plants. Although there has been a resurgence in the interest in nuclear power, it is still difficult to find private investments willing to underwrite the expense. Maybe the development of small nukes for national security reasons will lead to cost effective small nukes for distributed micropower nationwide. Small reactors for FOBs are more problematic. Even Bagram only needs about 25 MW with other FOBS being smaller. Security will be the first concern. If someone tries a smash and grab at Fort Hood they have to go through a couple of armored divisions and have a long way to got to get away. Kabul to Peshawar is only 128 miles. Cost shouldn’t be an overriding factor in considering secure power, but even at a 75% cost reduction in production, half a billion for 25MW is a bit much. Of course if you could produce a 300MW system, Bagram could air condition Kabul! The real soft power. My buddy, T.C. the fighter pilot, would tell you that DOD's mission is to fight and win the Nation's wars, not spark business recovery. DOD needs to focus on conserving energy. “Reducing the consumption at Miramar by 50% might save a lot of fuel and money, but I'd rather reduce consumption by 50% at PB Jugroom even though the savings in gallons and dollars are tiny.” Reducing demand reduces risk. All that being said, it may well be worth DOE and DOD efforts to explore the potential. It is something that may be beyond the means of commercial entities, but not government (See China). If there is going to be a market here, let us not be left behind as we have been with other alternative energy production means.

### 2AC IAEA DA

#### IAEA overstretched now and empirically fails

Findlay 12 Trevor, Senior Fellow at Centre for International Governance Innovation and Director of the Canadian Centre for Treaty Compliance and Professor at the Norman Paterson School of International Affairs, “UNLEASHING THE NUCLEAR WATCHDOG: strengthening and reform of the IAEA”, http://www.cigionline.org/sites/default/files/IAEA\_final\_0.pdf

In spite of this well-deserved reputation and its apparently starry prospects, the Agency remains relatively undernourished, its powers significantly hedged and its technical achievements often overshadowed by political controversy. This evidently prized body has, for instance, been largely unable to break free of the zero real growth (ZRG) budgeting imposed on all UN agencies from the mid-1980s onwards (ZRG means no growth beyond inflation). As a result, the Agency has not been provided with the latest technologies and adequate human resources. Moreover, despite considerable strengthening, its enhanced nuclear safeguards system is only partly mandatory. Notwithstanding the increasing influence of its recommended standards and guides, its safety and security powers remain entirely non-binding. Although the Agency’s long-term response to the Fukushima disaster remains to be seen, its role in nuclear safety and security continues to be hamstrung by states’ sensitivity about sovereignty and secrecy, and by its own lack of capacity. Many states have shown a surprising degree of ambiguity towards supporting the organization both politically and financially. The politicization of its governing bodies has increased alarmingly in recent years, crimping its potential.¶ Most alarming of all, the Agency has failed, by its own means, to detect serious non-compliance by Iraq, Iran and Libya with their safeguards agreements and, by extension, with the NPT (although it was the first to detect North Korea’s non-compliance). Iran’s non- compliance had gone undetected for over two decades. Most recently, the Agency missed Syria’s attempt to construct a nuclear reactor with North Korean assistance. Despite significant improvements to the nuclear safeguards regime, there is substantial room for improvement, especially in detecting undeclared materials, facilities and activities.

#### No deaths from nuclear meltdowns

Drum 11 Kevin, political blogger for Mother Jones, "Nukes and the Free Market", March 14, www.motherjones.com/kevin-drum/2011/03/nukes-and-free-market

We’re currently told that the death toll in Japan will be at least 10,000 people of whom approximately zero seem to have perished in nuclear accidents. What happens when a tsunami hits an offshore drilling platform or a natural gas pipeline? What happens to a coal mine in an earthquake? How much environmental damage is playing out in Japan right now because of gasoline from cars pushed around? The main lesson is “try not to put critical infrastructure near a fault line” but Japan is an earthquakey country, so what are they really supposed to do about this?¶ This is a good point: energy sources of all kind cause problems. Sometimes the problems create screaming headlines (nuke meltdowns, offshore oil explosions, mining disasters) and sometimes they don't (increased particulate pollution, global warming, devastation of salmon runs). But the dangers are there for virtually every type of energy production.¶ Still, it's worth pointing out that the problem with nuclear power isn't so much its immediate capacity to kill people. As Matt points out, no one has died in Japan from the partial meltdowns at its damaged nuclear plants, and it's unlikely anyone ever will. The control rods are in place, and even in the worst case the containment vessels will almost certainly restrict the worst damage.

#### IAEA inspection overstretch inevitable:

#### Iran

AFP 9-18 “IAEA chief vows to continue talks with Iran”, http://www.dailytimes.com.pk/default.asp?page=2012\09\18\story\_18-9-2012\_pg14\_4

VIENNA: The head of the UN atomic agency said Monday he wants to hold more talks with Iran on suspicions of past nuclear weapons research activities, despite the failure of a string of meetings this year.

Speaking at the start of a week-long annual gathering of the International Atomic Energy Agency’s 155 member states in Vienna, Yukiya Amano said the watchdog “is firmly committed to intensifying dialogue” with Tehran. “We will continue negotiations with Iran on a structured approach to resolve all outstanding issues. I hope we can reach agreement without further delay, to be followed by **immediate implementation**,” Amano said in a speech.

His comments came ahead of an address to the IAEA general conference by Fereydoon Abbasi Davani, head of Iran’s Atomic Energy Organisation. Abbasi was also due to meet Amano later on Monday. On August 24, the IAEA failed again to convince Tehran in talks to grant access to sites, scientists and documents linked to suspected activities that the IAEA believes were “relevant to the development of a nuclear explosive device”. Evidence of these alleged activities, which the IAEA believes were carried out under a structured programme until 2003 and possibly since, were set out in a major IAEA report in November that cited a number of different sources including foreign intelligence services.

Iran is also **expanding the enrichment** of uranium, a process — subject to IAEA inspections — which can provide fuel for nuclear power stations and medical purposes, but also when highly enriched for a nuclear weapon. Iran, subject to growing international pressure over its growing nuclear activities, says its programme is peaceful and that the IAEA’s allegations are baseless. It wants any agreement with the IAEA to cover a range of issues.

### 2AC Fiscal Cliff DA

#### Fiscal cliff won’t pass in lame duck and no impact

Swanson 10/24 Ian, The Hill, "Fiscal cliff approaches and concerns mount", 2012, thehill.com/blogs/on-the-money/economy/263699-cliff-approaches-and-concerns-mount

Yet two weeks before a presidential election that is razor-close, there is new skepticism that any deal will be reached in lame-duck Washington. ¶ “The odds are high that we’ll have to go into next year to get a deal,” Mark Zandi, the chief economist at Moody’s Analytics, said in an interview Tuesday. ¶ “We’re increasingly concerned,” said Steve Bell, senior director of economic policy for the Bipartisan Policy Center. ¶ Lawmakers digging in their heels during a campaign, pressure on committee chairmen — who could face challenges in the lame-duck session — and a belief on both sides that the other will take more of the blame are adding to the sense that a deal won’t be found. ¶ The Congressional Budget Office estimates falling over the cliff would cause a recession. Unemployment would jump back over 9 percent while the economy would contract in the first half of the year by 2.9 percent. Goldman Sachs argues the cliff would take 4 points off the nation’s GDP. ¶ But it could take time for that to happen. ¶ Zandi argues the immediate effects on the economy of going over the cliff are “not cataclysmic.” ¶ “The economy won’t collapse,” he says, though the damage will build up over time.

#### Obama has no PC for passage

Herb and Wasson 10/23 Jeremy Herb and Erik Wasson, writers for the Hill, “GOP: Obama's sequester remark during debate could reshape fiscal cliff talks”, October 23, 2012, http://thehill.com/blogs/defcon-hill/budget-appropriations/263523-obama-sequester-remark-could-reshape-fiscal-cliff-negotiations

President Obama’s vow at Monday’s debate that the sequestration cuts “will not happen” could come back to haunt him during Congress's lame-duck negotiations on the fiscal cliff if he is reelected.¶ Republicans were already licking their chops at Obama’s statement Tuesday, and the White House was quickly backtracking the remark after the debate.¶ **Republicans said that** Obama has given away leverage in any lame-duck talks.¶ “He has, which is why White House aides were immediately trying to walk it back,” said one GOP House aide.

#### Plan shields controversy

Appelbaum 12 Binyamin, Defense cuts would hurt scientific R&D, experts say, The New York Times, 1-8, http://hamptonroads.com/2012/01/defense-cuts-would-hurt-scientific-rd-experts-say

Sarewitz, who studies the government's role in promoting innovation, said the Defense Department had been **more successful** than other federal agencies because it is the **main user of the innovations that it finances**. The Pentagon, which spends billions each year on weapons, equipment and technology, has an **unusually direct stake in the outcome** of its research and development projects.¶ "The central thing that distinguishes them from other agencies is that they are the customer," Sarewitz said. "You can't pull the wool over their eyes."¶ Another factor is the Pentagon's relative insulation from politics, which has allowed it to sustain a long-term research agenda **in controversial areas.** No matter which party is in power, the Pentagon has continued to invest in clean-energy technology, for example, in an effort to find ways to reduce one of its largest budget items, energy costs.

#### SMR incentives are bipartisan---recent bills prove

King et al 11 Marcus, Associate Director of Research at The George Washington University's Elliott School of International Affairs, with a concurrent appointment as Associate Research Professor of International Affairs, LaVar Huntzinger and Thoi Nguyen, "Feasibility of Nuclear Power on U.S. Military Installations", March, www.cna.org/sites/default/files/research/Nuclear Power on Military Installations D0023932 A5.pdf

Favorable public perception has contributed to bipartisan congressional interest in building new nuclear capacity. Congress has introduced several bills that provide funding for new nuclear research and incentives **for the nuclear industry**. The Enabling the Nuclear Renaissance Act (ENRA) under consideration by the Senate contains many of the nuclear provisions found in previously introduced bills. In the area of small reactor technology, the legislation directs the Department of Energy (DOE) to develop a 50 percent cost-sharing program with industry, and it provides government funding at the rate of $100 million per year for 10 years. The bill also calls for the establishment of a program office within DOE to manage community led initiatives to develop “energy parks” on former DOE sites. The energy parks may include nuclear power plants [11].

#### Winners win

Marshall and Prins 11 (BRYAN W, Miami University and BRANDON C, University of Tennessee & Howard H. Baker, Jr. Center for Public Policy, “Power or Posturing? Policy Availability and Congressional Influence on U.S. Presidential Decisions to Use Force”, Sept, Presidential Studies Quarterly 41, no. 3)

Presidents rely heavily on Congress in converting their political capital into real policy success. Policy success not only shapes the reelection prospects of presidents, but it also builds the president’s reputation for political effectiveness and fuels the prospect for subsequent gains in political capital (Light 1982). Moreover, the president’s legislative success in foreign policy is correlated with success on the domestic front. On this point, some have largely disavowed the two-presidencies distinction while others have even argued that foreign policy has become a mere extension of domestic policy (Fleisher et al. 2000; Oldfield and Wildavsky 1989) Presidents implicitly understand that there exists a linkage between their actions in one policy area and their ability to affect another. The use of force is no exception; in promoting and protecting U.S. interests abroad, presidential decisions are made with an eye toward managing political capital at home (Fordham 2002).

### 2AC Obama Good – Elections

#### Romney win overall and in Ohio

Horowitz 10/26—writes for the Madison Project (Daniel, A Wide Electoral/Popular Vote Split Won’t Happen, [www.redstate.com/2012/10/26/a-wide-electoralpopular-vote-split-wont-happen/](http://www.redstate.com/2012/10/26/a-wide-electoralpopular-vote-split-wont-happen/))

There is an emerging narrative percolating throughout the political world; the prospect that Romney could win the popular vote but lose the Electoral College. The theory is predicated on the seemingly contradictory data between state and national polls. National polls seem to show Romney with a consistent 2-4% lead, while state polls show the candidates tied or Obama slightly ahead in Ohio, Iowa, and Wisconsin.¶ Some analysts are attempting to harmonize the state and national polls by theorizing that Romney’s national lead is driven by historic gains among whites in red states and a strong showing in Pennsylvania and Michigan. They suggest that ultimately the Electoral College boils down to Ohio (or Wisconsin, if Romney loses Ohio), a state where Obama’s much-vaunted ground game and oversaturation of ads could flip the state and the entire election to Obama.¶ This analysis is dead wrong. Either the state polls are correct, and this is a dog fight, or the national polls are correct, and this is a Romney win. The both cannot reflect reality.¶ It’s not just that the national polls show Romney ahead by 3%; it’s that 3 respected, yet diverse, national polls converged yesterday on the exact same number in one day – Romney 50% Obama 47% (today Gallup is Romney +5 and ABC/WaPost is Romney +1). So Romney is at 50% and the incumbent is at 47% (how ironic!) with undecided voters likely to break against him in an election defined by the stagnating economy. But it’s more than that. The Washington Post poll has Romney leading by 19-20 among Independents; Rasmussen shows him with a 17-point lead. Romney is now crushing Obama on the economy and even leading in favorability. It is almost impossible to lose the Electoral College under normal circumstances when leading by more than 1% nationally. It’s certainly impossible to lose when polling this well in all the internals.¶ In order for Romney to win by such margins in the popular vote, yet lose the Electoral College, he would have to outperform Bush in a number of non-swing-states, though he is unlikely to do so.¶ The math doesn’t add up.¶ Bush won the popular vote by 2.46% in 2004. In order to assume that Romney wins by roughly the same margin as Bush (or probably more, based on the internal numbers of the national polls), yet loses the Electoral College, one has to find a number of places where Romney outperforms Bush. But look around the map. Bush did really well in red states and probably won a number of them by more than Romney will. Bush won Montana by 21 points – something Romney will not do. The latest Rasmussen poll had him up just 8.¶ What about the blue states? People forget that Bush did pretty well in many Democrat states. He came within 7.6 in Delaware; 6.7 in NJ, 4 in Oregon, 3.5 in MN, and 9 in Maine. Heck, he only lost California by 10 points – a somewhat unlikely outcome for Romney.¶ What about the swing states? He won CO by 4.5; VA by 8; FL by 5; and NC by a whopping 13. He even won New Mexico – a state that Romney will not come close to winning (unless the Gallup national poll is correct).¶ What about Romney dramatically overperforming in Wis, MI, and PA, yet still losing? Well, that’s already baked into Bush’s 2.46% national margin. He lost Wis. by the slimmest of margins, PA by 2.5, and MI by 3.5.¶ Across the board, this is a much better showing in many states than Romney is expected to win, even in the best case scenario. Yet, he still only won the popular vote by 2.46% overall. So the idea that Romney could match this margin or even more nationally, yet lose the Electoral College, but make up the difference by overperfroming Bush in a number of areas, is crazy talk. Where would those votes come from?¶ Bottom line: if Romney wins the popular vote by 2-3%, he will clearly run the table on all the swing states, and possibly come very close in MI or PA, if not win them outright. Oh, and what’s all that talk of ads running in Minnesota?¶ So what about the state polls? If you look at most of the samples, they are more Democratic than the 2008 turnout model. It’s becoming clear that the early voting, which is disproportionately comprised of Democrats, is distorting the likely voter screens of most state polls. That’s why they are all showing a high D turnout, despite the ubiquitous enthusiasm gap.¶ Additionally, notice how Romney’s surge has stalled out in the state polls even as it continues in the national polls. He has even stalled in some Colorado and Virginia polls, states where Obama is clearly losing. The stagnation in all the state polls began right around the time when early voting picked up in earnest. If we are to believe the national polls, which are hard to disregard due to the convergence, the only plausible theory about the divergence of state polling is that they are inflating Democrat strength by 2-4% due to early voting.¶ If you reconstruct a turnout model that is only slightly more favorable for Republicans than 2008, Romney is ahead in most of the important states. Take this Gravis Marketing poll of Iowa, for example. They show Obama up 4 points, but the party ID is D +6 (D 41, R 35, I 24). In 2008, it was D +1 (D 34, R 33, I 33), and in 2004 it was R +2 (D 34, R 36, I 30). Here’s the kicker: the poll shows Romney leading by 12 among independents. Remember that of all swing states, Republicans improved their voter registration edge the most in Iowa. Additionally, there is a tremendous enthusiasm gap. Yet, if we merely reconstruct the 2008 turnout, which was evenly split among all three affiliations, a 12-point Indy win would clearly tip the state to Romney.¶ We’re seeing the same thing with the latest ARG poll in Ohio. They have Obama up 49-47, yet Romney is winning Independents by a gargantuan 21 points. The sample is D+9, even though it was D+5 in 2008.¶ It’s becoming clear that the national polls could easily work with the state polling data if we adjust for the likely turnout distortions from early voting. To a certain extent, we are seeing a reflection of the national polling in the Rasmussen state polls that factor in respondents who are certain to vote. However, whether this theory is correct or not, one thing is certain: Romney will not win Independents nationally by 15-19 points and lose the Electoral College.

#### SMRs popular—their generic links don’t apply

Covert 12 Adrian is the Editorial Assistant at Gizmodo Magazine, “The US Government Is Banking on Small Nuclear Reactors for Future Energy”, March 12, 2012, http://gizmodo.com/5890394/the-us-government-is-banking-on-small-nuclear-reactors-for-future-energy

Ever since Fukushima, nuclear power has not been a warmly-received concept when it comes to energy solutions. But still, small modular reactors have remained one iteration of nuclear power that people are optimistic about due to their relative safety and manageability. That's why the US Department of Energy has entered into partnerships with the top SMR makers to help nurture the tiny wonders.¶ According to Ars Technica, the governement is going to offer up land at the Savannah River Nuclear Lab to work on research and build test sites for development. In addition to their size and relative stability, SMRs are popular because reactors are never opened on site, and are sent back to a central facility for refueling, which eases concerns about security. Sure they may not generate Gigawatts, but Megawatts aren't so bad either.

#### Winners win – the plan key to consolidate Obama’s momentum

**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.

#### No foreign policy election impacts

Gibson 10/24 Ginger is a national political reporter at Politico. “Election doomsday scenarios abound,” 2012, http://www.politico.com/news/stories/1012/82848.html

It doesn’t matter who wins the election, the result will be apocalyptic.¶ If Mitt Romney seizes victory, the nation will be in a state of constant war — a result of rampant voter disenfranchisement — and widespread rioting will erupt. If Barack Obama wins, he’s going to round up every gun in the country, the United States will report to the United Nations and civil war will break out.¶ No, **these scenarios** aren’t part of the doomsday prophecies on the Mayan calendar.¶ They**’re the wildly exaggerated and factually baseless fictions laid out by extreme factions in both parties should the other side win**. As the use of Twitter has exploded in the 2012 campaign, coupled with more expansive use of Facebook and other social networks, the rumble of extreme partisans propagating strange conspiracy theories is getting louder.¶ “I don’t think there are any more conspiracy theorist stories floating around than in past cycles, just more channels for them to play out on,” said Republican strategist Greg Mueller. “With social media, everyone has a broadcast outlet.”

### 2AC – AT: Russia Relations

#### Romney’s all talk---he’d work with Russia

Gasyuk 12 (Gasyuk, Rossiyskaya Gazeta’s Washington D.C. correspondent, 6-13, “Romney keeps the gloves off”, http://rbth.ru/articles/2012/06/13/romney\_keeps\_the\_gloves\_off\_15854.html)

Given the sharp disagreements between the United States and Russia on Syria, which is now careening toward civil war, Republicans will harshly criticize every attempt by Obama to further emphasize any progress in bilateral relations. “Some realism regarding U.S.-Russia relations would be constructive for the White House if it wants to avoid Republican attacks,” Simes told Russia Now. But this doesn’t mean that presumptive GOP nominee Mitt Romney, if elected, will transform his public anti-Russian statements into political practice. “I believe that most likely Governor Romney believes in the statements he made, but that does not mean that in practice this rhetoric will be his guide for action,” Simes said. “Many statements from the GOP candidates including those on foreign affairs surely have to be taken in the context of the political and electoral reality in the U.S.,” Aron said. “It is not only possible, but highly probable,” that Mitt Romney’s views on Russia will evolve if he is elected, Simes said. American political history is rife with examples of strategic U-turns that begin the morning after the inauguration balls. When Dwight Eisenhower ran for president, his advisers—such as the famous John Foster Dulles—spoke of Harry Truman’s “cowardly” policy of containment of the Soviet Union and called for the speedy liberation of Eastern Europe. However President Eisenhower instead started the process of normalizing relations through personal meetings with Nikita Khrushchev in 1955 and 1959. President Richard Nixon was viewed as a leading anti-Communist, but it was Nixon who found the way toward detente. Nixon made the first-ever trip by an American president to then-Communist Russia in 1972, but also opened the door to dialogue with Communist China. No one should be too surprised that Mitt Romney, if elected, might rethink his position. When needed for supply routes, Russia is no longer America’s “number one geopolitical foe.” As a president, many observers believe he would take a more realistic approach to handling bilateral ties.

#### Relations useless

Ostapenko 9---Trend Daily News staff writer (E., 7/7, “Normalization In U.s.-russian Relations Not To Change Political Situation In World: Analyst At French Studies Institute”, http://www.turkishweekly.net/news/83734/-normalization-in-u-s-russian-relations-not-to-change-political-situation-in-world-analyst-at-french-studies-institute-.html)

Normalization of relations between the United States and Russia will not assume a global significance and will not change the situation in the world, since today Russia does not play the role it played formerly, Dominic Moisi, analyst on Russian-American relations, said. "There is a country that is essential for the future of the world, it is not Russia, but it is China," Moisi, founder and senior advisor at the French Institute for International Relations (IFRI), told Trend News in a telephone conversation from Paris

Speaking of the growing role of China, Moisi said that the Chinese are soon going to be the number two economy in the world. Russian economy can not compete. As another important aspect of the increasing weight of China in the world, Moisi considers the absence of problems with the aging of population, unlike European countries, including Russia.

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### AT: Solar Flare

#### Earth’s magnetic sphere means no impact

Holdman 1 **(**Astrophysicist- Heliophysics Science Division- NASA/Goddard Space Flight Center, “Space Weather: What impact do solar flares have on human activities?” <http://hesperia.gsfc.nasa.gov/sftheory/spaceweather.htm>)

Solar flares produce high energy particles and radiation that are dangerous to living organisms. However, at the surface of the Earth we are well protected from the effects of solar flares and other solar activity by the Earth's magnetic field and atmosphere. The most dangerous emissions from flares are energetic charged particles (primarily high-energy protons) and electromagnetic radiation(primarily x-rays). The x-rays from flares are stopped by our atmosphere well above the Earth's surface. They do disturb the Earth's ionosphere, however, which in turn disturbs some radio communications. Along with energetic ultraviolet radiation, they heat the Earth’s outer atmosphere, causing it to expand. This increases the drag on Earth-orbiting satellites, reducing their lifetime in orbit. Also, both intense radio emission from flares and these changes in the atmosphere can degrade the precision of Global Positioning System (GPS) measurements.The energetic particles produced at the Sun in flares seldom reach the Earth. When they do, the Earth's magnetic field prevents almost all of them from reaching the Earth's surface. The small number of very high energy particles that does reach the surface does not significantly increase the level of radiation that we experience every day. The most serious effects on human activity occur during major geomagnetic storms. It is now understood that the major geomagnetic storms are induced by coronal mass ejections (CMEs). Coronal mass ejections are usually associated with flares, but sometimes no flare is observed when they occur. Like flares, CMEs are more frequent during the active phase of the Sun's approximately 11 year cycle. The last maximum in solar activity was in the year 2000. The next maximum is expected to occur in late 2011 or in 2012.Coronal mass ejections are more likely to have a significant effect on our activities than flares because they carry more material into a larger volume of interplanetary space, increasing the likelihood that they will interact with the Earth. While a flare alone produces high-energy particles near the Sun, some of which escape into interplanetary space, a CME drives a shock wave which can continuously produce energetic particles as it propagates through interplanetary space. When a CME reaches the Earth, its impact disturbs the Earth's magnetosphere, setting off a geomagnetic storm. A CME typically takes 3 to 5 days to reach the Earth after it leaves the Sun. Observing the ejection of CMEs from the Sun provides an early warning of geomagnetic storms. Only recently, with SOHO, has it been possible to continuously observe the emission of CMEs from the Sun and determine if they are aimed at the Earth. One serious problem that can occur during a geomagnetic storm is damage to Earth-orbiting satellites, especially those in high, geosynchronous orbits. Communications satellites are generally in these high orbits. Either the satellite becomes highly charged during the storm and a component is damaged by the high current that discharges into the satellite, or a component is damaged by high-energy particles that penetrate the satellite. We are not able to predict when and where a satellite in a high orbit may be damaged during a geomagnetic storm. Astronauts on the Space Station are not in immediate danger because of the relatively low orbit of this manned mission. They do have to be concerned about cumulative exposure during space walks. The energetic particles from a flare or CME would be dangerous to an astronaut on a mission to the Moon or Mars, however. Another major problem that has occurred during geomagnetic storms has been the temporary loss of electrical power over a large region. The best known case of this occurred in 1989 in Quebec. High currents in the magnetosphere induce high currents in power lines, blowing out electric transformers and power stations. This is most likely to happen at high latitudes, where the induced currents are greatest, and in regions having long power lines and where the ground is poorly conducting. These are the most serious problems that have occurred as a result of short-term solar activity and the resulting geomagnetic storms. A positive aspect of geomagnetic storms, from an aesthetic point of view, is that the Earth's auroras are enhanced. The damage to satellites and power grids can be very expensive and disruptive. Fortunately, this kind of damage is not frequent. Geomagnetic storms are more disruptive now than in the past because of our greater dependence on technical systems that can be affected by electric currents and energetic particles high in the Earth's magnetosphere. Could a solar flare or CME be large enough to cause a nation-wide or planet-wide cataclysm? It is, of course, impossible to give a definitive answer to this question, but no such event is known to have occurred in the past and there is no evidence that the Sun could initiate such an event.

## T

#### Financial incentives are a transfer of economic resources or market creation

EIA 1 (Renewable Energy 2000: Issues and Trends, Report prepared by the US Energy Information Administration, “Incentives, Mandates, and Government Programs for Promoting Renewable Energy”, http://tonto.eia.doe.gov/ftproot/renewables/06282000.pdf)

Over the years, incentives and mandates for renewable energy have been used to advance different energy policies, such as ensuring energy security or promoting environmentally benign energy sources. Renewable energy has beneficial attributes, such as low emissions and replenishable energy supply, that are not fully reflected in the market price. Accordingly, governments have used a variety of programs to promote renewable energy resources, technologies, and renewable-based transportation fuels.1 This paper discusses: (1) financial incentives and regulatory mandates used by Federal and State governments and Federal research and develop- ment (R&D),2, 3 and (2) their effectiveness in promoting renewables. A financial incentive is defined in this report as providing one or more of the following benefits: • A transfer of economic resources by the Government to the buyer or seller of a good or service that has the effect of reducing the price paid, or, increasing the price received, respectively; • Reducing the cost of production of the good or service; or, • Creating or expanding a market for producers. The intended effect of a financial incentive is to increase the production or consumption of the good or service over what it otherwise would have been without the incentive. Examples of financial incentives are: tax credits, production payments, trust funds, and low-cost loans. Research and development is included as a support program because its effect is to decrease cost, thus enhancing the commercial viability of the good(s) provided.4 Regulatory mandates include both actions required by legislation and regulatory agencies (Federal or State). Examples of regulatory mandates are: requiring utilities to purchase power from nonutilities and requiring the incorporation of environmental impacts and other social costs in energy planning (full cost pricing). Another example is a requirement for a minimum percentage of generation from renewable energy sources (viz., a “renewable portfolio standard,” or, RPS). Regulatory mandates and financial incentives can produce similar results, but regulatory mandates generally require no expenditures or loss of revenue by the Government.

#### Precision---our definition’s from the DoE

Waxman 98 **–** Solicitor General of the US (Seth, Brief for the United States in Opposition for the US Supreme Court case HARBERT/LUMMUS AGRIFUELS PROJECTS, ET AL., PETITIONERS v. UNITED STATES OF AMERICA, http://www.justice.gov/osg/briefs/1998/0responses/98-0697.resp.opp.pdf)

2 On November 15, 1986, Keefe was delegated “the authority, with respect to actions valued at $50 million or less, to approve, execute, enter into, modify, administer, closeout, terminate and take any other necessary and appropriate action (collectively, ‘Actions’) with respect to Financial Incentive awards.” Pet. App. 68, 111-112. Citing DOE Order No. 5700.5 (Jan. 12, 1981), the delegation defines “Financial Incentives” as the authorized financial incentive programs of DOE, “including direct loans, loan guarantees, purchase agreements, price supports, guaranteed market agreements and any others which may evolve.” The delegation proceeds to state, “[h]owever, a separate prior written approval of any such action must be given by or concurred in by Keefe to accompany the action.” The delegation also states that its exercise “shall be governed by the rules and regulations of [DOE] and policies and procedures prescribed by the Secretary or his delegate(s).” Pet. App. 111-113.

#### Paying for electricity is an incentive

Doris 12 – National Renewable Energy Laboratory (Elizabeth, “Policy Building Blocks: Helping Policymakers Determine Policy Staging for the Development of Distributed PV Markets,” Paper to be presented at the 2012 World Renewable Energy Forum, 5/13-5/17, http://www.nrel.gov/docs/fy12osti/54801.pdf)

3.3 Market Expansion This stage of policy development targets the development of projects and includes both incentives that attempt to distribute the high first costs of distributed technologies and policies that facilitate project installation. The purpose of this category is to increase the installation of individual projects through monetizing the non-economic benefits of distributed generation for the developer. Because the value of those benefits vary in different contexts, these policies can be politically challenging to put in place and technically challenging to design and implement. There is a large body of literature (encompassing the energy field as well as other fields) that discusses the design and implementation of effective market incentives. Specific policy types include: • Incentives. In the context of this framework, incentives are defined as **direct monetary support** for specific project development. Incentives, especially in the current economic environment, can be politically challenging to implement and require detailed design to ensure that they are effectively reaching the intended market at levels that spur development without creating over-subsidization. Because of the complications and expense of these types of policies, they are most used and most cost-effective in environments where the market is prepared for project development. There are three primary types of incentives: • **Investment incentives directly alter the first cost of technologies**. These incentives can take the form of grants, rebates, or tax incentives, depending on the market needs. Grants are typically applied to larger scale projects and are paid in advance of development, and so target development that would not take place without advance investment. Rebates are most commonly based on equipment purchases and can be applied at the time of purchase or through a post-purchase mechanism. Tax incentives can be deductions or credits, can be applied to entire installations, and are applied after purchase, annually. Tax incentives target development that does not need direct capital investment, but instead prioritizes reduction in pay-back period. • **Production incentives provide payment for electricity produced** from the distributed electricity. These are different from net metering because the aim is not to provide the economic value of electricity sold into the grid, but instead, to monetize the indirect benefits of distributed generation and apply that on a production basis to projects. These incentives do not directly remove the challenge of higher first costs, and so are most effective in situations in which those high first costs can be spread over the course of the project lifetime (e.g., where direct priori investment is not a priority). In the last decade, incentives for distributed generation have tended toward the production type, because it assures the public that the investment is resulting in clean energy development (whereas investment incentives have the potential to be invested in projects that do not materialize). • **Feed-in-Tariffs**. This incentive type reduces investment risk by **providing fixed payments for projects** based on the levelized cost of renewable energy generation. This (among other design characteristics) distinguishes feed-in-tariffs from production-based incentives, which are based on monetizing the value of the electricity to the grid or the value to the electricity purchaser. • Removing Siting Restrictions or Ensuring Broad Market Access. Siting restrictions can be stipulated by local ordinances or home owners associations and designate where solar panels can be placed within the jurisdiction. Twenty-four states currently have laws in place that prevent the restriction of solar facilities on residences (12). Like the current state role in encouraging transparency in permitting policies, these typically legislative policies cost nothing to put in place, but implementation and enforcement can be challenging and costly, depending on the interests of the localities. This is an expansion policy (as opposed to a preparation policy) because the effect of siting restrictions is currently unclear, and to date, market development has not been limited by these types of regulations. • Streamlined Permitting. Permitting for solar facilities has traditionally been the jurisdiction of localities, but there are some states that also issue permits. In the past two years, both Colorado (13) and Vermont (14) have issued laws regulating state permits for renewable energy systems. Such permitting falls into the market expansion category as a potential follow-on to the development of transparent permitting. However, because of its limited use to date there is little information on effectiveness, potential intended or unintended impacts, or broad applicability, so it is not currently considered a primary policy for developing markets.

## Elections

### AT: Romney Impact

#### Romney won’t change foreign policy

Miller 12 Aaron David Miller is a distinguished scholar at the Woodrow Wilson International Center for Scholars. “Barack O’Romney,” May 23, http://www.foreignpolicy.com/articles/2012/05/23/barack\_oromney,

And that brings up an extraordinary fact. What has emerged in the second decade after 9/11 is a remarkable consensus among Democrats and Republicans on a core approach to the nation's foreign policy. It's certainly not a perfect alignment. But rarely since the end of the Cold War has there been this level of consensus. Indeed, while Americans may be divided, polarized and dysfunctional about issues closer to home, we are really quite united in how we see the world and what we should do about it. Ever wondered why foreign policy hasn't figured all that prominently in the 2012 election campaign? Sure, the country is focused on the economy and domestic priorities. And yes, Obama has so far avoided the kind of foreign-policy disasters that would give the Republicans easy free shots. But there's more to it than that: Romney has had a hard time identifying Obama's foreign-policy vulnerabilities because there's just not that much difference between the two. A post 9/11 consensus is emerging that has bridged the ideological divide of the Bush 43 years. And it's going to be pretty durable. Paradoxically, both George W. Bush's successes and failures helped to create this new consensus. His tough and largely successful approach to counterterrorism -- specifically, keeping the homeland safe and keeping al Qaeda and its affiliates at bay through use of special forces, drone attacks, aggressive use of intelligence, and more effective cooperation among agencies now forms a virtually unassailable bipartisan consensus. As shown through his stepped-up drone campaign, Barack Obama has become George W. Bush on steroids.

#### Romney’s anti-Russia policy is just rhetoric

LA Times 12 (Maeve Reston and Seema Mehta, “Mitt Romney struggles to differentiate his foreign policy from the president's”, 5/31, http://articles.latimes.com/2012/may/31/nation/la-na-romney-foreign-policy-20120531)

In 2008, Romney called for more collaboration with China and Russia. In a debate four months ago, he put Russian leader Vladimir Putin in the same category — among the "world's worst actors" — as Cuba's Fidel Castro and Iran's Mahmoud Ahmadinejad. He labeled Russia the United States' "No. 1 geopolitical foe," in a March interview on CNN. The latter statement drew widespread scorn as a throwback to Cold War-era politics.¶ Yet Russia represents another instance in which Romney and Obama don't differ much, despite the rhetoric. Romney has assailed Obama as trying to appease the Russians by scrapping a George W. Bush-era plan to build a missile-defense system in Eastern Europe, and replacing it with a different plan to be completed by 2020. Yet Romney says he is willing to commit to the same timeline.

#### Romney won’t change policy

NYT 12(New York Times, Peter Baker, “Romney and Obama Strain to Show Gap on Foreign Policy”, 7/28, http://www.nytimes.com/2012/07/29/us/politics/obama-and-romney-strain-to-assert-foreign-policy-differences.html?pagewanted=all)

Mr. Romney has called Russia “our No. 1 geopolitical foe” and declared Mr. Obama’s effort to improve relations a failure. Mr. Romney promises to challenge Mr. Putin’s authoritarianism. But he has not suggested cutting off cooperation between the countries’ space programs or counterterrorism agencies, nor shutting down the Afghanistan supply route through Russia negotiated by Mr. Obama. He supports Mr. Obama’s drive to normalize trade relations, though with a human rights amendment the president initially resisted.¶ Mr. Romney’s visit to Poland is intended to highlight what he called Mr. Obama’s “sudden abandonment of friends in Poland” under Russian pressure by canceling Mr. Bush’s missile defense program partly based there. But Mr. Obama did not abandon missile defense altogether; he substituted a reconfigured system devised by Mr. Bush’s last defense secretary.

#### No war

David E. Hoffman 10/22/12, contributing editor to Foreign Policy and the author of The Dead Hand: The Untold Story of the Cold War Arms Race and Its Dangerous Legacy, which won the 2010 Pulitzer Prize for general non-fiction, "Hey, Big Spender," Foreign Policy, www.foreignpolicy.com/articles/2012/10/22/hey\_big\_spender?page=full

Despite tensions that flare up, the United States and Russia are no longer enemies; **the chance of nuclear war or surprise attack is nearly zero**. We trade in each other's equity markets. Russia has the largest audience of Facebook users in Europe, and is open to the world in a way the Soviet Union never was.

### DoD Shields

#### DOD energy spending isn’t perceived by the public, even though other government spending is

Gail Reitenbach 12, Managing Editor, POWER Magazine, Senior Editor at The McGraw-Hill Companies, 1/1/12, “The U.S. Military Gets Smart Grid,” <http://www.powermag.com/print/smart_grid/The-U-S-Military-Gets-Smart-Grid_4228.html>

The military has an almost perfect set of conditions for developing a variety of advanced, "smart" technologies centered on electricity generation, delivery, and use.¶ Necessity. The DOD is one of the largest energy consumers worldwide and the single largest energy consumer in the U.S. At a White House Energy Security Forum in April 2011, Deputy Defense Secretary William J. Lynn III noted that the DOD accounts for 80% of U.S. federal energy use (and somewhere between 1% and 2% of nationwide consumption), consumes more energy than is used by two-thirds of all the nations on Earth, and has annual energy bills in the tens of billions of dollars ($15 billion in 2010). As in the civilian world, the number of electrically powered devices keeps increasing, so demand tends to rise as well. Consequently, ensuring a reliable supply of energy for both transportation and power can be challenging. ¶ Surety of supply poses challenges for both stationary and FOB installations. According to Lynn, more than 70% of convoys in Afghanistan are used to transport fuel or water and are easy targets for insurgents' roadside bombs. More than 3,000 U.S. troops and contractors had been killed or wounded protecting them as of April 2011. ¶ The desire to keep its people safe—by minimizing the amount of fuel that U.S. forces need to move around in combat zones to fuel electricity generators and vehicles—is a powerful motivating factor for many of the military's smart grid, energy efficiency, and renewable energy initiatives. ¶ Sharon E. Burke, assistant secretary of defense for operational energy plans and programs, told the audience at the Military Smart Grids and Microgrids Conference in October 2011: "When you consider that we move about 50 million gallons of fuel every month right now in Afghanistan, much of which is for power generation, you begin to understand the huge financial cost of this fuel." Burke noted that the fuel powers more than 15,000 generators in Afghanistan alone. She added that better combat power generation has benefits that include less need for fuel, reduced noise and heat signatures, less maintenance, and a lighter force. ¶ Protecting defense-related people, projects, and property at home is also a concern. Remember that DOD facilities are, for the most part, connected to the national grid, making them vulnerable to massive outages like those experienced in 2003 in the Northeast and in 2011 in the Southwest. ¶ Money. Though some Americans may balk at the Department of Energy (DOE) issuing grants and loan guarantees to advance utility smart grid or renewable projects, they are much less aware of the money spent through the Pentagon on similar projects for the military. ¶ For example, Dorothy Robyn, DOD deputy undersecretary for installations and environment, told Defense News on Oct. 31, 2011: "I've been delegated the authority to sign off on renewable projects that go out beyond the 10-year authority that most federal agencies have. We're the only federal agency that has the authority to go out to 30 years. What that does is allow us to do projects that are bigger and have a longer payback period." Robyn also noted that her department can take advantage of third-party financing for renewable and energy efficiency projects.

#### Obama can empirically use the DoD to deflect blame

Yochi J. Dreazen, 1-5-2012, “Shifts at Pentagon Reflect Dual Realities of Different Threats, Tighter Budgets,” National Journal, ln

The Obama administration's high-profile rollout of its new military blueprint for the years ahead was designed to do two very different things: mark a decisive shift away from manpower-heavy counterinsurgencies like Afghanistan and shield the White House from Republican criticism over its plans for significant cuts to the Pentagon budget. The blueprint personally unveiled by President Obama on Thursday during an unusual visit to the Pentagon has far-reaching implications for the U.S. military, Washington's friends abroad, and the defense industryand its congressional protectorshere at home. The document represents the administration's clearest public expression to date of how it believes the U.S. should prepare to respond to major security challenges in an era of shrinking budgets. Military funding will fall by more than $450 billion in the years ahead; if automatic sequestration cuts take effect, it will lose roughly $500 billion more. The new strategy is the product of a widespread view across the Pentagon's military and civilian leadership that ground wars like Afghanistan are a thing of the past while air and naval conflicts with nations like Iran or China represent the most important threats of the future. The document explicitly said the Pentagon will shift military and financial resources away from Europe and toward the Middle East and Asia-Pacific regions. Defense Secretary Leon Panetta and Joint Chiefs of Staff Chairman Gen. Martin Dempsey made clear that the new thinking would mean potentially significant cuts to the size of the Army and Marine Corps, as well as to expensive weapons programs. "The U.S. joint force will be smaller and it will be leaner," Panetta said. "The Army and Marine Corps will no longer need to be sized to support the kind of large-scale, long-term stability operations that dominated military priorities … over the past decade." Both men have previously indicated that the purchases of costly armaments like the F-35 Joint Strike Fighter, the most expensive warplane ever built, and several next-generation types of warships may be slowed or reduced to save money, though they offered no new details on Thursday. Canceling or curtailing planned weapons buys is always difficult politically because lawmakers typically work to shield armaments built in their states as a way of saving jobs. It is likely to be even harder now because of election-year partisanship and legitimate concerns about the Pentagon taking steps that would almost certainly mean job losses at a time of deep economic weakness throughout the U.S. Talk of reducing the size of the nation's ground forces is likewise sparking fierce GOP criticism on Capitol Hill and from leading Republican presidential candidates like Mitt Romney, who has saidwithout specifying how he'd pay for itthat he'd expand the forces instead. The politically perilous road ahead was clear from Panetta and Dempsey's steadfast refusals to offer any concrete details about how many troops will be cut, what programs may be eliminated, and whether military pensions or benefits will be reduced. Instead, the two men said specifics about those contentious issues won't be made public until the administration releases its budget proposals next month. Obama used his brief remarks at the Pentagonthe first time a president had ever taken this step to argue that the coming cuts stem from a careful review of the likeliest threats to the nation and have the full support of the Defense Department's military and civilian leadership. He reinforced the latter point by surrounding himself with the Joint Chiefs of Staff and top civilian officials during his remarks. Republicans, for their part, argue that the cuts will weaken American national security and stem from an election-year desire to reduce Pentagon funding to shield costly entitlement programs. The president, anticipating such criticism, said the Pentagon's budget will continue to grow in the years ahead, albeit at a slower pace.

### UQ

#### Romney will win Ohio despite polls

Jordan 10/25—small-business market-research consultant (Josh, Why Romney Doesn’t Need a Poll Lead in Ohio, [www.nationalreview.com/corner/331593/why-romney-doesnt-need-poll-lead-ohio-josh-jordan](http://www.nationalreview.com/corner/331593/why-romney-doesnt-need-poll-lead-ohio-josh-jordan))

The race for Ohio is slowly tightening, but Mitt Romney does not hold a lead in a single poll in the current Real Clear Politics average (he is tied in two). Two polls from Time and CBS/Quinnipiac have grabbed headlines by showing Obama a five-point lead in each. Romney is chipping away at Obama’s poll lead, but the Democratic advantage in party-ID has increased across these polls. When looking at the polls in Ohio, it is becoming entirely possible that Mitt Romney should be able to win Ohio without ever showing a consistent lead in the polls, or any lead at all.¶ In the past week Romney has trimmed four-tenths of a point off of his deficit in the RCP average, going from 2.5 to 2.1, but at the same time, the average party-ID advantage for Democrats in these polls has risen from 5.5 to 6.5. A big reason for the increase in Democrats’ share in the polls is due to early voting. If a pollster calls someone who says they voted already, they are automatically passed through the likely-voter screen since t

hey have, after all, voted. The problem with this can be best summed up by Gregory House: “Everybody lies.”¶ Pollsters can only work with what their respondents tell them, and this is the reason that likely-voter screens can be so tricky, though important, in polling. The preferable response is that you are going to vote or, in the case of Ohio, that you’ve already voted. Many respondents will say they are going to vote (or have voted) when in fact they may not end up doing it (this effect is known as social-desirability bias). For this reason, some likely-voter screens ask about previous elections and general political enthusiasm to gauge the actual likelihood that a voter will end up in the booth on Election Day. But that is where early voting throws the screen out the window — if a voter says they voted, there is nothing a pollster can do to but assume that it’s true.¶ Enter Ohio, where the current estimates from compiling early in-person and absentee voting shows early turnout to be about 15 percent of voters. But responses in the current polls claim that 23 percent of registered voters have already voted. That means that polls are overstating early voting by eight percentage points on average. This could be in part because some voters have requested an absentee ballot and report that as voting, some have mailed in ballots that haven’t been counted as received yet, but some voters are also just flat out saying they voted when they haven’t. It’s impossible to know the exact reason, but it’s clear that more are claiming to vote than really have.¶ In the polls’ early-voting results, Obama leads on average by 20 points. There are indications that the GOP has shrunk the Democratic advantage in this category significantly from 2008, but it is unclear how much. Either way, Obama’s early-voting advantage gives him a lead that Romney is only scraping away at with his Election Day voter lead. But if pollsters are finding more respondents who are claiming to have already voted than what the records show, some of this early-voter advantage is illusory.¶ This is why it is increasingly difficult for Romney to show an lead in the Ohio polls. But even with Obama currently enjoying a 2.1 point lead, Romney is still in great shape to win Ohio on Election Day. Here are some of the reasons for the optimism coming from Boston these days:¶ Romney’s strength with independents keeps growing: Last week when Obama led the Real Clear Politics average by 2.5 points, Romney led among independents by an average of 8.7 points. Romney has since increased that lead with independents to 12.3 points, which is why he’s been able to cut Obama’s overall lead even as the polls have leaned more Democratic. In 2008 Obama beat McCain with independents by eight points. It would be almost impossible for Obama to win Ohio while suffering a 20-point swing among independents.¶ The polls give Democrats a better turnout advantage than they had in 2008: As I explained in my last Ohio post, in 2008 Democrats beat Republicans in turnout by five points. The current polls show an average of D+6.6. A D+5 turnout in 2008 gave Obama a 4.5-point victory, while he is currently leading by only 2.1 points on an even greater D+6.6 turnout. Again, we know it should be very difficult for Democrats to match their 2008 turnout, let alone increase it.¶ History suggests late deciders will break against the incumbent: This is a rule that always receives some skepticism, but it’s very likely to benefit Romney at least some on Election Day. In 2004, late deciders broke against George W. Bush heavily, even though he was a wartime president. John Kerry beat Bush by 25 points among voters who decided in the last month, 28 points among voters that decided in the three days prior to Election Day, and 22 points among day-of deciders. Those voters were 20 percent of the Ohio electorate; while this year there are expected to be fewer late deciders, Obama cannot afford to lose among by those margins and still win.¶ In Ohio, Republicans tend to outperform their share of the national vote: In the last nine elections, the GOP has outperformed in Ohio. With Romney currently running just ahead of Obama nationally, it seems much more likely that Obama’s lead in Ohio has more to do with the higher party-ID advantage than a dramatic shift in Ohio from the past nine elections.¶ Strength with crossover voters in Ohio: In addition to Romney’s strength with independents, in the past two elections the GOP candidate has won over more Democrat votes than he’s lost Republican ones. Obama’s Ohio win in 2008 was based entirely on his strength with independents and the wave turnout, both of which are highly unlikely to be repeated in 2012. If Romney wins with independents by anywhere near the current average he has and takes more crossover voters than Obama does, Obama would need to exceed 2008 turnout greatly to win.¶ So, with less than two weeks until Election Day we will all know the results soon enough, but as more Ohio polls come in, it is important to remember that the picture for Romney in Ohio is better than many pundits would have us believe. It only takes a quick look at Romney’s rallies to remind us it’s not 2008 anymore, as Republicans have reclaimed the enthusiasm advantage that led to such sweeping 2008 victories for Democrats. That GOP enthusiasm has become contagious since the debates, and it is exactly what has Team Obama so afraid these days. All they have left to hang their hopes on is a slim lead in the polls, and even that might not be enough on Election Day.