# 1AC

### 1AC – Heg Advantage

#### CONTENTION 1: HEG

**Cyber-attack is coming---actors are probing grid weaknesses**

**Reed 12** 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", 10/11, 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.

**Grid attacks take 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.

**Plan solves grid collapse---SMRs make 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 causes 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.

### 1AC – Space Advantage

#### CONTENTION 2: SPACE

#### North Korea missile threat high---they will attempt reunification by force---increased capabilities are key

Yi 1-2 – Dr. Xiaoxiong Yi is the director of Marietta College’s China Program. January 2nd, 2013, "North Korea nuclear and missile development a clear and present danger" [www.lancastereaglegazette.com/article/20130102/OPINION04/301020014/North-Korea-nuclear-missile-development-clear-present-danger?nclick\_check=1](http://www.lancastereaglegazette.com/article/20130102/OPINION04/301020014/North-Korea-nuclear-missile-development-clear-present-danger?nclick_check=1)

North Korea is going nuclear rapidly.¶ A year into his rule, Kim Jong-un, 30, the grandson of the Kim Dynasty, has not only written North Korea’s nuclear status into the country’s constitution, but also led the Hermit Kingdom one major step closer to a full-blown nuclear-armed state.¶ Since 1998, North Korea has already developed short- and medium-range missiles and stockpiled enough weapons-grade plutonium for half a dozen nuclear bombs. **Pyongyang’s successful launch of a long-range missile in December 2012 has turned a hypothetical nuclear power into an emerging reality**.¶ As Kim Jong-un was giving himself a nice year-end present to mark the first anniversary of his succession to power in the secretive country, **North Korea’s leap forward in mid-December clearly demonstrated that the up-and-coming “North Korea 3.0” is on a** credible path to further developing its intercontinental ballistic missile capabilities, capable of reaching the shores of Alaska and Hawaii**.**¶The South Korean government has issued an official warning that the North has developed rockets that can reach the U.S. mainland. “Based on our analysis and simulation,” South Korea Defense Ministry announced on Dec. 23, “the missile is capable of flying more than 10,000 kilometers (6,200 miles) with a warhead of 500-600 kilograms.”¶ But Kim Jong-un and his generals still seem unsatisfied with their recent missile launch success. Satellite photos indicate North Korea is already in a **“state of readiness” for its third nuclear test** at the Punggye-ri nuclear test facility.¶ Pyongyang conducted its first and second atomic explosions in 2006 and 2009. A third nuclear test would fit a pattern. “North Korea is thought to have enough plutonium for a handful of crude atomic bombs, and unveiled a uranium enrichment facility in 2010,” according to Hong Kong-based South China Morning Post, “but it must continue to conduct tests to master the miniaturization technology crucial for a true nuclear weapons program. Rocket and nuclear tests unnerve Washington and its allies because **each new success puts North Korean scientists another step closer to perfecting a nuclear warhead small enough to put on a missile that could hit the United States.**”¶ The three generations of Kims have been no strangers to nuclear brinkmanship, but Kim the grandson’s latest series of actions is qualitatively different. With North Korea’s long-range missile launch conducted on Dec. 12, and a simultaneous preparation for the third underground nuclear test, Kim Jong-un seems to be betting all his chips on getting the world’s recognition as a nuclear power and ultimately, a reunification of the Korean Peninsula by force and under his terms.¶ “Kim is fighting for a place in the nuclear club,” writes Shim Jae Hoon of New York Times, “and by doing so, will have the power to demand the withdrawal of American troops from the South. North Korea has not given up the ambition of reunifying the peninsula under its dominance, just as Vietnam was reunified under Hanoi’s control. Through repeated nuclear tests, the North seeks to make its nuclear weapons program a fait accompli.”¶ Kim Jong-un’s North Korea may be a friendless nation, but it certainly got the world’s attention last month when it sent its long-range missile into space.¶ A dictatorial and unpredictable regime is now preparing for another nuclear explosion for a true nuclear weapons program. What are the implications for the U.S. and its allies?¶ Since the Clinton administration, Washington has repeatedly stated the United States “will not tolerate nuclear weapons in North Korea.”¶ For the United States and its two key allies in Asia, Japan and South Korea, it will be a mistake to assume that they can continue to do business as usual with Pyongyang. “North Korea’s military provocations have revealed weaknesses of the U.S. and its alliance partners’ military readiness,” says Dr. Ryo Hinata-Yamaguchi at the Center for Strategic and International Studies in Washington.¶ “A more expansive strategy is needed to deter North Korea. The United States, Japan, and South Korea now must work together to show the North Koreans that playtime is over.”

#### North Korea will blackmail the US absent missile defense --- causes war

Peter Huessy 9, Senior Defense Consultant Associate at the National Defense University Foundation (NDUF) and President of GeoStrategic Analysis, “Missile Defense in the Age of Nuclear Proliferation”, inFocus, http://www.jewishpolicycenter.org/1527/missile-defense-nuclear-proliferation

The Iranians are developing missiles with ranges in excess of 2,400 kilometers, and are seeking to develop **an intercontinental missile capability**, which the United States Air Force predicts will be completed by 2015. Tehran also has successfully tested a two-stage rocket that placed a satellite in orbit. This is a common precursor to developing an ICBM (intercontinental ballistic missile) capability.

North Korea now lags behind Iran in domestic rocket capabilities. Its last test of a long-range rocket only successfully completed two stages. If the third stage were to work, Pyongyang could land a 300 to 500 kilogram warhead on the United States. And while the West might experience relief over these apparent failures, it should be noted that Iranian technicians have been identified at North Korean launch facilities, marking a **strong symbiotic relationship and the potential for technical cooperation**. The Russians and Chinese also assist both rocket programs.

In the case of Iran, current assessments indicate that the Mullahs are developing nuclear devices to fit onto its 2,000 to 2,400 kilometer range Shahab missiles. This is a development of the utmost significance. The Islamic Republic could **fit a small nuclear device onto a short or medium range missile**, and launch it from a freighter just 300 kilometers off the coast of North Carolina, for example. Indeed, as Investors Business Daily reports, "the Iranians have tested a sophisticated nuclear warhead design that lets them pack a nuclear warhead into a smaller package able to fit nicely on the Shahab-3 and other Iranian missiles."

Analysts are also concerned about the threat of an electro-magnetic pulse (EMP) attack. Such an attack would involve detonating a nuclear device 20 to 70 miles above a major metropolitan area. The blast would destroy every computer and electronic device within sight of the blast. This would destroy refrigerators, cars, phones, and more. It would, in effect, set the city back more than one hundred years, technologically speaking, and effectively destroy its economy. The ripple effect of just one EMP attack, both through economic and technological mayhem, could **cripple the rest of the country.**

The conventional wisdom is that Iran does not have the technology to launch an EMP attack on the U.S. However, the EMP Commission, chartered by Congress earlier this decade, judged that such an attack was very possible. Indeed, Iran tested a Scud-type missile off of a barge in the Caspian Sea in the mid 1990s. The Missile Defense Agency (MDA) also conducted a test off the coast of Hawaii in recent years to prove to a skeptical intelligence community that it could be done. Even as far back as 1998, the Commission on Ballistic Missile Threats to the United States concluded that an EMP type attack ranked among the more likely missile threats to the United States.

Defending Against the Threat

While the U.S. currently has the technological capability to protect our costal regions from shorter-range attacks, such as from a freighter, to do so would **require many more platforms**. Systems such as the Aegis, the THAAD, and Patriot have proven to be effective in this capacity. But our current inventory needs to be expanded, as sufficient deployments around the country would deprive other regions from protection. Enhancement of the long-range interceptors deployed in Alaska and California must also be part of any defense package that seeks to deal with this threat, since an EMP threat can come from Scuds or ICBMs. As such, the U.S. Congress and the Administration should accelerate the acquisition and deployment of additional missile defense systems, as part of a global and layered capability to protect the U.S. and its allies.

In the absence of such defenses, North Korea and Iran or even Russia and China, will find it easier to **blackmail, coerce, or bully the U.S. or its allies.** U.S. military power is not the reason we are being threatened by the likes of Pyongyang and Tehran. It is that their terrorist and hegemonic goals can **only succeed if American power is overcome**. As Jeffrey Kuhner, President of the Edmund Burke Institute, wrote in The Washington Times:

Moscow and Peking have not abandoned their rivalry with the West… they are part of an alliance that aims to curtail and undermine American power. They have provided… support to Stalinist North Korea… They have sold vital missile and nuclear technology to Iran's apocalyptic mullahs. The are constantly obstructing the global war against terror."

Responding to the Critics

It is remarkable that after nearly half a century, even as the threats have gathered, critics of missile defense continue to oppose its deployment. They are wedded to the ambiguous strategy of "engagement and negotiations" with our enemies, primarily because they view U.S. policies as the root of the problem—most prominently represented by our liberation of Afghanistan and Iraq. In their view, if the United States is coerced into "staying at home," all the better.

The consequences of such a policy are grave. With no missile defenses for the U.S. homeland, **we can be** blackmailed successfully in any confrontation **with a state that has long-range missiles in its possession**. For example, we might be powerless to confront North Korea if it chose to resort to aggression against South Korea.

How should the U.S. prepare for this scenario? Taking no precautions will almost certainly embolden an aggressive actor like North Korea. But, **a preemptive attack is also fraught with danger**. Such an attack could leave Los Angeles and Pyongyang in ashes.

The answer lies in the deployment of effective missile defenses in any theater. Effective missile defenses give the President and the Pentagon the ability to strike launch sites in North Korea, for example, without necessarily sparking a wider conflict. More to the point, such defenses could also **intercept North Korean rockets** against our forces in the South China Sea, the Sea of Japan, South Korea, and Japan, for example.

#### Goes nuclear --- causes extinction

Chol 11 Kim Myong Chol is author of a number of books and papers in Korean, Japanese and English on North Korea, including Kim Jong-il's Strategy for Reunification. He has a PhD from the Democratic People's Republic of Korea's Academy of Social Sciences "Dangerous games" Aug 20 www.atimes.com/atimes/Korea/MH20Dg01.html

The divided and heavily armed Korean Peninsula remains the most inflammable global flashpoint, with any conflict sparked there likely to become a full-blown thermonuclear war involving the world's fourth-most powerful nuclear weapons state and its most powerful.

Any incident in Korea by design, accident, or miscalculation could erupt into a devastating DPRK-US war, with the Metropolitan US serving as a main war theater.

Rodong Sinmun warned on August 16: "The Korean Peninsula is faced with the worst crisis ever. An all-out war can be triggered by any accident."

Recent incidents illustrate the real danger of miscalculation leading to a total shooting war, given the volatile situation on the Land of Morning Calm.

1. The most recent case in point is the August 10 shelling of North Korea by the South. Frightened South Korea marines on Yeonpyeong Island mistook three noises from a North Korean construction site across the narrow channel for artillery rounds, taking an hour to respond with three to five artillery rounds.

The episode serves as a potent reminder to the world that the slightest incident can lead to war. A reportedly malfunctioning firefinder counter-artillery radar system seems to partly account for the panicky South Korean reaction.

South Korean conservative newspaper the Joong Ang Daily reported August 17:

"A military source said that radar installed to detect hostile fire did not work last week when North Korea fired five shots toward the Northern Limit Line (NLL), the disputed maritime border, on Aug 10.

"'We must confirm the location of the source of the firing through the ARTHUR (Artillery Hunting Radar) and HALO (hostile artillery location) systems, but ARTHUR failed to operate, resulting in a failure to determine the source of the fire,' said the source."

BBC reported on November 25 last year the aggressive nature of troops on the South Korea-held five islands in North Korean waters.

"Seen in this sense, they (five islands including Yeonpyeong Island) could provide staging bases for flanking amphibious attacks into North Korea if South Korea ever takes the offensive."

2. An almost catastrophic incident took place at dawn on June 17 near Inchon. South Korean marines stationed on Gyodong Island near Inchon Airport fired rifles at a civilian South Korean jetliner Airbus A320 with 119 people aboard as it was descending to land, after mistaking it for a North Korean military aircraft.

The Asiana Airlines flight was carrying 119 people from the Chinese city of Chengdu.

About 600 civilian aircraft fly near the island every day, including those flying across the NLL, but they face a perennial risk of being misidentified as a hostile warplane.

It is nothing short of a miracle that the Airbus A320 was not hit and nobody harmed.

3. On March 26, 2010, the high-tech South Korean corvette Sokcho fired 130 rounds at flocks of birds, mistaking them for a hostile flying object. The innocent birds looked like a North Korean warplane just at a time when an alleged North Korean midget submarine had managed to escape with impunity after torpedoing the hapless Cheonan deep inside security-tight South Korean waters.

The South Korean military's habit of firing at the wrong target increases the risk of an incident running out of control.

CNN aired a story December 16, headlined: "General: South Korea Drill Could Cause Chain Reaction."

F/A-18 pilot-turned Marine Corp General James Cartwright told the press in the Pentagon, "What we worry about, obviously, is if that it [the drill] is misunderstood or if it's taken advantage of as an opportunity.

"If North Korea were to react to that in a negative way and fire back at those firing positions on the islands, that would start potentially a chain reaction of firing and counter-firing.

"What you don't want to have happen out of that is ... for us to lose control of the escalation. That's the concern."

Agence France-Presse on December 11 quoted former chief of US intelligence retired admiral Dennis Blair as saying that South Korea "will be taking military action against North Korea".

New Korean war differs from other wars

Obama and the Americans seem to be incapable of realizing that North Korea is the wrong enemy, much less that a new Korean War would be fundamentally different from all other wars including the two world wars.

Two things will distinguish a likely American Conflict or DPRK-US War from previous wars.

The first essential difference is that the US mainland will become the main theater of war for the first time since the US Civil War (1861-1865), giving the Americans an opportunity to know what it is like to have war fought on their own land, not on faraway soil.

The US previously prospered by waging aggressive wars on other countries. Thus far, the Americans could afford to feel safe and comfortable while watching TV footage of war scenes from Afghanistan, Iraq, Pakistan and Libya as if they were fires raging across the river.

The utmost collateral damage has been that some American veterans were killed or returned home as amputees, with post traumatic stress disorder, only to be left unemployed and homeless.

However, this will no longer be the case.

At long last, it is Americans' turn to have see their homeland ravaged.

An young North Korea in 1950-53 was unable to carry the war all the way across the Pacific Ocean to strike back, but the present-day North Korea stands out as a fortress nuclear weapons state that can withstand massive American ICBM (Intercontinental ballistic missile) attacks and launch direct retaliatory transpacific strikes on the Metropolitan USA.

The second essential difference is that the next war in Korea, that is, the American Conflict or the DPRK-USA War would be the first actual full-fledged nuclear, thermonuclear war that mankind has ever seen, in no way similar to the type of nuclear warfare described in science fiction novels or films.

North Korea is unique among the nuclear powers in two respects: One is that the Far Eastern country, founded by legendary peerless hero Kim Il-sung, is the first country to engage and badly maul the world's only superpower in three years of modern warfare when it was most powerful, after vanquishing Nazi Germany and Imperial Japan.

The other is that North Korea is fully ready to go the length of fighting [hu]mankind's first and last nuclear exchange with the US.

The DPRK led by two Kim Il-sungs - the ever-victorious iron-willed brilliant commander Kim Jong-il and his heir designate Kim Jong-eun - is different from Russia under Nikita Khrushchev which backed down in the 1962 Cuban missile crisis.

Khrushchev and his company never fought the Americans in war. As a rule, most countries are afraid to engage the Americans. As the case is with them, North Korea is the last to favor war with the Americans.

However, it is no exaggeration to say that the two North Korean leaders are just one click away from ordering a retaliatory nuclear strike on the US military forces in Guam, Hawaii and metropolitan centers on the US mainland.

On behalf of Supreme Leader Kim Jong-il, Kim Jong-eun will fire highly destructive weapons of like Americans have never heard of or imagined to evaporate the US.

The North Koreans are too proud of being descendents of the ancient civilizations of Koguryo 2,000 years ago and Dankun Korea 5,000 years ago, to leave the Land of morning Calm divided forever with the southern half under the control of the trigger-happy, predatory US. The North Koreans prefer to fight and die in honor rather than kowtow to the arrogant Americans.

At the expense of comforts of a better life, North Koreans have devoted more than half a century to preparing for nuclear war with the Americans. All available resources have been used to convert the whole country into a fortress, including arming the entire population and indigenously turning out all types of nuclear thermonuclear weapons, and developing long-range delivery capabilities and digital warfare assets.

An apocalyptic Day After Tommorow-like scenario will unfold throughout the US, with the skyscrapers of major cities consumed in a sea of thermonuclear conflagration. The nuclear exchange will begin with retaliatory North Korean ICBMs detonating hydrogen bombs in outer space far above the US mainland, leaving most of the country powerless.

New York, Washington, Chicago, San Francisco and major cities should be torched by ICBMs streaking from North Korea with scores of nuclear power stations exploding, each spewing as much radioactive fallout as 150-180 H-bombs.

#### Space laser solves

Richard Dunn 5 is a senior analyst at the Northrop Grumman Analysis Center & MA Public Affairs, Harvard University, where he is responsible for preparing in-depth assessments of military, political, technological and economic developments worldwide, “Operational Implications of Laser Weapons”, September, http://www.northropgrumman.com/analysis-center/paper/assets/Operational\_Implications\_of\_La.pdf

Operations: Satellite-Based Laser Weapons24 — Space-based lasers may also¶ provide active defense over large areas, depending¶ on the wavelength of the energy propagated and¶ existing atmospheric conditions, including¶ weather.25 A space-based laser satellite constellation¶ would have the inherent advantages and disadvantages¶ conferred by orbital mechanics.¶ Operating in space allows the placement of satellites¶ far above the earth in vantage points that¶ provide line-of-sight access to large portions of¶ the earth’s surface, including **potentially denied¶ areas within a hostile state**. These vantage points¶ have obvious advantages for directed energy¶ weapons based in space just as they do for sensors.¶ However, this access is complicated by the¶ motion of satellites within their orbit versus the¶ motion of the earth. Only satellites in very high¶ (23,000 mile) geosynchronous (GEO) orbits¶ maintain their position relative to the earth’s surface.¶ But GEO orbits are not suitable for spacebased¶ lasers for a number of reasons, the most¶ obvious being that they put the laser at too great¶ a distance from potential targets. The best solution¶ for laser systems would be a constellation of¶ satellites to achieve the desired coverage at lower¶ orbits. The satellites would not linger over specific¶ portions of the globe but would orbit the¶ earth on predictable paths with “access” to different¶ surface locations. About a dozen satellites at¶ an altitude of around 1,200 – 1,500 km can provide¶ continuous coverage of most of the earth¶ (excluding polar regions).¶ Space-based lasers could engage targets, primarily¶ ballistic missiles, much earlier in their trajectories¶ than terrestrially based defenses. Ballistic missile¶ threats could be engaged shortly after they ascend¶ above the clouds during their vulnerable boost¶ phase, before they deploy decoys.¶ Active defense lasers could also potentially protect¶ high-value satellites from attack by nano- or microsatellites¶ operating in a kinetic collision or parasitic¶ mode. In the vacuum of space, potentially¶ short engagement ranges would likely keep such a¶ satellite self-defense system relatively lightweight.

#### Chinese ASAT attacks are coming and collapse military power---space capabilities are key to deter attack

Bill Gertz 10-16, Senior Editor of the Washington Free Beacon, which is a project of the 501(c)4 Center for American Freedom, the Beacon’s editor in chief is Matthew Continetti, former associate editor of The Weekly Standard, 10/16/12, “China to Shoot at High Frontier,” http://freebeacon.com/china-to-shoot-at-high-frontier/

Whether or not the test is successful, development of the new high-altitude DN-2 ASAT reveals that China’s military is planning for future high-orbit space warfare despite seeking international agreements banning weapons in space.

China’s January 2007 ASAT test drew protests from the United States and other spacefaring nations, who saw it as a major threat to satellites used for both military and civilian purposes. That test also produced tens of thousands of pieces of space debris which threaten satellites.

A second possibility is the DN-2 missile test will be fired against a target missile, as occurred in 2010 as part of a joint Chinese ASAT-missile defense test.

Pentagon spokesmen declined to comment on the DN-2 ASAT program.

Michael Pillsbury, a former Reagan administration defense policymaker, stated in a 2007 report to Congress that Chinese military writers advocated covert deployment of sophisticated anti-satellite weapons system like the kind now being developed by the People’s Liberation Army for use against the United States “in a surprise manner without warning.”

“Even a small scale anti-satellite attack in a crisis against 50 U.S. satellites—assuming a mix of targeted military reconnaissance, navigation satellites, and communication satellites—could have a catastrophic effect not only on U.S. military forces, but on the U.S. civilian economy,” said Pillsbury, currently with the Hudson Institute. Chinese military writings also have discussed attacks on GPS satellites that are located in high-earth orbit, he stated.

ASAT a top-secret program

China’s anti-satellite missile system is a key element of the communist state’s growing arsenal of asymmetric warfare weapons, and remains one of Beijing’s most closely guarded military secrets.

Defense officials have said that with as few as 24 ASAT missiles, China could severely weaken U.S. military operations by disrupting global communications and military logistics, as well as by limiting celestial navigation systems used by high-technology weapons. Such an attack also would severely degrade U.S. intelligence gathering efforts against global targets, a key strategic military advantage.

A U.S. official familiar with reports of the ASAT test said China’s delay in conducting the test until after the Nov. 6 election is a sign Beijing wants to help President Obama’s reelection campaign. “It implies they’d rather have him reelected,” said the official.

The Obama administration has adopted conciliatory policies toward China’s military buildup and its large-scale human rights abuses. Critics say the administration also failed to hold Beijing accountable for its unfair trade practices and currency manipulation.

The administration’s questionable policies were revealed by a 2009 State Department cable that quoted Secretary of State Hillary Clinton as saying, “How do you deal toughly with your banker?”—a reference to China’s potentially coercive leverage over the United States through its large holdings of U.S. debt securities.

Richard Fisher, a Chinese military affairs specialist, said little is known publicly of the DN-2 missile. However, the DN-2 may be China’s designation for an ASAT missile and kill vehicle combination mounted on launchers dubbed KT-2, or KT-2A. This ASAT weapon is based on DF-31 or DF-31A road-mobile intercontinental ballistic missiles, respectively.

“ASATs derived from the KT-2 and KT-2A space launch vehicles have the potential to reach high earth orbits used by many strategic U.S. surveillance, communication, and navigation satellites,” said Fisher, with the International Assessment and Strategy Center.

Fisher said in 2002, during a military show in China, the KT-2A was touted by Chinese officials as having a 2,000-kilogram payload that could reach high-earth orbits.

“Since its appearance a decade ago, the KT series of space launch vehicles presaged what we now know, that a key Chinese strategic goal has been to deny outer space as a sanctuary to support American military operations,” Fisher said.

A KT-1 microsatellite launcher was displayed at the Zhuhai air show in 2000, and “it was fairly obvious that this could become the basis for an ASAT, and it was used as the basis for the SC-19 ASAT demonstrated successfully in January 2007,” Fisher said.

Because China will not join a verifiable space control agreement, “Washington has little choice, if it is to continue to deter China militarily, but to build far greater redundancy, passive and active defenses for outer space,” he said.

China ASAT caused space debris

U.S. officials estimate that China’s 2007 ASAT test that destroyed an aging weather satellite in low-earth orbit now accounts for 45 percent of all space debris in low-earth orbit.

After a year of stonewalling by China on the test, an official U.S. demarche, or protest note, was sent to Beijing in January 2008. According to a copy of the note made public by Wikileaks, the protest warned the Chinese government, “Any purposeful interference with U.S. space systems will be interpreted by the United States as an infringement of its rights and considered an escalation in a crisis or conflict.”

“The United States reserves the right, consistent with the [United Nations] Charter and international law, to defend and protect its space systems with a wide range of options, from diplomatic to military,” stated the protest, made by then-U.S. Ambassador to China Clark Randt.

A joint State Department-Pentagon report to Congress on export controls made public in April states that China is “developing space-based methods to counter ballistic missile defenses of the United States and our allies, including anti-satellite (ASAT) weapons.”

“As China advances in operational space capabilities, it is actively focusing on how to destroy, disrupt, or deny U.S. access to our own space assets,” the report said.

China is developing and refining its ASAT weapons as part of a “multi-dimensional program to limit or prevent the use of space-based assets by potential adversaries during times of conflict,” the report said.

“In addition to the direct-ascent [missile] ASAT program, China is developing other technologies and concepts for kinetic and directed energy for ASAT missions,” including electronic jamming of satellite communications and lasers that disrupt satellites, the report said.

ASAT weapons “have significant implications for anti-access/area-denial efforts against the United States in Taiwan Strait contingencies,” the report said. Those weapons and capabilities are being developed by China as a means to force the U.S. military out of Asian waters and territory and make it more difficult for U.S. forces to get into the region during a conflict, such as a defense of Taiwan. Other anti-access area denial weapons include anti-ship ballistic missiles, cyber warfare capabilities, and submarines.

Defense Intelligence Agency director Lt. Gen. Ronald L. Burgess told Congress in February that “China successfully tested a direct ascent anti-satellite weapon (ASAT) missile and is developing jammers and directed-energy weapons for ASAT missions.”

Burgess said that as “a prerequisite for ASAT attacks, China’s ability to track and identify satellites is enhanced by technologies from China’s manned and lunar programs as well as technologies and methods developed to detect and track space debris.”

Another ASAT test by China will likely undermine the Obama administration’s controversial space arms control proposal, introduced in January. Many in the Pentagon oppose the International Code of Conduct for Outer Space Activities over concerns it would place limits on U.S. space capabilities.

U.S. lagging in counterspace

Despite China’s continuing development of space weapons, the administration has done no research or development into so-called counterspace weapons and other capabilities that could deter China from its ASAT and anti-satellite laser and jammer arms, according to military officials. The opposition is based on the administration’s preference for arms control negotiations and agreements as a major element of its U.S. national security policies, the officials said.

#### Causes China to invade Taiwan

Dr Graham Ong-Webb 11, 3-15, a Managing Editor with IHS Jane's & PhD from the Department of War Studies, King's College London, “How Far Will China's Navy Reach?”, http://www.isn.ethz.ch/isn/Current-Affairs/ISN-Insights/Detail?lng=en&id=127560&contextid734=127560&contextid735=127476&tabid=127476

Not only economic interests but also geopolitical ones are fueling China's naval prowess, particularly in the Taiwan Straits - the most likely naval flashpoint. Beijing's option to unify Taiwan with the mainland by military force if necessary is no longer fuelled by ideology but geopolitics. As a 2008 US government report correctly put it, Taiwan is regarded as the focal point from which China can 'break out' from its centuries-long containment along the Pacific littoral" and secure its immediate security environment within the Asia-Pacific region. This 'line of containment' is also known as the oft-mentioned "first-island chain" running south from the Japanese archipelago to the Philippines, which naturally denies the mainland from having unfettered access to the oceanic thoroughfare. **The possession of Taiwan would** permanently break China's geographical curse. As a result, the Taiwan Straits - as well as the South China Sea and the Yellow Sea - have become pressing geopolitical priorities **that drive China's expansive military planning and procurement**. Naval prowess - only one head of the hydra

Moreover, it must be said that China's growing 'naval power' is not only about an expanding fleet of ships and submarines. All militaries advancing towards greater sophistication seek to integrate their sea, air, land and space capabilities in order to **increase overall lethality, efficiency and effectiveness**. The Chinese Navy is but one head of the country's military hydra. In a larger sense, the Chinese Navy should be regarded as a placeholder for the sea, air, land, and space-related capabilities that **China will bring to bear against an adversary in the maritime realm of conflict.**

US strategic planners have been increasingly concerned with China's recent development and impending deployment of certain air, land, and space-related capabilities, which **affect Taiwan's ability to impede a Chinese naval advance** toward its shores and also the **US Navy's capacity to project its military power in the Straits**. Some of these developments include an aircraft carrier, anti-ship ballistic missiles, stealth fighter-aircraft and anti-satellite missiles.

In January, the Chinese media published a video of China's first aircraft carrier undergoing sea trials. The bid to field a Chinese aircraft carrier may look like an unwieldy proposition because of the indomitable presence of 11 US aircraft carrier groups policing the world's oceans. The Chinese carrier, which is an upgraded version of a partially-built vessel purchased from Ukraine in 1998, is generations behind American carrier technology. However, China's plan to field an aircraft carrier since the 1990s is not an arms-race-type rejoinder to the US. It is simply borne out of a pragmatic need to use carrier-based aviation to better protect China's surface fleet. The Chinese Navy has calculated that an aircraft carrier with 40 aircraft on board would generate a combat effectiveness of between 200 and 800 land-based fighters in air-support functions. A Chinese carrier, supported by a fleet of attack submarines, may allow the rest of the Chinese Navy to secure an area up to the 'second-island chain' stretching from the Aleutians to Papua New Guinea.

China's fledgling anti-ship missile capability threatens US aircraft carriers. In early January, the US Navy's intelligence director acknowledged that China's anti-ship ballistic missile, the DF-21D, had finally reached its initial operating capability, **leaving US carriers open to attack**. Previously, US observers were sceptical that Chinese engineers could master the complicated science of hitting a manoeuvrable target such as a moving aircraft carrier. With the impending deployment of the DF-21D, its immediate role would be to **deter the US Seventh Fleet from approaching the Taiwan Strait**. The key target would be the USS George Washington, the aircraft carrier assigned to this fleet which **carries the US Navy's best strike aircraft** capable of attacking Chinese sea, air and land targets and destroying vital Chinese radar systems. These carried-launched aircraft have a range of less than 1,000 kilometers. Therefore, the DF-21D, which shares a similar range, is intended to keep the aircraft belonging to the George Washington out of lethal range.

The US and Taiwanese airborn-early-warning aircraft that support their respective navies are also **not immune from attack**. It was reported in early January that the Chinese military successfully test flew their own indigenously-built fifth-generation stealth fighter aircraft known as the J-20 "Black Eagle", designed to creep up and destroy those aircraft that **would otherwise provide real-time intelligence and surveillance of a Chinese naval attack**. Until recently, US officials have played down China's ability to make advances on its J-20 program launched in the 1990s. In fact, the American defence community previously estimated that the J-20 would be operational only around 2020 when it is more likely to be ready in about three years from now.

Lastly, the Chinese military is very close to fielding an anti-satellite missile capability that stands to cripple the network of satellites that the US military depends upon to marshal and **coordinate its air, land and naval forces effectively**. Chinese military planners realize that the US military satellite and communications network is both its **greatest strength and greatest weakness.** While it makes the US military more effective and efficient, it is also reduced to fighting 'blind, deaf and dumb' without it. In January 2007, Beijing successfully destroyed one of its own weather satellites with a direct ascent anti-satellite missile, based on the same missile airframe used for the DF-21D, hence proving that it could obliterate US satellites in low earth orbit.

These developments bolster the Chinese military's confidence in **achieving what it views to be its national security imperatives.** Whether or not China does possess hegemonic aspirations, it is becoming clear that Beijing is removing **the shackles** that previously placed limits on its strategic reach. In particular, as a recent US Office of Naval Intelligence report has noted, the Chinese Navy has begun removing the geographical limits to its 'offshore defense' thinking. It appears to have been given the mandate to venture "as far as [its] capabilities will allow it to operate task forces out at sea with the requisite amount of support and security." The deployment of a Chinese naval convoy to the Gulf of Aden to protect the country's shipping from Somali pirates in early January is instructive. The question that should now be asked is **how much maritime security is really enough for Beijing**. The answer determines how far Beijing will ask its navy to go.

#### Goes nuclear

Glaser 11 Professor of Political Science and International Affairs – George Washington University, “Will China’s Rise Lead to War?” *Foreign Affairs* Vol. 9 Iss. 2, March/April

THE PROSPECTS for avoiding intense military competition and war may be good, but growth in China's power may nevertheless require some changes in U.S. foreign policy that Washington will find disagreeable--particularly regarding Taiwan. Although it lost control of Taiwan during the Chinese Civil War more than six decades ago, China still considers Taiwan to be part of its homeland, and unification remains a key political goal for Beijing. China has made clear that it will use force if Taiwan declares independence, and much of China's conventional military buildup has been dedicated to increasing its ability to coerce Taiwan and reducing the United States' ability to intervene. Because China places such high value on Taiwan and because the United States and China--whatever they might formally agree to--have such different attitudes regarding the legitimacy of the status quo, the issue poses special dangers and challenges for the U.S.-Chinese relationship, placing it in a different category than Japan or South Korea. A crisis over Taiwan could fairly easily escalate to nuclear war, because each step along the way might well seem rational to the actors involved. Current U.S. policy is designed to reduce the probability that Taiwan will declare independence and to make clear that the United States will not come to Taiwan's aid if it does. Nevertheless, the United States would find itself under pressure to protect Taiwan against any sort of attack, no matter how it originated. Given the different interests and perceptions of the various parties and the limited control Washington has over Taipei's behavior, a crisis could unfold in which the United States found itself following events rather than leading them. Such dangers have been around for decades, but ongoing improvements in China's military capabilities may make Beijing more willing to escalate a Taiwan crisis. In addition to its improved conventional capabilities, China is modernizing its nuclear forces to increase their ability to survive and retaliate following a large-scale U.S. attack. Standard deterrence theory holds that Washington's current ability to destroy most or all of China's nuclear force enhances its bargaining position. China's nuclear modernization might remove that check on Chinese action, leading Beijing to behave more boldly in future crises than it has in past ones. A U.S. attempt to preserve its ability to defend Taiwan, meanwhile, could fuel a conventional and nuclear arms race. Enhancements to U.S. offensive targeting capabilities and strategic ballistic missile defenses might be interpreted by China as a signal of malign U.S. motives, leading to further Chinese military efforts and a general poisoning of U.S.-Chinese relations.

Lack of US response to Chinese space mil collapses Asian deterrence

RICHARD D. FISHER 10, JR. 1-20, senior fellow at the International Assessment and Strategy Center, “China's Scary Space Ambitions”, WSJ, http://online.wsj.com/article/SB10001424052748704320104575014341463615862.html?mod=WSJ\_Opinion\_LEFTTopBucket

China's Jan. 11 test of exoatmospheric missile interception is worth paying attention to—especially in Washington. It isn't just an early step toward development of a missile-defense system; it's also a signal of a radical change in the country's stance on the **militarization of space.** The United States should take this as a wake-up call that in the long term, China intends to **challenge its strategic superiority in aerospace.**

The People's Liberation Army publicly unveiled its new strategy as part of the Air Force's 60th anniversary in November last year. It appears that this strategy was formulated in 2004, but the world did not learn about it until PLA Air Force Commander General Xu Qiliang summarized it as "effecting air and space integration, possessing capabilities for both offensive and defensive operations."

Meanwhile, Chinese diplomats continued to hew to the line set down in 1985 by the late leader Deng Xiaoping, when he told former U.S. President Richard Nixon that China "is against whoever goes in for development of outer space weapons." China started an intensive diplomatic and propaganda campaign against American missile defense programs. Most recently Beijing added its vocal assistance to Vladimir Putin's intimidation campaign, which succeeded in helping to convince current U.S. President Barack Obama to reverse his predecessor's commitment to build ground-based defenses in Europe against Iran's Chinese-aided nuclear missile threat.

Today, China is beginning to shed the cloak of deception over its own missile-defense efforts, and has all but declared its intention to build an **aerospace power to rival that of the U.S.** After General Xu's statements, Chinese media commentaries explained that the new aerospace strategy emerged from Communist Party leader and PLA commander Hu Jintao's December 2004 call for the PLA to implement new "historic missions," which include **defending China's international interests**. The PLA Air Force in particular will shift from being a "campaign air force" for theater-level wars (such as against Taiwan) in cooperation with the Army, Navy and Second Artillery missile force, to a "strategic air force" increasingly capable of independent action farther from home.

Of particular importance is the PLA's willingness to publicly justify a space combat mission. While it is not yet clear which service will lead this mission, the PLA Air Force is the most vocal booster. In an Oct. 31 interview, General Xu stated that "competition among armed forces is moving toward the space-air domain and is extending from the aviation domain to near space and even deep space . . . having control of space and air means having **control of the ground, the seas and oceans**, and the electromagnetic space, which also means having the strategic initiative in one's hands . . ." General Xu's candor forced the Foreign Ministry to inveigh the following month: "We oppose the weaponization of outer space or a space arms race . . ." But even some Chinese scoff at this self-serving propaganda. Also in November, a Chinese military expert stated that as long as "hegemonism" (code for the U.S.) maintains primacy in space, "air-and-space **non-militarization is merely people's naive illusion**, or just a slogan and banner."

This isn't the first warning to Washington. In 2006, the PLA used ground-based lasers to "dazzle" a U.S. satellite, and in January 2007 demonstrated a ground-launched satellite interception. Last November, Chinese experts noted that the PLA may develop "assassin" satellites and "laser-armed" satellites, and reported China may already be developing an "orbital bomber." The PLA may also consider placing military assets on the moon—the first "Chang'e Three" moon lander may be equipped with a small radar and laser range-finder for "scientific" missions. The strict military-civilian "dual use" policy governing China's space program may mean that future larger unmanned Moon bases could be used to locate and target U.S. deep-space satellites that **provide warning of missile strikes.**

It's already public knowledge that China is now developing or deploying four new nuclear-armed intercontinental land-mobile and sea-based nuclear missiles. The key variable is whether the PLA will equip these missiles with multiple warheads, as some Asia sources have suggested to me, which could conceivably allow China quickly to achieve 400 or more warheads. These same sources also estimate a national missile-defense capability could emerge before the mid-2020s.

China is upgrading its aerospace capabilities closer to earth, too. Since the November PLA Air Force anniversary, PLA leaders have stated that China's fifth-generation fighter could fly "soon" and be in service by 2017-19, exceeding a recent U.S. government estimate by about a decade. Other Chinese sources speculate the PLA may build 300 of these fighters. As China signals its intention to build space-combat capabilities, increase the size and survivability of its nuclear missile forces, and build new fifth-generation air combat systems, the Obama administration is signaling retreat on the same fronts. Having declared his disdain for "Cold War" weapons in early 2009, it is unlikely that Mr. Obama will begin U.S. space-combat programs that could match and deter China in space. If anything, in fact, U.S. officials convey an **indifference to China's aggressive intent.** In early 2009, Mr. Obama reduced the limited number of ground-based missile interceptors to be based in Alaska and terminated a theater missile-defense program to enable one interceptor to shoot down multiple warheads. By August, the administration had defeated a Congressional attempt to extend production beyond 187 of the Lockheed Martin F-22, the premier U.S. fifth-generation jet fighter.

Continuing this course risks sacrificing the air superiority in Asia the U.S. has purchased through great sacrifice. If the PLA is able to attack U.S. space assets, it **can** limit the U.S. military's ability to detect and respond to PLA movements. Should China decide to increase its warhead numbers to the hundreds and defend them, the U.S. nuclear deterrent extended to Japan and other allies will lose its credibility**.** And if a larger number of PLA fifth-generation air-superiority fighters is able to overwhelm a lesser number of U.S. F-22s, then U.S. naval forces and bases in the Western Pacific will be more vulnerable to PLA air and missile strikes.

As a new U.S. administration tries to "move beyond the Cold War," primarily by limiting U.S. military power, China is signaling its intent to start an arms race. An American failure to respond would constitute a retreat from leadership. Asians will then face two unpalatable choices: **accommodate China or** obtain their own military deterrence. Both would increase **political instability** and in turn **threaten the region's economic growth.**

#### US leadership in Asia’s key to prevent Chinese seizure of shipping lanes and the Strait of Malacca

Spinetta 6 Major Lawrence, “The Malacca Dilemma-Countering China’s String of Pearls with Land Based Air Power”, <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA476931>

With regard to Japan, China has made repeated incursions into Japanese territorial waters and the country's economic zones in order to warn its neighbor in unusually blunt terms that any interference with Beijing's designs over disputed territory will be met with force.30 Tensions between China and Japan over the enforcement of territorial claims and the exploitation of disputed natural resources could erupt in a conflict with wide regional repercussions.31 Japan's unilateral declaration of an exclusive economic zone in the East China Sea, the site of intensive hydrocarbon prospecting, may spark military confrontation. Energy as a Driver of China’s National Security Policy 32 No longer inward looking, China shifted its foreign policy focus towards achieving regional dominance, bolstering national prestige, ensuring diplomatic ascension, and safeguarding economic interests. With regard to the last, economic considerations are intimately intertwined with Chinese security strategy. As such, energy concerns loom large in Chinese foreign policy calculations. China’s desire to secure energy imports to fuel its economy remains a prime driver of its security policy. China’s demand for energy grew by more than 30 percent in 2003, and Chinese automobile ownership increased 80 percent during the past four years. China is the second largest consumer of oil in the world and the third largest importer of oil. Importing 60 percent of its oil from the Middle East, China is heavily dependent on foreign oil, particularly Middle Eastern sources.33 As China’s economy expands, its dependence on foreign oil will increase, exacerbating pressures to secure energy resources. In the near term, China is projected to remain the fastest growing energy consumer in the world. Oil industry experts expect Chinese imports to rise from 6 million barrels in 2004 to 16-20 million barrels per day in 2020. If this projection proves accurate, China will have to import eighty percent of its total oil consumption. Even if both China’s economy and oil consumption grows at a rate below expectations, many experts agree that China “faces acute and unavoidable energy vulnerabilities.”34 The specter of an impending energy crisis is not remote; China is already experiencing oil shortages. In 2004, 24 of China’s 31 provinces experienced power cuts as demand surpassed energy grid capacities. The Chinese government introduced energy rationing in industrial centers near Guangzhou and Shanghai, ordered six thousand factories to take a one-week break or operate at non-peak hours, and mandated shopping malls in Beijing reduce their air conditioning by one-third to conserve energy.35 The Chinese government recognizes “a growing reliance on Middle Eastern suppliers for stable energy supplies is problematic and must be mitigated through a comprehensive diversification strategy.”36 But, its diversification strategy has made little progress. China lost bids to buy stakes in oil fields outside the Middle East, such as its July 2005 failed attempt to buy UNOCAL.37 Similarly, a deal to build a land pipeline from Russia to China collapsed after Japan entered the competition and offered more money to reroute the pipeline. Because regional energy grids in Southeast Asia have been built in a piecemeal fashion, Chinese efforts to connect grids and facilitate regional energy interdependence have produced only marginal benefits. China’s dependence on sea lanes to import oil is a critical strategic vulnerability. Almost all of the oil that China imports passes through maritime chokepoints and hence, is susceptible to disruption. Eighty percent of China’s oil imports pass through the Strait of Malacca. In a 2003 speech to the Chinese Communist Party leadership, President Hu Jintao identified this dependence on sea lanes as a critical vulnerability and directed national security officials to figure out a solution for the “Malacca Dilemma.” Predictably, China is allocating substantial resources to its military, buying sophisticated weapons, and seeking to expand its influence in the Western Pacific and Indian Ocean based on fears that the United States will exploit this economic vulnerability in a potential conflict. A Strategic Crossroads China’s aggressive strategy to challenge US maritime superiority suggests traditionalists who view national security as a zero-sum game with the United States are triumphing over integrationists who favor cooperation. Traditionalists view security issues more narrowly through a military filter, whereas integrationists emphasize cooperation and interdependence.38 Traditionalists and integrationists advocate different methods of securing access to energy imports. Traditionalists support a policy of direct physical control. They advocate the resolution of territorial disputes with force if necessary and encourage Chinese companies to acquire equity in foreign natural resources.39 In contrast, integrationists argue China “must expand ties to foreign supplies through diverse market arrangements, encourage foreign suppliers to pursue ‘linking’ projects in China, expand cooperation with the International Energy Agency to better anticipate and respond to international energy crises, and increase reliance on markets.”40 Although China seems to be pursuing elements of both the traditionalist and integrationist approaches, its weight of effort and magnitude of military spending suggests the government is prioritizing a military approach over cooperation. China is at a strategic crossroads. China’s break-neck military build-up has given it the capability to increasingly threaten its neighbors and US regional influence.41 The government can either choose a martial path to an expanded sphere of influence, or it can broaden its definition of security and focus on economic growth through commercial rather than military means. Based on recent antagonistic actions, it is far from a forgone conclusion that the integrationists will eventually triumph in the policy debate and China will embark upon a path of benign competition. Ideological differences with the United States increase the risk that China will choose a martial path. Additionally, the 2005 Department of Defense annual report to Congress on Chinese military power identifies other factors that could lead to conflict. These include: ƒ Nationalistic fervor bred by expanding economic power and political influence ƒ Structural economic weakness and inefficiencies that undermine economic growth ƒ An inability to accommodate the forces of an open, transparent market economy ƒ A government that is still adapting to great power roles ƒ An expanding military-industrial complex that proliferates advanced weapons.42 The interactions of complex political, economic, and social forces within China and their influence on Chinese strategic behavior are difficult to predict. For example, economic stagnation could aggravate domestic political problems for Communist Party leaders, leading Beijing to reduce military spending. Conversely, Chinese leaders could shift investments to the military in a bid to sustain domestic support through nationalistic assertions abroad.43 An economic downturn and demographic change may catalyze the government to focus on internal rather than external threats to regime survival. Alternatively, an economic downturn may cause Chinese leaders to advocate the acquisition by force of natural resources to fuel their economy. The unpredictability of Taiwanese politics may provoke China to act militarily despite a willingness of certain factions within the Chinese government to negotiate a settlement. The point is that US action will not be the sole determinant or driver of Chinese foreign policy. The United States needs to be prepared for the contingency that China follows a less than friendly path. The Need for US Action The stakes are high; the United States cannot cede control of the region’s strategic waterways without incurring immeasurable risk to vital US interests. First, failure to respond to China’s “String of Pearls” strategy threatens US power projection capability. Emphasizing preparations to fight and win short-duration, high-intensity conflicts, China hopes to negate the United States’ ability to intervene in the region, especially during a conflict with Taiwan. The US military cannot perform its primary missions—peacetime engagement, deterrence and conflict prevention, and fighting and winning the nation’s wars—unless it maintains the ability to deploy forces in a timely and effective manner. China enjoys the enduring advantage of proximity and interior lines of communication in Asia.44 The United States must overcome the tyranny of distance to project power and to protect the region’s sea lines of communication. In a China-Taiwan conflict, delaying or harassing a US carrier task force may create conditions sufficient for PRC victory. Unimpeded access through the South China Sea is strategically important not only in the event of conflict in the region, but also as a route to the Persian Gulf. Sixty-four percent of the known global oil reserves are concentrated in the Middle East. Surrendering maritime control to China would effectively give it a vote in US foreign policy. Even if China did not actively oppose US forces transiting through strategic chokepoints, it could impose significant time delays and costs. For example, a naval battle group proceeding from Yokosuka, Japan to Bahrain forced to sail around Australia would require an additional 15 days of transit. The extra fuel costs alone would amount to almost $10 million.45 More critical than the monetary cost, the loss of speed and responsiveness may prove difficult to overcome.46 Second, failure to respond to China’s “String of Pearls” strategy would jeopardize freedom of navigation through chokepoints that are critically important to global economic interests. One quarter of the world’s trade passes through the Strait of Malacca. Over 1,100 fully laden supertankers, many with only a meter or two of clearance between their keels and the channel bottom, pass eastbound through the Strait each year.47 If China succeeds in gaining control of the Strait, then half of the world’s merchant fleet would be required to seek alternative routes. This situation would result in huge economic losses, delays in shipping, and generate a substantial increase in the requirement for vessel capacity. If the Chinese threaten to close the Strait of Malacca and merchant ships are re-routed, commercial transportation costs will increase by 60 percent.48 More importantly, China would be able to harm the economies of close allies, most notably Japan and South Korea. Threats to exert control over sea lanes would have an enormous impact, giving Beijing tremendous bargaining leverage. Japan and South Korea rely on US naval power to help protect the transit of their goods to market and the flow of resources. Seventy percent of Japan’s trade passes through the Strait of Malacca. The Japanese and South Korean economies are heavily dependent on the free passage of commercial traffic through the Strait of Malacca, yet neither country has the naval forces necessary to adequately protect its long-haul commercial shipping in the region. Not only does it benefit the United States to protect the vital interests of its close allies, the United States is bound by treaty to secure Japanese and South Korean sea lines of communication.49 An American failure to protect Japanese and South Korean interests would weaken strategic alliances and encourage those nations to take their own defensive measures, potentially setting the conditions for a spiraling arms race. Ross Terrill, a national security expert at Harvard’s Asia Center says, “A Japan that saw China eclipse the U.S. -- its major ally and whose primacy in East Asia explains six decades of Japanese restraint -- would surely challenge China.”50 If a regional arms race does not come to fruition and Japan chooses a conciliatory approach, then Japan may be forced into political accommodation as a result of overt Chinese threats or soft power influence. Developing a Hedge Strategy A Chinese national security strategist closely tied to the People’s Liberation Army stated, “When a nation embarks upon a process of shifting from an ‘inward-leaning economy’ to an ‘outward-leaning economy,’ the arena of national security concerns begins to move to the oceans. Consequently, people start to pay attention to sea power. This is a phenomenon in history that occurs so frequently that it has almost become a rule rather than an exception.”51 In an Atlantic Monthly article, “How We Would Fight China,” Robert Kaplan predicts a future conflict as the Chinese navy increasingly seeks to project power and control the region’s sea lanes. He warns, “Given the stakes, and given what history teaches us about the conflicts that emerge when great powers all pursue legitimate interests, the result is likely to be the defining military conflict of the twenty-first century: if not a big war with China, then a series of Cold War-style standoffs that stretch out over years and decades.”52 Many political scientists argue it’s a question of “when,” not “if” US-China relations sour (i.e., relations are defined by more than benign competition). As a result, some neo-conservatives advocate the United States follow a strategy that seeks to prevent or at least moderate China’s rise. Max Boot chides the Pentagon for failing to recognize China’s nefarious plotting and accuses “Chinese strategists, in the best tradition of Sun Tzu, [of] working on crafty schemes to topple the American hegemon.”53 In response, Richard Haas, president of the Council on Foreign Relations, points out, “One problem with this thinking is that the rise and fall of countries is largely beyond the ability of the United States or any other outsider to control. The performance of states is mostly the result of demographics, culture, natural resources, educational systems, economic policy, political stability, and foreign policy. It is not clear the United States could prevent China's rise even if it wanted to.”54 Either way, strained relations between the two countries are likely. While war with China is not inevitable, it would be a serious mistake for the United States not to protect its vital interests and create a hedge against the risk of some sort of conflict—military and/or diplomatic. China stands at a strategic crossroads, and the United States must be prepared to respond to the uncertainties of any Chinese course of action. The dispute over Taiwan is an obvious flashpoint, but countering Chinese soft power requires strategic considerations beyond preparing against direct military confrontation. The United States must be prepared to fully engage China, but also capable of responding to potential Chinese attempts to attain regional hegemony through force or intimidation. The United States has little influence over the pace and scope of Chinese military spending, but it can strive to maintain a strategic advantage in the region to protect trade, preserve regional influence, and threaten China’s strategic vulnerabilities if required. China’s ultimate goal is to control strategic chokepoints in the South China Sea and Indian Ocean. China’s “String of Pearls” strategy supports efforts to exclude the United States from the region. To offset the ability of Beijing to leverage its emergent military capabilities, the United States needs a sustained and robust naval and air presence in the region to prevent China from having the option of threatening US and allied interests. The United States should take steps to encourage a peaceful and prosperous China while pursuing a hedge strategy to reduce the risks associated with a China that chooses a belligerent attitude in the realm of foreign policy. Ross Terrill remarked, “The expansionist claims of Beijing are unique among today's powers. But the Chinese regime is a rational dictatorship that has, for the past quarter century, been patient in fulfilling its goals. It surely realizes that others -- such as the U.S., Japan, Russia and India -- have a variety of reasons for denying China the opportunity to be a 21st century Middle Kingdom. If Beijing continues to be faced with a countervailing equilibrium that keeps the peace in East Asia, it will probably act prudently.”55

**Collapse of Asian trade from Malacca causes nuclear war**

Auslin 9 Michael, resident scholar at AEI, “Averting Disaster”, The Daily Standard, 2/6, http://www.aei.org/publications/filter.all,pubID.29339/pub\_detail.asp

As they deal with a collapsing world economy, policymakers in Washington and around the globe must not forget that when a depression strikes, war can follow. Nowhere is this truer than in Asia, the most heavily armed region on earth and riven with ancient hatreds and territorial rivalries. **Collapsing trade flows** can lead to political tension, nationalist outbursts, growing distrust, and ultimately, military miscalculation. The result would be disaster on top of an already dire situation. Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. No one should think that Asia is on the verge of conflict. But it is also important to remember what has helped keep the peace in this region for so long. Phenomenal growth rates in Japan, South Korea, Hong Kong, Singapore, China and elsewhere since the 1960s have naturally turned national attention inward, to development and stability. This has gradually led to increased political confidence, diplomatic initiatives, and in many nations the move toward more democratic systems. America has directly benefited as well, and not merely from years of lower consumer prices, but also from the general conditions of peace in Asia. Yet policymakers need to remember that even during these decades of growth, moments of economic shock, such as the 1973 Oil Crisis, led to instability and bursts of terrorist activity in Japan, while the uneven pace of growth in China has led to tens of thousands of armed clashes in the poor interior of the country. Now **imagine such instability multiplied region-wide**. The economic collapse Japan is facing, and China's potential slowdown, **dwarfs any previous economic troubles,** including the 1998 Asian Currency Crisis. Newly urbanized workers rioting for jobs or living wages, conflict over natural resources, further saber-rattling from North Korea, all can take on lives of their own. This is the nightmare of governments in the region, and particularly of democracies from newer ones like Thailand and Mongolia to established states like Japan and South Korea. How will overburdened political leaders react to internal unrest? What happens if Chinese shopkeepers in Indonesia are attacked, or a Japanese naval ship collides with a Korean fishing vessel? Quite simply, Asia's political infrastructure may not be strong enough to resist the slide towards confrontation and conflict. This would be a political and humanitarian disaster turning the clock back decades in Asia. It would almost certainly drag America in at some point, as well. First of all, we have **alliance responsibilities** to Japan, South Korea, Australia, and the Philippines should any of them come under armed attack. Failure on our part to live up to those responsibilities could mean the end of America's credibility in Asia. Secondly, peace in Asia has been kept in good measure by the continued U.S. military presence since World War II. There have been terrible localized conflicts, of course, but nothing approaching a systemic conflagration like the 1940s. Today, such a conflict would be far more bloody, and it is unclear if the American military, already stretched too thin by wars in Afghanistan and Iraq, could contain the crisis. Nor is it clear that the American people, worn out from war and economic distress, would be willing to shed even more blood and treasure for lands across the ocean. The result could be a historic changing of the geopolitical map in the world's most populous region. Perhaps China would emerge as the undisputed hegemon. Possibly democracies like Japan and South Korea would link up to oppose any aggressor. India might decide it could move into the vacuum. All of this is guess-work, of course, but it has happened repeatedly throughout history. There is no reason to believe we are immune from the same types of miscalculation and greed that have destroyed international systems in the past.

#### Space laser solves --- solves satellite vulnerability to Chinese ground-based laser attacks

Richard Dunn 5 is a senior analyst at the Northrop Grumman Analysis Center & MA Public Affairs, Harvard University, where he is responsible for preparing in-depth assessments of military, political, technological and economic developments worldwide, “Operational Implications of Laser Weapons”, September, http://www.northropgrumman.com/analysis-center/paper/assets/Operational\_Implications\_of\_La.pdf

Space Operations: Could Give New Meaning to¶ “Space Superiority”33 — Laser weapons speed-of light¶ delivery, exceptional accuracy and adjustability¶ make them well suited for engaging targets¶ in space from the ground or for engaging targets¶ on the surface or in the lower atmosphere from¶ space. The lack of atmosphere to attenuate power¶ and the fact that they only need to be recharged¶ to be rearmed (for SSLs) also makes them ideal¶ space-to-space weapons. As noted earlier, laser¶ weapons can play a defensive role on space platforms,¶ but they clearly have offensive utility as well.¶ **Concerns over the offensive use of lasers against¶ space targets** have risen steadily since a Soviet¶ ground-based laser (GBL) tracked the Challenger¶ space shuttle at low power in 1984, causing¶ equipment malfunctions and crew distress.34 U.S.¶ experiments have also demonstrated that satellites¶ hundreds of kilometers up are vulnerable to high¶ energy GBLs.35 The importance of this capability¶ has not been lost on countries like China, which¶ is pursuing a robust high energy laser capability.36¶ For technologically sophisticated nations with¶ militaries that are dependent on information and¶ data (e.g., positioning/navigation/timing, intelligence,¶ surveillance and reconnaissance, and communications)¶ derived from space-based systems,¶ **the potential threat from GBLs is real.¶** Information about the target satellites’ operational¶ characteristics, like orbital parameters, is¶ readily available in open sources. The physical¶ destruction of satellites may not be as important¶ to the attacker as the ability to jam, spoof or otherwise¶ inhibit a spacecraft’s functional effectiveness¶ for a limited period of time. The beam’s¶ intensity and point of impact will determine the¶ GBL’s lethality and effectiveness against a spacebased¶ target. Due to the megawatt levels of¶ power required, chemical lasers rather than solidstate¶ lasers will most likely be the lasers of choice¶ for GBLs for the foreseeable future.¶ **Laser weapons could** also **be placed into orbit.¶** The vacuum of space is an **ideal environment for¶ lasers**, but orbital mechanics will dictate spacebased¶ lasers’ operational utility. However, for¶ offensive counter-space operations, timelines are¶ not usually critical. Over a period measured in¶ hours, a few space-based lasers get a good shot at¶ all low earth orbit (LEO) satellites. With sufficient¶ power levels, they could **attack targets from the¶ earth’s surface well into orbit**. If such weapons¶ are eventually developed and fielded, they might¶ be **so overwhelming that they would** make successful¶ operations in other mediums impossible¶ without first achieving true “space superiority.”

#### Space weapons are currently infeasible due to power limitations --- nuclear’s key

McCall 6 Chair, USAF Scientific Advisory Board, “Spacecraft Bus Technoligies,” http://www.au.af.mil/au/awc/awcgate/vistas/stechch3.pdf

All current spacecraft are either power limited or restricted in some measure by inadequate electrical power. Power limitations impose restrictions on the communications and propulsion subsystems and currently make large space-based radars and space-based weapons **relatively** unfeasible. A revolutionary change in capabilities will result from power technologies capable of providing large amounts of power onboard satellites. Large amounts of power will be enabling on spacecraft in the same sense that large amounts of random access memory have been enabling in personal computers. If power is not an issue, then previously hard applications become easy and new applications become possible. Evolutionary development of solar-array-based power technologies will see improvements to tens of kilowatts on satellites over the next decades. However, all solar collection systems in Earth orbit are limited by the solar constant of 1.4 kiloWatts per square meter. Large powers from solar collectors require large collection areas. For substantially larger powers (> 100 kW), several different types of technologies will have to be explored. Powers of this level will make large space-based radars, space-based directed energy weapons, and the use of high-performance electrically driven maneuvering technologies possible. **A natural technology to enable high power is nuclear power in space**; however, this technology has to date been considered unacceptable due to political and environmental limitations. Thus it is desirable to develop other technologies that may provide large power levels in space. In addition to continued development of safe **nuclear systems**, two other sources of continuous power in space that should be explored are the concepts of electrodynamic power-generating tethers and power beaming from one location to another (e.g., from space to space). The development of these and other technologies for high continuous power **will have a revolutionary effect** and the Air Force should invest in these areas as well as continuing to invest in solar collection technologies. Over the years, there have been several programs in nuclear powered spacecraft. NASA has been using Radioisotope Thermoelectric Generators (RTGs) for the interplanetary missions that generate a few tens of watts of power. Russia has flown nuclear reactors in space and BMDO has a joint program with the Russians (TOPAZ), under which the Defense department bought three of the reactors to do laboratory experiments. DoE had a program (SP 100) to use nuclear power in space and the Air Force had a nuclear propulsion program; these programs have been canceled. Nuclear power, however, remains one of the attractive alternatives in generating large amounts of power in space. To build a reactor for space applications has many challenging technical aspects including development of high-temperature lightweight materials, active cooling technologies, extremely radiation-hard and high-temperature electronics, and fail-safe system architectures. Setting the emotional issues of nuclear power aside, this technology offers a viable alternative for large amount of power in space. The Air Force should continue efforts towards making a safe nuclear reactor in space a viable option. Existing joint programs with Russia offer a low cost alternative and should be pursued. To build a reactor for space applications has many challenging technical aspects including development of high-temperature lightweight materials, active cooling technologies, extremely radiation-hard and high-temperature electronics, and fail-safe system architectures. Setting the emotional issues of nuclear power aside, this technology offers a viable alternative for large amount of power in space. The Air Force should continue efforts towards making a safe nuclear reactor in space a viable option. Existing joint programs with Russia offer a low cost alternative and should be pursued.

#### Military SMR development solves --- allows the Air Force to deploy a space laser

Maybury 12 Chief Scientist-USAF, “Energy Horizons: United States Air Force Energy S&T Vision 2011-2026,” 1/31, http://www.fas.org/irp/doddir/usaf/energy.pdf

Space is the ―ultimate high ground, providing access to every part of the globe, including denied areas. Space also has the unique characteristic that once space assets reach space, they require comparatively small amounts of energy to perform their mission, much of which is renewable. This simple characterization belies the complexity of the broader space enterprise. The bigger space energy picture must encompass the energy required to maintain and operate the launch ranges, the energy consumed during the launch of space assets, the energy generated and used in space, the energy consumed in satellite control stations, and the energy consumed in data ingest and processing centers. A comprehensive space energy strategy that addresses this full spectrum promises to enhance the resiliency, sustainability, and affordability of future space systems and operations through reduced consumption, increased energy supply, and cultural change. In the near-term, there should be an emphasis on lowering ground facilities and systems energy consumption, while continuing S&T investments for long-term assured energy advantage. The focus on ground facilities should include launch ranges, world-wide satellite control facilities, as well as the substantial data centers required to process and disseminate data to warfighters. In the longer term it may be possible to broaden the set of missions to be performed from space in an energy-efficient manner. This would require significant advances in S&T related to space-borne energy generation and storage technologies. In the mid- and long-term, substantial energy savings may be achieved through commonality in ground systems, efficient operations of those ground systems, as well as expanding the use of renewable energy resources. 3.1 Space Domain Strategic Context On-orbit assets continue to be among the highest demand and lowest density assets in the Air Force inventory. They consistently and effectively provide unique capability to the community. These assets are constrained, not just by the size of the payloads they carry, but also by their capability. Their austere operational environment coupled with current technology constraints means these systems regularly are required to operate long past their projected life. S&T that increases energy production, storage, and utilization of on-orbit assets can both provide longer life systems or increase capability value for the Air Force. In contrast to the air domain, assets in the space portfolio do not use traditional aviation fuels for mobility (airlift and air refueling). Indeed, once space assets are placed in orbit, with the very small exception of on-board consumables (to include propulsion for satellite maneuverability), only energy for the associated ground facilities and systems is required to maintain and operate them. Although there is an energy cost in getting systems to space, it is relatively small compared to the energy costs of the ground infrastructure. Therefore, in the near-term, investments in S&T that reduce the energy costs of space systems should focus primarily on reducing the energy costs of the associated ground facilities and systems. Nonetheless, there are promising S&T projects, such as the Reusable Booster System (RBS) and revolutionary small launch vehicles, that may substantially reduce the cost to orbit by applying lessons learned from the commercial aircraft industry to the RBS. For example, reuse may dramatically reduce manufacturing costs while simultaneously permitting much faster turnaround times. However, the full implications of reusable launch vehicles on energy consumption are not yet fully understood. The reusable components of RBS must be rocketed or jetted back to the launch base, resulting in greater use of energy for every launch. The energy impact of RBS requires detailed study. Additional potentially large energy cost savings could be achieved by employing other technologies emphasized in Technology Horizons, including fractionated, composable, and networked space systems. Much smaller systems that may perform the same functions as larger systems offer the possibility of substantially lowering launch costs and reducing on-orbit energy use. On the other hand, launching larger constellations of smaller satellites in low earth orbit may require more energy and use less efficient small launch vehicles. The total energy picture associated with the use of small, fractionated satellites requires careful analysis. Technology Horizons also advocated autonomous real-time, cross-domain, assured and trusted Space Situational Awareness (SSA). While autonomy can be used to save energy and cost for virtually any space mission, automating heavily human-directed SSA can potentially save large energy costs by reducing the presence of human interaction and, at the same time, increasing responsiveness. Figure 3.1 visually emphasizes that the overwhelming share of energy use for space domain operations is in terrestrial facilities and systems. Of the energy consumed for Air Force Space Command (AFSPC) missions, 97.2% is used by terrestrial facilities, 1.8% is used for ground vehicle transportation, and an estimated 1% is used for rocket launches. The commercial space sector has taken significantly different approaches on the ground infrastructure. Commercial space systems are operated with smaller facilities, small crews, and even autonomously. AFSPC has considered base closures to save significant costs; another solution, either in concert with base closures or by itself, is to establish an aggressive program to replace local power generation with renewable technologies. This would directly support the Air Force Energy Plan goals in the near-term, while also supporting assured sources of supply and cost reduction goals. Efforts are already underway to create more energy efficient ground assets using information from the cyber and infrastructure elements of Energy Horizons. A key opportunity is energy cost reduction for terrestrial radar and heating, ventilation, and air conditioning (HVAC) systems, but so far little work has been done on this. 3.2 Space Energy Technologies Leading edge technologies for energy performance of on-orbit space systems can transition to terrestrial facilities and systems to lower their energy intensity and consumption. These technologies fall into three categories which are addressed in turn: energy generation, storage, and transmission. 3.2.1 Energy Generation Table 3.1 illustrates the near-, mid- and far-term opportunities in energy generation. Today, there is an emphasis on continuing to evolve Inverted Meta-Morphic (IMM) solar cell arrays that are exceeding 34% efficiency in demonstration programs. In contrast, current terrestrial solar cell arrays for energy generation are far less efficient, below 20%. If packaging and production issues could be overcome, the improved efficiency offered by IMM would dramatically improve the output capabilities of ground facility solar array systems and, in turn, lower the use of non-renewable energy sources. There may also be spinoff to the air and ground domains through programs such as DARPA‘s Vulture program, a long-endurance unmanned vehicle powered by solar cells, which is taking advantage of the same kinds of efficiency improvements in terrestrial systems. The importance of these S&T efforts lies in the fact that every 1% increase in solar cell energy generation efficiency translates to a 3.5% increase in power (or decrease in mass) for the system. The downside is that as the efficiency improves, the relative benefit is not as great, so there is a point of diminishing returns with the evolutionary approach. In addition, amorphous-Silicon (a-Si) for flexible arrays has achieved 10% efficiency. While a-Si has not been fully space qualified, it could be transitioned to terrestrial systems such as Remotely Piloted Aircraft (RPA) and powered tents. There are other breakthrough space energy generation component technologies with the potential of achieving up to 70% efficiency. Examples include quantum dots and dilute nitrides in solar cells. But there are also entirely new technologies such as tethers to attempt to harvest energy from the geomagnetic field, and energy harvesting from system heat waste. These ideas, as well as **new developments in** nuclear energy, including **small modular reactors, can potentially fuel local facilities.** Recently, there has been progress in developing large systems for energy generation, including very large deployable panels as developed by the Air Force Research Lab (AFRL), DARPA, and industry. For example, we are currently limited to 27 kW arrays for satellite power, whereas more power is required for some future space missions by the AF, National Security Space (NSS), and NASA. **Employing larger and more efficient arrays will enable missions that require very high power, such as** space-based radar or **space-based laser missions**. An example of a system that is almost ready for a flight demonstration is the AFRL-Boeing 30 kW Integrated Blanket Interconnect System (IBIS). Figure 3.2 shows the technology and implementation concept for such a High Power Solar Array (HPSA). In the long term, increased solar cell efficiencies and revolutionary materials foreshadow the potential of 500 kW on-orbit power generation technologies, which would be transformational for performing missions from space-based systems. In addition to improving photovoltaic efficiencies, other potential energy production is possible in the mid- to far-term. In addition to modern designs for autosafing, small modular nuclear reactors for ground operations energy, nuclear energy has been demonstrated on several satellite systems (e.g., Radioisotope Thermoelectric Generators (RTG)). **This source provides consistent power regardless of harvestable resources** (i.e. solar) at a much higher energy and power density than current technologies. While the implementation of such a technology should be weighed heavily against potential catastrophic outcomes, **many investments into small modular reactors can be leveraged for space based systems. As these nuclear power plants decrease in size, their utility on board space based assets increases.**

### 1AC – Plan

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

### 1AC – Solvency

#### CONTENTION 3: SOLVENCY

#### Plan’s solves SMRs in the military -- 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 is best at advancing SMRs

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 solve 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.

# 2AC

## Heg

### 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…”

## Space

### AT: No Asian War

#### Yes Asia war

Medcalf & Heinrichs 11 - Rory Medcalf is Director of the International Security Programme at the Lowy Institute, Sydney. Raoul Heinrichs is Sir Arthur Tange Scholar at the Strategic and Defence Studies Centre, Australian National University, and editor of the Lowy Institute Strategic Snapshot series, June 27, 2011, “Asia’s Maritime Confidence Crisis,” online: http://the-diplomat.com/2011/06/27/asia%E2%80%99s-maritime-confidence-crisis/?print=yes

To the casual observer, recent security tensions in Asian waters might seem a storm in a Chinese teacup. The spectacle of opposing vessels – often motley flotillas of civilian patrol boats, fishing trawlers and survey ships – jostling near contested reefs, rocks and islets in the South and East China seas is the kind of activity that was likened back in Cold War days to a game of ‘nautical chicken’. Surely, in an age of economic interdependence and nuclear weapons, this petty posturing wouldn’t lead to great-power war?

Yet such wishful thinking ignores the real dangers of Asia’s China-centric maritime incidents. In the absence of effective mechanisms for crisis-management and confidence-building, these events are increasing in frequency and intensity. The harassment by Chinese civilian vessels of the USNS Impeccable in 2009 presaged a serious set of encounters in 2010, including North Korea’s sinking of the Cheonan and a diplomatic crisis between China and Japan over the ramming of a Japanese customs vessel near the disputed Senkaku/Diaoyu islands.

Though major power tensions have eased somewhat in 2011, encounters have continued. Chinese helicopters have continued to ‘buzz’ Japanese naval units, even in the sensitive period following Japan’s earthquake and tsunami. In March, a Philippine survey ship was shadowed and harassed by Chinese patrol boats, eliciting formal diplomatic protests from Manila. More recently, in May and June, Chinese patrol boats have allegedly severed seismic cables aboard Vietnamese vessels operating near disputed territories in the South China Sea. Washington has weighed in, particularly with signals of reassurance to its ally Manila – prompting Chinese warnings about fanning flames and getting burned.

At the weekend, Sino-US and Sino-Vietnamese talks seem to have put a lid on the simmering tensions. And the chance that such incidents will lead to major military clashes shouldn’t be overstated. But each encounter involves risks, however small, of miscalculation and casualties. As the number and tempo of incidents increases, so does the likelihood that an episode will escalate to armed confrontation, diplomatic crisis or possibly even conflict. An accumulation of incidents could also play into a wider deterioration of relations among major powers, with dangerous implications for regional peace and stability.

### Space Militarization Inevitable

#### Space militarization is inevitable – the only question is effectiveness

Walker 8(Peter, The Guardian UK. “China and the arms race in space” 6-3-08. http://www.guardian.co.uk/news/blog/2008/jun/03/thearmsraceinspace)

Outside scrutiny of China has, understandably, been muted in the weeks following the Sichuan earthquake. But a new battle of strength between Asia's emerging superpower and the US is fast emerging - in the skies. In comments reported this week, Chinese military bigwigs have warned that an arms race in space is "unstoppable". China served notice of its capabilities in January when it used a ballistic missile to shoot down one of its own defunct satellites. The US is widely assumed to have parallel technology. A new book issued by the state-run China Arms Control and Disarmament Association, dissected by Reuters, warns that this was only the start. The buildup of weaponry in orbit "is already unstoppable", Wu Tianfu, of the 2nd Artillery Corps command college, which controls China's nuclear weaponry, says in the book. Strategic confrontation in outer space is difficult to avoid. The development of outer space forces shows signs that a space arms race to seize the commanding heights is emerging. Beijing remains officially set on drawing up secure multinational regulations to avoid a space arms race, but is clearly hedging its bets - something Washington is only too aware of. Last month, Brigadier General Jeffrey Horne, from the US Strategic Command, told a congessional advisory group that China was "aggressively" developing its ability to shoot down satellites, technology he predicted could be used in a future showdown over Taiwan. The US in turn must "proactively protect our space capabilities", he insisted. So that's that, it seems. The next time you think you see a shooting star in the heavens, it might be worth a second look.

### AT: Weaponization Bad

#### Space planes pound the DA

TimesLive 10 (The Times Live, Citing Anatoly Kornukov, Russian Airforce Commander, “ Russian fury at US unmanned spacecraft,” April 23, <http://www.timeslive.co.za/scitech/2010/04/23/russian-fury-at-us-unmanned-spacecraft>)

Former Russian air force commander Anatoly Kornukov has sharply criticized the US launch of an unmanned space craft, saying that Russia now needs to develop a new defence system against space and air attacks, Russian media report. A rocket carrying the X-37B Orbital Test Vehicle, commonly referred to as the "space plane," took off from Cape Canaveral in Florida. The space craft will significantly increase US fighting power and shows that the country has ambitions to "reach space and threaten us," Kornukov argued. "The US has completely spit on calls from Russia and the world to abandon plans for the deployment of weapons in space," he said. Moscow has to react with "actions instead of words," he added. "The aggressors from space could turn Russia into something like Iraq or Yugoslavia," Kornukov said, referring to the destruction caused by past US air raids in both countries. The US Air Force has flatly rejected suggestions that the X-37 project could mark the beginning of the weaponization of space.

#### No arms races

Dolman 12(Everett**,** PhD and Professor of Comparative Military Studies @ US Air Force School of Advanced Air and Space Studies and Recipient of Central Intelligence’s Outstanding Intelligence Analyst Award, “ New Frontiers, Old Realities,” Spring, http://www.au.af.mil/au/ssq/2012/spring/dolman.pdf)

And in such circumstances, the United States certainly would respond. Conversely, if the United States were to weaponize space, it is not at all sure that any other state or group of states would find it rational to counter in kind. The entry cost to provide the necessary infrastructure is still too high—hundreds of billions of dollars, at minimum. The years of investment needed to achieve a comparable counterforce capability—essentially from scratch—would provide more than ample time for the United States to entrench itself in space and readily counter preliminary efforts to displace it. The tremendous effort in time and resources would be worse than wasted. Most states, if not all, would opt not to counter US deployments directly. They might oppose American interests with asymmetric balancing, depending on how aggressively it uses its new power, but the likelihood of a hemorrhaging arms race in space should the United States deploy weapons first—at least for the next few years—is remote. This reasoning does not dispute the fact that US deployment of weapons in outer space would represent the addition of a potent new military capacity, one that would assist in extending the current period of American hegemony well into the future. Clearly this would be threatening, and America must expect severe condemnation and increased competition in peripheral areas. But such an outcome is less threatening than another, particularly illiberal authoritarian state doing so. Although there is obvious opposition to the current international balance of power, the majority of states seem to regard it as at least tolerable. A continuation of the status quo is thus minimally acceptable, even to states working toward its demise. As long as the United States does not employ its power arbitrarily, the situation would be accommodated initially and grudgingly accepted over time. Mirror-imaging does not apply here. An attempt by China to dominate space would be part of an effort to break the sea-air dominance of the United States in preparation for a new international order with the weaponizing state at the top. Such an action would challenge the status quo rather than seek to perpetuate it. This would be disconcerting to nations that accept the current international order—including the venerable institutions of trade, finance, and law that operate within it. Simultaneously, it would be intolerable to the United States. As leader of the current system, the United States could do no less than engage in a perhaps ruinous space arms race, save graciously deciding to step aside and accept a diminished world status. 19 Seizing the initiative and securing low-Earth orbit now, while the United States is dominant in space infrastructure, would do much to stabilize the international system and prevent an arms race in space. The enhanced ability to deny any attempt by another nation to place military assets in space and to readily engage and destroy terrestrial antisatellite capacity would make the possibility of large-scale space war or military space races less likely, not more. So long as the controlling state demonstrates a capacity and a will to use force to defend its position, in effect expending a small amount of violence as needed to prevent a greater conflagration in the future, the likelihood of a future war in space is remote. Moreover, if the United States were willing to deploy and use a military space force that maintained effective control of space and did so in a way that was perceived as tough, nonarbitrary, and efficient, such an action would serve to discourage competing states from fielding opposing systems. It could also set the stage for a new space regime, one that encourages space commerce and development. Should the United States use its advantage to police the heavens and allow unhindered peaceful use of space by any and all nations for economic and scientific development, over time its control of low-Earth orbit could be viewed as a global asset and a public good. In much the same way the British maintained control of the high seas in the nineteenth century, enforcing international norms against slavery while protecting innocent passage and property rights, the United States could prepare outer space for a long-overdue burst of economic expansion.

### AT: Soft Power

#### Space missiles boost soft power

Frederick 9—Masters of Military Operational Art and Science at the Air Command and Staff College (Lorinda A, Fall 2009, “Deterrence and Space-Based Missile Defense,” Air & Space Power Journal, Vol. 23, Iss. 3, Proquest, DA: 7/20/2011//JLENART)

SBMD progressed through various programs, such as GPALS, Brilliant Pebbles, Clementine, and SBL, despite dwindling support from presidential administrations following President Reagan's. Pres. George W Bush paved the way for the next administration to put SBMD on the international agenda. According to The National Security Strategy of the United States of America (2006), the United States may need new approaches to deter state and nonstate actors and deny them the objectives of their attacks.50 Additionally, the National Strategy to Combat Weapons of Mass Destruction (2002) states that "today's threats are far more diverse and less predictable than those of the past. States hostile to the United States and to our friends and allies have demonstrated their willingness to take high risks to achieve their goals, and are aggressively pursuing WMD and their means of delivery as critical tools in this effort. As a consequence, we require new methods of deterrence."51 Cooperation on missile defense initiatives could increase global stability. By banding together in coalitions, countries can deter war by repelling an attack against any member.52 States and rogue elements will not be able to strike surreptitiously if they know that the international community could quickly discern the origin of any launch and compute potential impact points. Attempts by a rogue element to destabilize the region through the attribution of attacks to a state may initially promote the rogue elements own agenda. However, data provided by missile defense and other sensors can refute such claims. The shared international ability to identify launch and impact points might deter states and rogue elements from launching in the first place. The more nations cooperate with each other, the more stable the world becomes. Policy makers need to invest in the development of many different capabilities, including SBMD, to negate missiles in their boost phase and use the information gleaned from these developments to inform decisions. One approach involves bringing a system to the prototype stage for testing and accurately gauging its performance. This approach could let the United States invest in only a limited number of prototypes, thus deferring large-scale production to allow further research, development, and testing. These efforts could decrease the risk of failure during production and deployment.53 When the need arises, the United States should capitalize on preexisting prototypes as long as the industrial base could support rapid production. By funding RSr1D for SBMD, the United States would ensure the viability of these technologies. The DOD cannot expect developments in commercial industry to be available for national security purposes. Competitive pressures force industry to fund near-term RoO programs and choose near-term survival over longterm possibilities.54 Applied research into SBMD technologies would allow the United States to gain more knowledge about boost-phase defenses. America will get as much RSr1D in SBMD technologies as it is willing to fund.

### 2AC Russia DA

#### Russia has taken a definitive stance in favor of space militarization.

Lars **Rose** October 17th **2008** Review and assessment of select US space security technology proposals Space Policy Volume 24, Issue 4 http://www.sciencedirect.com/science/article/pii/S0265964608000672#secx1

[Department of Materials Engineering, University of British Columbia]

This paper has discussed space weapons and the possible implications of orbiting some specific systems, based on recent US research and development proposals. This is not to say that the USA is the sole driver of such development. Several countries have their entire space program based in the military. Russia, with the only publicly confirmed (but seldom mentioned) actual space weapon, an aircraft cannon mounted on Salyut 3, has already shown that it is willing to develop and carry weapons into space [154]. This fact is underlined by the creation of space technology such as the failed Russian Polyus ASAT/miner testbed [155] and [156]. It is likely that other countries could use such precedents to point at in the case of their own security technology developments. Even if many of the proposals in the USA never went beyond the planning and paper stage [157] and [158], the mere installation of abovementioned relatively primitive gun turrets in space serves further to underline that merely proposing the development of space weapons in the USA can easily spark real development elsewhere, leading to an arms race without real cause, especially in the light of the media exposure they typically receive. This once more lines out the need for a new code of good conduct in space [50].

#### SMD wouldn’t threaten Russia

**Denny 10**- (Bart Denny, Analyst at Camber Corporation, Space Systems Analyst at U.S. Air Force (Civilian), Naval Missile Defense Operations Officer, April 29, 2010, time to revisit space-based missile defense, <http://www.bartdenny.com/time-for-space-based.html>)

Space-based missile defenses represent no threat to the strategic arsenals of Russia or other major nuclear weapons states. Surface and, if built, space-based missile defenses will not be destabilizing factors in the relationship between nuclear-armed states, if the U.S. constructively engages the international community as to their purpose and convincingly shows their benefit to all who seek the protection of these systems. Rather, missile defenses will be a key factor--along with diplomacy, counter-proliferation and non-proliferation activities, and verifiable disarmament--in ushering in a world without nuclear weapons. A space-based interceptor system, similar in concept to Brilliant Pebbles, would at last provide a viable boost-phase defense, greatly enhancing the layered defense against ballistic missiles.

#### No war

Ryabikhin et al 9 [Dr. Leonid Ryabikhin, expert of the Russian Science Committee for Global Security, General (Ret.) Viktor Koltunov, Dr. Eugene Miasnikov, June 2009, “De-alerting: Decreasing the Operational Readiness of Strategic Nuclear Forces,” http://www.ewi.info/system/files/RyabikhinKoltunovMiasnikov.pdf]

The issue of the possibility of an “accidental” nuclear war itself is hypothetical. Both states have developed and implemented constructive organizational and technical measures that practically exclude launches resulting from unauthorized action of personnel or terrorists. Nuclear weapons are maintained under very strict system of control that excludes any accidental or unauthorized use and guarantees that these weapons can only be used provided that there is an appropriate authorization by the national leadership. Besides that it should be mentioned that even the Soviet Union and the United States had taken important bilateral steps toward decreasing the risk of accidental nuclear conflict. Direct emergency telephone “red line” has been established between the White House and the Kremlin in 1963. In 1971 the USSR and USA signed the Agreement on Measures to Reduce the Nuclear War Threat. This Agreement established the actions of each side in case of even a hypothetical accidental missile launch and it contains the requirements for the owner of the launched missile to deactivate and eliminate the missile. Both the Soviet Union and 5 the United States have developed proper measures to observe the agreed requirements.

### AT: North Korea War Good

#### Korean war draws in China/Russia – escalates to extinction

Rich 9 (2/27, Instructor of Economics, History and Political Science @ Delaware County Community College, “North Korean Roulette: The Danger of the Sarajevo,” [open.salon.com/blog/don\_rich/2009/02/27/north\_korean\_roulette\_the\_danger\_of\_the\_sarajevo](http://open.salon.com/blog/don_rich/2009/02/27/north_korean_roulette_the_danger_of_the_sarajevo).)

The extensive and complex engagement of Four Great Powers, and that means in order of importance for the North, China, Japan, Russia, and of course the United States, is what makes the North Korean version of Roullette particularly dangerous, as the Great Powers each have incentives to load the North Korean gun with exta bullets for a game in which they would seek to manipulate the overall balance of power, and incentives to potentially encourage South Korea and the United States or especially Japan to pull the trigger.

Russia did this in effect in the Korean War by arming the North to attack the South, then watching the United States and China bleed each other in the last two years of the war.

If nothing else, Mr. Kim should reflect very carefully on that fact as he plays the game.

Similarly, China should think very carefully about using this looming event in order to break apart the East Asian security architecture by responding to an American shoot down of the missile militarily: remember who really won the last Korean War, Russia.

If  a war escalates this time, Chinese cities probably would burn this time; think that through:cities burn. Hundreds.

Japan should think very carefully about insisting on a live fire test of the Aegis missile defense system to shoot down the North Korean missile.

Given the possibility that Russia and China are goading the North, why give them an excuse to escalate? There are always B-52's  from Guam, and there are always the special weapons allude to below. We can delete the North in twenty minutes,but only if we have to.

South Korea in particular should think very carefully about the consequences of escalating this event.

There are 12,000 North Korean artillery pieces trained on Seoul. Even if the United States would probably respond with special, i.e. tactical nuclear, weapons and respond with them in large numbers and decisively, the North Koreans will be gut shooting you with artillery.

If China comes in, and they might feel that they have to, if the U.S. is using tactical nuclear weapons so close to Beijing, just across a little sea, Seoul could pass back and forth again in a sea of blood like the last time, or be leveled in a fashion that would make the last episode seem like a walk in the park.

Think Mr. Kim.

You will not survive such an event. Be wary of "friends" encouraging you to run terrible risks: the Russians did that to your father, and millions of your countrymen died. This time, maybe no one survives.

### Asteroids

#### Lasers solve asteroids—key to detect and deflect

ANI 7 (Asian News International, “Lightweight lasers can eliminate Earth-striking asteroids,” 3/20, http://news.webindia123.com/news/articles/world/20070320/618874.html)

Researchers at the University of Alabama in Huntsville have claimed that a lightweight, space-based laser has the potential to eliminate dangerous asteroids posing a threat to Earth. According to says Richard Fork, the head of the Laser Science and Engineering Group at the university, the technique could detect and deflect space rock away. "Though the technology may take two decades or so to mature, this is something that is doable," Fork is quoted, as saying. One of the great advantages of using lasers is that their beams remain relatively tightly focused over long distances, allowing them to study asteroids from farther away than is currently possible. Previously, researchers had proposed several methods to save Earth from an asteroid impact. These included blowing it up with a nuclear bomb or putting a spacecraft beside it so the craft's gravity could tug the asteroid off course. But these solutions had their drawbacks. A laser, on the other hand, could give researchers an advance warning of the asteroid's likely composition and exact shape, which would help them figure out how to move it. In fact, the laser itself could also do the moving. If its short pulses were focused on a centimetre-sized spot on the asteroid, they would repeatedly pulverise material, ejecting tiny bits of space rock at 10 kilometres per second. This would function as the asteroid's propellant, pushing it into a different orbit - and safely away from Earth.

#### Extinction – magnitude overwhelms probability

Garshnek 2k

[ Victoria Garshnek, Global Human Futures Research Associates, David Morrison, NASA Ames Research Center, Frederick M. Burkle Jr, Division of Emergency Medicine, Department of Surgery, John A. Burns School of Medicine “ The mitigation, management, and survivability of asteroid/comet impact with Earth,” Space Policy 16 (2000) 213 - 222]

As far as we know, impacts are randomly distributed in time. Of the roughly 1500 (in number) kilometer-scale NEOs currently in Earth crossing orbits, some 30% have been found. Although we feel confident that Earth will not be struck in the foreseeable future by any of the known objects, we cannot say anything about the 70% that are not yet discovered. A comprehensive search has not yet been carried out and we must often speak in terms of probabilities. The chances of one of the undetected NEOs with a diameter of 1 km or more colliding with Earth in the next 50 years is about 1 in 20,000 [32]. The consequences would be catastrophic and global: there would be an impact winter, a collapse of agriculture and, possibly, the end of our civilization. However, chance is not really at work here. There either is or is not a NEO aimed to hit Earth in the next year or in the next century. There are those who believe that there is no escape from a large asteroid impact that would have global effects. A large object filling the atmosphere with dust, blotting sunlight, causing extreme cold and killing plants presents a complex emergency of unprecedented proportions. The disaster response problem can be immense. Smaller objects could cause continent wide destruction necessitating evacuation plans, which can be the ultimate logistic and public health nightmare. Staying in the projected area of devastation and being comfortable to the end does not "t with the human innate instinct to survive and most likely would not be the popular course of action. Hoping not to know about the impact coming is also not a solution. Other thoughts may center on hoping it does not hit in our lifetime \* let it be a problem for future generations to deal with. All of these viewpoints are missing the key issue: is human civilization worth saving? Is everything we have been a part of in our lifetime and historically evolved from worth preserving? It is the collapse of civilization \* the loss of thousands of years of the fruits of the arts, religion, and the sciences \* that we should fear the most. In his opening statement to the Congressional hearings on the NEO threat on 24 March 1993 [32], the late US Congressman George E. Brown Jr. stated: `If some day an asteroid does strike the Earth, killing not only the human race but millions of other species as well, and we could have prevented it but did not because of indecision, unbalanced priorities, imprecise risk definition and incomplete planning, then it will be the greatest abdication in all of human history not to use our gift of rational intellect and conscience to shepherd our own survival, and that of all life on Earth.

## 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.

## CP

### 2AC Microgrids CP

#### Micro-grid fails---unreliable and quality problems

BIESI 11 Brookings Institution Energy Security Initiative, The Hoover Institution Shultz-Stevenson Task Force on Energy Policy, "Assessing the Role of Distributed Power Systems in the U.S. Power Sector", October, media.hoover.org/sites/default/files/documents/Distributed-Energy.pdf

Microgrid¶ Generation technologies are central to discussions around distributed energy systems. However, controls, infrastructure and demand side management are also an integral part of the broader discussion. The term ‘microgrid,’ is used to refer to a smaller version of a main or central electrical grid that much like its larger counterpart, consists of interconnected electrical loads and distributed energy generation resources that are typically controlled by a central control system. A microgrid may operate independently as its own self-contained entity, or may be interconnected with an adjoining central utility grid or neighboring microgrid. ¶ The concept of the microgrid is often associated with a power system in developing countries where the centrally managed grid is weak or inadequate. However, microgrid architectures are deployed in the United States including in various communities such as university campuses, hospitals, industry and military. Fully 74 percent of the global microgrid market dollars were spent in North America in 2010. 40¶ Although not a specific technology in itself, the notion of the microgrid is a system comprised of software, controls and hardware infrastructure including sensors, inverters, switches and converters. The microgrid and its primary components form the platform that is necessary for the integration of distributed generation resources with the local loads consuming the energy. The benefits of such architectures lie in the fact that they can be locally operated and controlled independent of a centrally managed utility. Such architecture enables distributed power systems, whether they operate on a stand-alone basis, or as an integrated component of a larger central grid.¶ 1.4 Functional Risks of DPS Technology Despite the policy support and cost declines in technology, DPS applications are constrained by several fundamental technical and functional factors. These factors give rise to risks associated with power quality, “dipatchability” and reliability. Some of the most important technical risks of widespread DPS deployment and integration are listed below. ¶ Power Quality¶ Some DPS technologies rely on power electronic devices, such as AC-to-DC or DC-to-AC converters. If such devices are not correctly set up, the integration of DPS power can result in a harmonic distortion and in operational difficulties to loads connected to the same distribution systems. 41¶ Reactive Power Coordination¶ With the proper system configuration and network interface, DPS can bring relief to the power system by providing close proximity power support at the distribution level. However, some renewable generation sources such as wind can worsen the reactive coordination problem. Wind generators have asynchronous induction generators designed for variable speed characteristics and, therefore, must rely on the network to which they are connected for reactive power support.42¶ Reliability and Reserve Margin¶ Intermittent power generation such as solar and wind is non-dispatchable. It is thus necessary to maintain sufficient generation reserve margins in order to provide reliable power generation. If there is a high level of distributed generation deployment, reserve margin maintenance can be a problem.

#### Microgrid’s reliance on multiple inputs fails

Amora 10 Ramon, Department of Electrical and Computer Engineering, Mississippi State University, “Controls for microgrids with storage: Review, challenges, and research needs”, Renewable and Sustainable Energy Reviews Volume 14, Issue 7, September 2010, Pages 2009–2018

Microgrids installations and integration in LV distribution systems will increase significantly in future. Consequently, distribution systems will have different characteristics from the current conventional distribution systems. The difference will be more significant with increased number of microgrids. Thus, suitable control strategies must be designed to anticipate this difference [50].¶ Besides to optimize system operation electrically, microgrid controls also aim to optimize production and consumption of heat, gas, and electricity in order to improve overall efficiency [22]. Moreover, controlling a large number of microsources having different characteristics will be very challenging due to the possibility of conflicting requirement and limited communication [6]. In case of decentralized or centralized controllers, control action required with probable lost input parameters will be surely challenging.¶ Transitions from grid-connected to islanded modes of operation are likely to cause large mismatches between generation and loads, causing a severe frequency and voltage control problem. The “plug-and-play” capability may also create serious problem if the connection and disconnection processes involve big number of microsources at the same time [6].

#### Links to politics

Sater 11 Daniel, Research Fellow at Global Green USA's Security and Sustainability Office, “Military Energy Security: Current Efforts and Future Solutions”, Global Green, globalgreen.org/docs/publication-185-1.pdf

Widespread development of microgrids will require large capital expenditures by the DOD and Congress. In the current climate of budget cuts, especially with regard to the DOD, any new spending is likely to attract heavy scrutiny. One of the benefits of allowing present trends to continue is that it does not require any new action by the DOD or Congress.¶ Microgrids remain a relatively new development and some base commanders might resist their implementation. Despite their advantages in cybersecurity over the large-scale smart grid, the DOD must make advances in cybersecurity to ensure that microgrids do not make the energy supply for military installations less secure instead of more so.

## DA

### Incentives Now

#### DOE funding SMRs now---more to come

Holly 12/6 Derrill, ECT Staff Writer, "DOE Advances Small Nuclear Reactors", 2012, [www.ect.coop/power-supply/power-plants/doe-funds-small-nuclear-reactors-project/50667](http://www.ect.coop/power-supply/power-plants/doe-funds-small-nuclear-reactors-project/50667)

The Department of Energy has agreed to help fund a small modular nuclear reactor design backed by a consortium that includes several generation and transmission electric cooperatives.¶ After reviewing several proposals, DOE selected a project led by Bechtel Corp., Babcock & Wilcox and the Tennessee Valley Authority. The mPower Consortium was formed in in 2010 to support the Generation mPower small modular nuclear reactor design. The consortium includes investor-owned FirstEnergy, TVA, and 13 G&Ts.¶ The lead companies have proposed deployment of up to five 180 megawatt Babcock & Wilcox mPower reactors at TVA’s abandoned Clinch River Breeder Reactor site in Oak Ridge, Tenn.¶ “DOE will match future engineering and design development, design certification and licensing activities up to a cap of $452 million,” said Sandra Byrd, vice president of member and public relations for Little Rock-based Arkansas Electric Cooperative Corp. “Although the mPower design is already far along, it still requires more testing and the design certification documents have to be developed and submitted to the Nuclear Regulatory Commission for approval.”¶ Plans call for the consortium to submit documentation to NRC by December 2013. An early site permit and a construction and operating license application will also be developed for submission over the next year.¶ “This will be the first time that a small nuclear design has been submitted to NRC for review and approval,” said Byrd, adding that commercial operation could begin between 2020 and 2022. Successful deployment of the technology is expected to lead to development of nuclear power plants roughly one-third the size of existing facilities, and DOE plans to issue additional funding opportunities.¶ “More is obviously better. Different designs may lend themselves to different utility operating situations,” said Byrd. Co-ops supported proposals from three of the four companies that sought consideration under the initial DOE cost-sharing grant.¶ Arkansas Electric Cooperative Corp. is among mPower Consortium backers also supporting the NexStart SMR Alliance led by Westinghouse and investor-owned Ameren Missouri. Springfield, Mo.-based Associated Electric Cooperative is also supporting the group.

### 2AC India Market Share DA

#### No commercialization

Reitenbach 12 Dr. Gail, POWER's Managing Editor, "The U.S. Military Gets Smart Grid", January 1, www.powermag.com/smart\_grid/The-U-S-Military-Gets-Smart-Grid\_4228\_p3.html

There should be no question about the importance of more self-reliant, sophisticated, and flexible power grids for the military. However, the trickle-down benefits of DOD smart grid technology pilots for non-military electricity customers—in terms of new technologies and lower prices—may be limited.¶ To take a small example, the EVs currently being developed for the military are custom builds (as so much is for the military) by a new entrant, which suggests that the likely tech transfer between REV and the dozens of mainstream "legacy" automakers with better consumer brand awareness could be minimal. What could transfer to the civilian grid from V2G pilots is a better understanding of how to handle the distribution-level technical issues involved in using EV-stored energy to provide grid-balancing ancillary services. The regulatory and economic aspects of that transaction would be another matter. ¶ Other energy storage technologies developed for military applications may not translate quickly into civilian life because of cost constraints, whereas the military's primary reason for deploying energy storage is security rather than least cost. Over time, however, we can hope that experience gained in military applications leads to cheaper technologies.¶ Another limiting factor is that even for technologies that work technically, working practically can mean different things in military and civilian contexts. Microgrids, for example, are likely to remain relegated to energy users who put a premium on reliable power supply—including various types of industrial, corporate, and educational campuses. ¶ Though the size of military renewable generation installations is smaller than most utility-scale projects beyond base gates, military microgrid projects may provide valuable lessons about balancing renewable and fossil-fueled generation sources. They could also accelerate greater deployment of distributed renewable generation, something that at least one leading utility CEO, NRG Energy Inc.'s David Crane, already has his eye on. According to an interview with Yale Environment 360, "The electricity future, says Crane, will be transformed by the widespread adoption of three innovations: solar panels on residential and commercial roofs, electric cars in garages, and truly 'smart meters' that will seamlessly transfer power to and from homes, electric vehicles, and the grid."

#### Nuclear not key to India leadership

MA 12

Macro Analyst, 3/3/12, “India's Alternative and Nuclear Energy Use Well Below Global Average,” http://www.economicsfanatic.com/2012/03/indias-alternative-and-nuclear-energy.html

Amidst these concerns, it is not very encouraging to see India's alternative and nuclear energy use well below the global average as a percentage of total energy consumption.

India's alternative and nuclear energy use as a percent of total energy consumption has just increased from 1.7% in 1971 to 2.3% in 2009.

In sharp contrast to this, the global alternative energy consumption as percentage of total energy consumption has increased from 2.7% in 1960 to 9.2% in 2009. Clearly, India has been a laggard in the implementation and use of alternative energy sources.

#### US licensing takes too long to gain market share

Charles D. Ferguson 10, President, Federation of American Scientists, 5/19/10, Statement before the House Committee on Science and Technology for the hearing on Charting the Course for American Nuclear Technology: Evaluating the Department of Energy’s Nuclear Energy Research and Development Roadmap, http://gop.science.house.gov/Media/hearings/full10/may19/Ferguson.pdf

What are the implications for the United States of Chinese and Indian efforts to sell small and medium power reactors? Because China and India already have the manufacturing and marketing capability for these reactors, the United States faces an economically competitive disadvantage. Because the United States has yet to license such reactors for domestic use, it has placed itself at an additional market disadvantage. By the time the United States has licensed such reactors, China and India as well as other competitors may have established a strong hold on this emerging market. ¶ The U.S. Nuclear Regulatory Commission cautioned on December 15, 2008 that the “licensing of new, small modular reactors is not just around the corner. The NRC’s attention and resources now are focused on the large-scale reactors being proposed to serve millions of Americans, rather than smaller devices with both limited power production and possible industrial process applications.” The NRC’s statement further underscored that “examining proposals for radically different technology will likely require an exhaustive review” … before “such time as there is a formal proposal, the NRC will, as directed by Congress, continue to devote the majority of its resources to addressing the current technology base.” 6 Earlier this year, the NRC devoted consideration to presentations on small modular reactors from the Nuclear Energy Institute, the Department of Energy, and the Rural Electric Cooperative Association among other stakeholders. 7 At least seven vendors have proposed that their designs receive attention from the NRC.8

### 2AC Immigration DA

#### Obama’s strategy is to make sure immigration doesn’t pass

Munro 12-31 – Neil Munro, reporter for the Daily Caller, December 31st, 2012, "Obama promises new immigration plan but keeps endgame close to his vest" dailycaller.com/2012/12/31/obama-promises-new-immigration-plan-but-keeps-endgame-close-to-his-vest/?print=1

President Barack Obama promised Dec. 30 to introduce an immigration bill during 2013, but activists on all sides of the debate are trying to understand his strategy.¶ **He may be gunning for a victory in the mid-term elections by introducing** a bill so radical that it will **spark an emotional controversy from whites**, which would then **spur many angry Latino**s to vote Democratic in the 2014 midterm elections, said Robert de Posada, former head of a GOP-affiliated group, The Latino Coalition.¶ **“The word that I’ve heard from many, is [that** he will] submit a very, very liberal plan that most Republicans will not support, that most southern and moderate Democrats will not support**,”** he said.¶ When the bill fails**, “they can announce once again that they tried [and that Latinos] need to rally in the next election**,” said Posada, who helped President George W. Bush win 40 percent of the Latino vote in 2004, during the housing boom.

#### Hagel pounds the disad---requires all Obama’s PC

Politico 1-6 – “Chuck Hagel takes fire from Capitol Hill,” 1/6/13, http://dyn.politico.com/printstory.cfm?uuid=F3C2EA30-9671-40B6-A668-0BDDCDC603FB

Senate Democrats and Republicans are far from sold on President Barack Obama’s expected nomination of Chuck Hagel as secretary of defense.¶ In fact, Obama’s decision to tap the Vietnam veteran and outspoken former Republican senator is likely to spark another nasty fight with Congress right on the heels of the fiscal cliff showdown and just before another likely battle royal over the debt ceiling.¶ Republicans on Sunday unleashed a fresh barrage of attacks amid reports Obama would nominate Hagel on Monday for the top job at the Pentagon. ¶ The new Senate minority whip, Texas Republican John Cornyn, said he’s firmly against Hagel’s nomination. Sen. Lindsey Graham (R-S.C.), an Air Force reservist who serves on the Armed Services Committee that will consider the nod, said Hagel would hold the “most antagonistic” views toward Israel of any defense secretary in U.S. history.¶ And despite heaping praise on Hagel when he retired from the Senate after the 2008 elections, Minority Leader Mitch McConnell (R-Ky.) on Sunday failed to extend an olive branch to the Nebraska Republican, instead suggesting there would be “tough questions” ahead. ¶ Even Senate Democrats are privately signaling they‘re not yet on board with the Hagel pick, and that the White House has a lot of work to do to get him across the finish line. ¶ The nomination comes at a tricky time for the administration — just as the fights over raising the debt ceiling and government appropriations are set to begin. And it could put a number of at-risk or pro-Israel Democrats in tough political spots — especially if the nomination fight grows even more contentious.¶ Democrats are also scratching their heads over why Obama appears willing to go to the mat for Hagel, while abandoning his push for a close friend and member of his inner circle, U.N. Ambassador Susan Rice, to become secretary of state. Rice, an unabashed Democrat, abandoned her bid after withering GOP criticism over the deadly attacks on the U.S. Consulate in Libya. ¶ Though different in substance, the controversy over Rice’s remarks is not unlike the current pushback over Hagel’s past foreign policy positions and controversial remarks. But Hagel lacks a natural constituency in the Senate, given that he’s grown alienated from the GOP, yet Democrats are suspicious of his record. ¶ “It is a strange signal for the White House to send that they are willing to fight for Hagel but not Rice,” one Senate Democratic aide said Sunday. “Democrats are not currently unified behind Hagel, and it will take some real work by the administration to get them there, if it’s even possible.” ¶ Senior Republicans agreed, noting that after Hagel infuriated Republicans and Democrats alike over the years, there isn’t a natural base for him. ¶ “I can’t imagine why [Obama] would choose to burn his political capital on this nomination. For what? There is no constituency for Chuck Hagel,” one senior GOP aide said. “Obama will expend every ounce of political capital he has to get him across the finish line. Dems will hate this.”

#### Executive military action shields

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

The White House believes it has figured out how to get more money for clean-energy programs touted by President Obama without having it become political roadkill in the wake of the Solyndra controversy: **Put it in the Pentagon**. While details are thin on the ground, lawmakers who work on both energy- and defense-spending policy believe the fiscal 2013 budget request to be delivered to Congress on Monday probably won't include big increases for wind and solar power through the Energy Department, a major target for Republicans since solar-panel maker Solyndra defaulted last year on a $535 million loan guarantee. But they do expect to see increases in spending on alternative energy in the Defense Department, such as programs to replace traditional jet fuel with biofuels, supply troops on the front lines with solar-powered electronic equipment, build hybrid-engine tanks and aircraft carriers, and increase renewable-energy use on military bases. While Republicans will instantly shoot down requests for fresh spending on Energy Department programs that could be likened to the one that funded Solyndra, many support alternative-energy programs for the military. "I do expect to see the spending," said Rep. Jack Kingston, R-Ga., a member of the House Defense Appropriations Subcommittee, when asked about increased investment in alternative-energy programs at the Pentagon. "I think in the past three to five years this has been going on, but that it has grown as a culture and a practice - and it's a good thing." "If Israel attacks Iran, and we have to go to war - and the Straits of Hormuz are closed for a week or a month and the price of fuel is going to be high," Kingston said, "the question is, in the military, what do you replace it with? It's not something you just do for the ozone. It's strategic." Sen. Lindsey Graham, R-S.C., who sits on both the Senate Armed Services Committee and the Defense Appropriations Subcommittee, said, "I don't see what they're doing in DOD as being Solyndra." "We're not talking about putting $500 million into a goofy idea," Graham told National Journal . "We're talking about taking applications of technologies that work and expanding them. I wouldn't be for DOD having a bunch of money to play around with renewable technologies that have no hope. But from what I understand, there are renewables out there that already work." A senior House Democrat noted that this wouldn't be the first time that the **Pentagon has been utilized to advance policies that wouldn't otherwise be supported**. "They did it in the '90s with medical research," said Rep. Henry Waxman, D-Calif., ranking member of the House Energy and Commerce Committee. In 1993, when funding was frozen for breast-cancer research programs in the National Institutes of Health, Congress boosted the Pentagon's budget for breast-cancer research - to more than double that of the health agency's funding in that area. **Politically, the strategy makes sense**. Republicans are ready to fire at the first sign of any pet Obama program, and renewable programs at the Energy Department are an exceptionally ripe target. That's because of Solyndra, but also because, in the last two years, the Energy Department received a massive $40 billion infusion in funding for clean-energy programs from the stimulus law, a signature Obama policy. When that money runs out this year, a request for more on top of it would be met with flat-out derision from most congressional Republicans. Increasing renewable-energy initiatives at the Pentagon can also help Obama advance his broader, national goals for transitioning the U.S. economy from fossil fuels to alternative sources. As the largest industrial consumer of energy in the world, the U.S. military can have a significant impact on energy markets - if it demands significant amounts of energy from alternative sources, it could help scale up production and ramp down prices for clean energy on the commercial market. Obama acknowledged those impacts in a speech last month at the Buckley Air Force Base in Colorado. "The Navy is going to purchase enough clean-energy capacity to power a quarter of a million homes a year. And it won't cost taxpayers a dime," Obama said. "What does it mean? It means that the world's largest consumer of energy - the Department of Defense - is making one of the largest commitments to clean energy in history," the president added. "That will grow this market, it will strengthen our energy security." Experts also hope that Pentagon engagement in clean-energy technology could help yield breakthroughs with commercial applications. Kingston acknowledged that the upfront costs for alternative fuels are higher than for conventional oil and gasoline. For example, the Air Force has pursued contracts to purchase biofuels made from algae and camelina, a grass-like plant, but those fuels can cost up to $150 a barrel, compared to oil, which is lately going for around $100 a barrel. Fuel-efficient hybrid tanks can cost $1 million more than conventional tanks - although in the long run they can help lessen the military's oil dependence, Kingston said Republicans recognize that the up-front cost can yield a payoff later. "It wouldn't be dead on arrival. But we'd need to see a two- to three-year payoff on the investment," Kingston said. Military officials - particularly Navy Secretary Ray Mabus, who has made alternative energy a cornerstone of his tenure - have been telling Congress for years that the military's dependence on fossil fuels puts the troops - and the nation's security - at risk. Mabus has focused on meeting an ambitious mandate from a 2007 law to supply 25 percent of the military's electricity from renewable power sources by 2025. (Obama has tried and failed to pass a similar national mandate.) Last June, the DOD rolled out its first department-wide energy policy to coalesce alternative and energy-efficient initiatives across the military services. In January, the department announced that a study of military installations in the western United States found four California desert bases suitable to produce enough solar energy - 7,000 megawatts - to match seven nuclear power plants. And so far, those **moves have met with approval from congressional Republicans**. Even so, any request for new Pentagon spending will be met with greater scrutiny this year. The Pentagon's budget is already under a microscope, due to $500 billion in automatic cuts to defense spending slated to take effect in 2013. But even with those challenges, clean-energy spending probably won't stand out as much in the military budget as it would in the Energy Department budget. Despite its name, the Energy Department has traditionally had little to do with energy policy - its chief portfolio is maintaining the nation's nuclear weapons arsenal. Without the stimulus money, last year only $1.9 billion of Energy's $32 billion budget went to clean-energy programs. A spending increase of just $1 billion would make a big difference in the agency's bottom line. But it would probably be easier to tuck another $1 billion or $2 billion on clean-energy spending into the Pentagon's $518 billion budget. Last year, the Pentagon spent about $1 billion on renewable energy and energy-efficiency programs across its departments.

#### SMR incentives are bipartisan

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].

#### Low PC inevitable and not key

Schier 11 Steven E. Schier is the Dorothy H. and Edward C. Congdon professor of political science at Carleton College, The contemporary presidency: the presidential authority problem and the political power trap. Presidential Studies Quarterly December 1, 2011 lexis

Implications of the Evidence¶ The evidence presented here depicts a decline in presidential political capital after 1965. Since that time, presidents have had lower job approval, fewer fellow partisans and less voting support in Congress, less approval of their party, and have usually encountered an increasingly adverse public policy mood as they governed.¶ Specifically, average job approval dropped. Net job approval plummeted, reflecting greater polarization about presidential performance.The proportion of fellow partisans in the public dropped and became less volatile. Congressional voting support became lower and varied more. The number of fellow partisans in the House and Senate fell and became less volatile. Public issue mood usually moved against presidents as they governed. All of these measures, with the exception of public mood, correlate positively with each other, suggesting they are part of a broader phenomenon.¶ That "phenomenon" is political authority. The decline in politicalcapital has produced great difficulties for presidential political authority in recent decades. It is difficult to claim warrants for leadership in an era when job approval, congressional support, and partisan affiliation provide less backing for a president than in times past.¶ Because of the uncertainties of political authority, recent presidents have adopted a governing style that is personalized, preemptive,and, at times, isolated. Given the entrenched autonomy of other elite actors and the impermanence of public opinion, presidents have had to "sell themselves" in order to sell their governance. Samuel Kernell (1997) first highlighted the presidential proclivity to "go public"in the 1980s as a response to these conditions. Through leveraging public support, presidents have at times been able to overcome institutional resistance to their policy agendas. Brandice Canes-Wrone (2001) discovered that presidents tend to help themselves with public opinion by highlighting issues the public supports and that boosts their congressional success--an effective strategy when political capital is questionable.¶ Despite shrinking political capital, presidents at times have effectively pursued such strategies, particularly since 1995. Clinton's centrist "triangulation" and George W. Bush's careful issue selection early in his presidency allowed them to secure important policy changes--in Clinton's case, welfare reform and budget balance, in Bush's tax cuts and education reform--that at the time received popular approval. This may explain the slight recovery in some presidential political capital measures since 1993. Clinton accomplished much with a GOPCongress, and Bush's first term included strong support from a Congress ruled by friendly Republican majorities. David Mayhew finds that from 1995 to 2004, both highly important and important policy changeswere passed by Congress into law at higher rates than during the 1947-1994 period. (2) A trend of declining political capital thus does not preclude significant policy change, but a record of major policy accomplishment has not reversed the decline in presidential political capital in recent years, either. Short-term legislative strategies can win policy success for a president but do not serve as an antidote to declining political capital over time, as the final years of both the Clinton and George W. Bush presidencies demonstrate.

#### 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).

#### Comprehensive reform fails – if it passes it has too many compromises that prevent solvency

Morrison 12-9 – Bruce Morrison, a former U.S. Representative from Connecticut, was the chairman of the House immigration subcommittee and the author of the Immigration Act of 1990. December 9th, 2012, "One Bill of Compromises Isn’t the Answer” www.nytimes.com/roomfordebate/2012/12/09/understanding-immigration-reform/one-immigration-bill-of-compromises-isnt-the-answer

To many, “comprehensive immigration reform” means “fix it and forget it.” But doing it all in one bill reprises what got us in the current mess in the first place. After major reform bills in 1986 and 1990, the failing employment verification scheme and the clogged green card process were allowed to go unattended. The “enforcement only” 1996 law only froze the mess in place.¶ Save the 'punishment' for those that do not comply with a system that works, not those ensnared in the current system that does not.¶ **A huge compromise of all competing immigration fixes larded into one bill will involve compromises that do not serve the nation’s interests.** Instead we need to assemble the votes to do the two things that must be done — a broad earned legalization program for the 11 million now illegally resident in the country in conjunction with the assurance that this problem will not happen again. That assurance will come from a universal, electronic, identity-authenticating screening of all workers to ensure that they are authorized to work in the U.S.¶ Because almost all who make unauthorized entries and overstays do so to seek and accept employment, no other tool will get the result we need to make legalization politically and philosophically justified — that we have fixed the source of the problem. And this also means using the employment relationship to roll-in legalization while rolling out universal verification.¶ The key point is that prevention of illegal presence is the goal. Save the “punishment” for those that do not comply with a system that works, not those ensnared in the current system that does not.¶ Our legal immigration system needs lots of fixing, like the increase of STEM green cards passed by the House last week and much more. But these fixes, including all future flows beyond the current one million annual immigrants and the millions who will be legalized, will get much easier to negotiate when the legalization-prevention barrier is removed.

### AT: India Relations

#### India relations resilient---immigration fights don’t spill over

Shari B. Hochberg 12, Pace University School of Law, Winter 2012, “United States-India Relations: Reconciling the H-1B Visa Hike and Framework for Cooperationon Trade and Investment,” Pace International Law Review, Vol. 24, No. 1, http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1324&context=pilr

The United States and India share common interests, from international security to the free flow of commerce. India has joined the United States in becoming a major world power, and over the last decade, the two countries have worked together to strategize capitalizing on each other’s growth. Ties have strengthened between the nations. However, much of that relationship rests on a flawed system of immigration and inconsistent international employment standards.

The United States and India signed the Framework, and only five months later, the United States passed legislation to increase fees on the H-1B visa, most frequently utilized by Indian businesses. Additionally, the state of Ohio made a statement in banning outsourcing within a week after the visa fee hike. The United States is sending mixed messages to India as well as to the rest of the world.

So long as the United States Administration keeps dialogue open and assuages the fears of the Indian business sector, the fierce debate will remain calm in the short-term. In the long run, however, the United States must overhaul its current immigration law, starting with the H-1B visa program. Eventually, a multilateral trade treaty should be reached, exponentially expanding the global marketplace, while allowing member countries to protect their own domestic interests.

# 1AR

## Case

### Yes Heg Impact

#### Empirics and best studies prove

Wohlforth 8 William, Daniel Webster Professor of Government in the Dartmouth College Department of Government, October, World Politics, “Unipolarity, Status Competition, and Great Power War,” www.­polisci.­wisc.­edu/­Uploads/­Documents/­IRC/­Wohlforth (2009)­.­pdf)

Despite increasingly compelling findings concerning the importance of status seeking in human behavior, research on its connection to war waned some three decades ago.38 Yet empirical studies of the relationship between both systemic and dyadic capabilities distributions and war have continued to cumulate. If the relationships implied by the status theory run afoul of well-established patterns or general historical findings, then there is little reason to continue investigating them. **The clearest empirical implication** of the theory **is that** status **competition is unlikely to cause great power military conflict in unipolar systems**. If status competition is an important contributory cause of great power war, then, ceteris paribus, unipolar systems should be markedly less war-prone than bipolar or multipolar systems. And this appears to be the case. As Daniel Geller notes in a review of the empirical literature: "**The only polar structure that appears to influence conflict probability is unipolarity**."39 In addition, a larger number of studies at the dyadic level support the related expectation that narrow capabilities gaps and ambiguous or unstable capabilities hierarchies increase the probability of war.40 These studies are based entirely on post-sixteenth-century European history, and most are limited to the post-1815 period covered by the standard data sets. Though the systems coded as unipolar, near-unipolar, and hegemonic are all marked by a high concentration of capabilities in a single state, these studies operationalize unipolarity in a variety of ways, often very differently from the definition adopted here. An ongoing collaborative project looking at ancient interstate systems over the course of two thousand years suggests that historical systems that come closest to the definition of unipolarity used here exhibit precisely the behavioral properties implied by the theory. 41 As David C. Kang's research shows, the East Asian system between 1300 and 1900 was an unusually stratified unipolar structure, with an economic and militarily dominant China interacting with a small number of geographically proximate, clearly weaker East Asian states.42 Status politics existed, but actors were channeled by elaborate cultural understandings and interstate practices into clearly recognized ranks. Warfare was exceedingly rare, and the major outbreaks occurred precisely when the theory would predict: when China's capabilities waned, reducing the clarity of the underlying material hierarchy and increasing status dissonance for lesser powers. Much more research is needed, but initial exploration of other arguably unipolar systems-for example, Rome, Assyria, the Amarna system-appears consistent with the hypothesis.43 Status Competition and Causal Mechanisms Both theory and evidence demonstrate convincingly that competition for status is a driver of human behavior, and social identity theory and related literatures suggest the conditions under which it might come to the fore in great power relations. Both the systemic and dyadic findings presented in large-N studies are broadly consistent with the theory, but they are also consistent with power transition and other rationalist theories of hegemonic war.

### Grid Not Resilient

#### Grid’s not improving---recent outages and lack of maintenance and funding

Cunningham 12 Nicholas, Policy Analyst at American Security Project, "Fragile Electricity Grid a National Security Concern", July 13, americansecurityproject.org/blog/2012/fragile-electricity-grid-a-national-security-concern/

The high winds from the recent “Derecho” storm knocked down trees, utility poles and power lines, leaving an estimated 3 million people without power in the Washington DC metro area. The emergency response, to say the least, was inadequate. Millions of people were left without power for several days, during a sweltering heat wave. Schools and businesses closed. Several people lost their lives in the last week and a half, both from the storm itself, and from heat-related illness. Maryland, Virginia, Ohio, West Virginia, and Washington DC announced a state of emergency.¶ The recent disaster highlights the fragility of our nation’s electricity grid. How could it take nearly a week to restore power to tens of thousands of people and businesses? The reason is that our electric grid is aging, under stress, and suffers from chronic underinvestment.¶ Underinvestment leads to aging infrastructure, which is already suffering from bottlenecks and congestion. The American Society of Civil Engineers (ASCE ) estimates that 70% of the nation’s transmission lines and transformers are more than 25 years old, leaving the grid vulnerable to outages. When power is cut off, businesses can’t open, factories shut down, and the economy takes a hit. Unplanned interruptions will cost the U.S. economy $6 billion in 2012, which is expected to rise to $71 billion by 2020 if investments aren’t made. ASCE estimates that the electric power industry would need to increase investment by $11 billion annually until 2020 to make the grid reliable.¶ The fragility of the grid presents a national security threat to the United States. The recent storm saw threats as ordinary as high winds and trees cripple the nation’s capital. With decades old infrastructure, we are not adequately equipped to handle extreme weather events, let alone greater threats such as coordinated cyber attacks on the electricity grid.¶ Not only have utilities devoted precious little to maintenance, but investment in innovation has been woefully lacking. Investment in R&D for the electric power sector has steadily declined over the past few decades. According to IEEE Spectrum, from 2001 to 2006 utilities dedicated a measly 0.17% of their revenue to R&D, a smaller share than the hotel industry.

#### Grid collapse inevitable---it’s fragile, vulnerable and next blackout will be more severe---wrecks mission effectiveness

Lovins 10 Amory B, Chairman and Chief Scientist of Rocky Mountain Institute, "DOD's Energy Challenge as Strategic Opportunity", Issue 57, 2nd Quarter 2010, www.ndu.edu/press/lib/images/jfq-57/lovins.pdf

The Resilience Capability¶ Resilience “combines efficient energy use with more diverse, dispersed, renewable supply—turning the loss of critical missions from energy supply failures (by accident or malice) from inevitable to near-impossible.”37¶ This capability is vital because the: [a]lmost complete dependence of military installations on a fragile and vulnerable commercial power grid and other critical national infrastructure places critical military and Homeland defense missions at an unacceptably high risk of extended disruption. . . . [Backup generators and their fuel supplies at military installations are generally sized] for only shortterm commercial outages and seldom properly prioritized to critical loads because those are often not wired separately from non-essential loads. DOD’s approach to providing power to installations is based on assumptions that commercial power is highly reliable, subject to infrequent and short term outages, and backups can meet demands. [These assumptions are] . . . no longer valid and DOD must take a more rigorous risk-based approach to assuring adequate power to its critical missions. 38¶ The 2008 DSB Task Force found that the confluence of many risks to electric supply— grid overloads, natural disasters, sabotage or terrorism via physical or cyberattacks on the electric grid, and many kinds of interruptions to generating plants—hazards electricity dependent hydrocarbon delivery, the national economy, social stability, and DOD’s mission continuity.¶ The U.S. electric grid was named by the National Academy of Engineering as the top engineering achievement of the 20th century. It is very capital-intensive, complex, technologically unforgiving, usually reliable, but inherently brittle. It is responsible for ~98–99 percent of U.S. power failures, and occasionally blacking out large areas within seconds—because the grid requires exact synchrony across subcontinental areas and relies on components taking years to build in just a few factories or one (often abroad), and can be interrupted by a lightning bolt, rifle bullet, malicious computer program, untrimmed branch, or errant squirrel. Grid vulnerabilities are serious, inherent, and not amenable to quick fixes; current Federal investments in the “smart grid” do not even require simple mitigations. Indeed, the policy reflex to add more and bigger power plants and power lines after each regional blackout may make the next blackout more likely and severe, much as suppressing forest fires can accumulate fuel loadings that turn the next unsuppressed fire into an uncontrollable conflagration.¶ Power-system vulnerabilities are even worse in-theater, where infrastructure and the capacity to repair it are often marginal: “attacks on the grid are one of the most common and effective tactics of insurgents in Iraq, and are increasingly seen in Afghanistan.” 39 Thus electric, not oil, vulnerabilities now hazard national and theater energy security. Simple exploitation of domestic electric vulnerabilities could take down DOD’s basic operating ability and the whole economy, while oil supply is only a gathering storm.

## Politics

### Relations Resilient

#### Relations resilient, particularly on tech issues

Mario Mancuso 8, Under Secretary of Commerce, Bureau of Industry and Security U.S. Department of Commerce, 6/2/8, "The Future of the U.S.-India High Technology Relationship", http://www.bis.doc.gov/news/2008/mancuso06052008.htm

The strength of today’s U.S. and India relationship is real, and underscores what visionary governments can accomplish for their people by acknowledging change and seizing opportunities. Shared interests and values, and improved economic and trade relations, have transformed the U.S.-India bilateral relationship into a "strategic partnership." And while tender points remain, the DNA of our partnership is more differentiated, healthy, and resilient than ever before.

Of the many dialogues that nurture our bilateral economic relationship, few have been as vibrant or had as much impact as the U.S.-India High Technology Cooperation Group (HTCG).

#### Immigration issues don’t spill over to broader relations and public backlash against Indian workers makes the impact inevitable

Singh 10 – Sinderpal Singh, Research Fellow at the Institute of South Asian Studies (ISAS), an autonomous research institute at the National University of Singapore, August 26, 2010, “H1B Visa Fee Hike: Will Indo-US Ties be Affected?,” ISAS Brief, No. 169

Third, there is the issue of how and to what extent this specific development will impact India-US relations in the near to middle future. Besides official protests to the Obama administration over the implications of this bill for India-based companies, the Indian Government now seems to be contemplating referring the matter to the World Trade Organization (WTO). In a statement on 17 August 2010, India’s Commerce Secretary Rahul Khullar, was quoted as saying that the visa fee hike ‘is WTO incompatible’ and that ‘if the US wishes to put up its protectionist barriers to hurt itself let them do it but where a measure is specifically targeting my commercial interest I cannot keep quiet’.13 The Obama administration meanwhile seems aware of the depth of India’s grievances on the matter and has attempted to address Indian concerns.14 With the US-India trade policy forum planned in three to four weeks time and Obama’s scheduled visit to India in November 2010, there are indications that the US might make certain adjustments in implementing the visa hike in the light of Indian concerns. Reflecting this optimism, Indian officials were recently quoted as saying that they were ‘hopeful of a quick solution’ before the two sides met for their trade policy forum.15

On the whole, it is still not clear if any solution satisfactory to both sides can be found on this issue at this stage or how long it would take to arrive at such a solution. Although it is evident that this issue has created some friction in Indo-US ties, it is unlikely to unravel the multilayered links that both countries have increasingly developed since Obama assumed office. This incident, however, does point to a larger potential irritant for future Indo-US ties. This irritant originates from the various domestic pressures on the Obama administration that could impact US foreign relations with India. More specifically, as the American public increasingly embraces protectionist postures espoused by US politicians, in tandem with the shrill debate over immigration, an anti-immigration protectionist discourse is emerging within the US with foreign knowledge workers an important target.16 Indian knowledge workers in this regard would be one of the hardest hit. So might the Indo-US relations in the longer term.

### Hagel Pounder

#### Hagel wrecks the rest of the agenda even if he’s confirmed

Lizza 1/7 Ryan, The New Yorker, "Will Hagel Spike the G.O.P.'s Fever", 2013, www.newyorker.com/online/blogs/newsdesk/2013/01/how-much-will-the-nomination-of-chuck-hagel-hurt-obamas-second-term-agenda.html#ixzz2HKGSAz32

There simply isn’t much common ground between Obama and most House Republicans on the agenda he’s chosen. On every front, Obama is challenging the G.O.P.’s most intransigent interest groups. He’s taking on the anti-tax activists who have controlled Republican economic thinking for decades. He’s taking on the Republicans’ Tea Party base over immigration, an issue that polls (and the Republican Presidential primaries) have shown to be more intense than almost any other for grassroots conservatives. He’s taking on the previously untouchable National Rifle Association with his coming proposals to regulate firearms.¶ And with today’s nomination of Hagel, Obama will open a new front against Republican neoconservatives, who control foreign policy in the G.O.P. It’s doubtful that the votes to defeat Hagel will materialize in the Senate, but a President’s political capital, especially in a second term, depletes quickly after his election. Even if Obama prevails, the Hagel fight will have a cost to the rest of his agenda.

#### Lots of time and PC

Stirewalt 1/7 Chris, writer for Fox News, 2013, “Obama Antagonizes with Hagel Pick,” http://www.foxnews.com/politics/2013/01/07/obama-antagonizes-with-hagel-pick/#ixzz2HIw1d0GW)

With Republicans still resentful of Hagel’s ostentatious opposition of Bush-era policies and support for Obama’s two presidential runs, confirmation would have been tricky enough. But the queasy feelings of pro-Israel Democrats on the tough-talking Vietnam vet will make it so much worse. Maryland Sen. Ben Cardin, a dutiful Democrat if ever there was one, told the soon-to-be-former cable news network Current TV on Sunday that there are “some statements that [Hagel] needs to clarify” and called the nomination “controversial.” Coming from Cardin, ranked in the 10 most liberal senators by National Journal, that’s the equivalent of a cannon shot across Obama’s bow. **It will take lots of time and effort to drag Hagel**, **opinionated and confrontational**, **across the finish line**. **The president can get it done**, **but the ordeal will be frightful and expend plenty of political capital**. The president is already staring down a double-barreled battle over government spending on the debt ceiling and the expiry of the law funding the government in lieu of a budget. Plus, Obama’s pick to lead the CIA, counterterrorism chief John Brennan, will face plenty of thorny questions from the left about his role in “enhanced interrogation techniques” and from the right about the Islamist raid on the U.S. consulate in Benghazi, Libya.

### Executive Shields

#### No politician will oppose the plan---helps troops

Merchant 10 Political & Environment Columnist-Discovery, 10/21, “How the US Military Could Bring Solar Power to Mass Market,” http://www.treehugger.com/corporate-responsibility/how-the-us-military-could-bring-solar-power-to-mass-market.html

Furthermore, **Congress is infinitely more likely to approve funding for R&D**; and infrastructure **if the projects are military-related**. Which is depressing, but true -- the one thing that **no politician can get caught opposing is the safety of American troops.** In fact, the whole premise of the article is rather depressing, on point though it may be: The only way we may end up getting a competitive clean energy industry is through serious military investment, which is of course, serious government spending. Which **under any other guise would be vehemently opposed by conservatives.**

#### 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.

#### Defense spending is untouchable

Maddow 11 Rachel, MSNBC show host, political commentator, “Rachel Maddow Show for March 25, 2011”, MSNBC, 3-25-11, Lexis

Case in point: there is a magic word in Washington politics. The well-earned common wisdom about this word is that if you attach this special magic word to a proposal, to something the government could spend money on, it doesn`t really matter how bad an idea it is, how many smart people think it`s a stupid thing, if it has this magic word attached to it, it becomes politically invincible, indestructible, it can`t be killed. The magic word is "defense." And it is well-earned common wisdom in Washington that any spending that is labeled "defense" is pretty much untouchable spending. It can`t be killed. Dollars spent by the military or on things that seem military-esque just don`t compete with other kinds of spending in the United States. And there`s a million reasons why. Defense contractors figured out that spreading to lots of different congressional districts the jobs associated with a particular airplane or vehicle or weapon system earns you a champion in Congress for keeping those jobs from every district you have larded yourself into. Defense spending is untouchable because calling a politician weak on defense in the 2000s is the equivalent of calling them soft on communism in the 1950s. Defense spending is untouchable because civilian lawmakers defer so deeply to the military, and to the former military officers laced through the contractor world, that if you squint, you would swear that Congress is some lackey puppet parliament in a country where the government has taken over by a junta. Defense spending, since the mammoth defense-funded, spend thrifty arms race build up of the Reagan years has been unquestionable in America.