### 1AC Grid adv

#### Grid collapse inevitable and wrecks military installations- only SMRs solve

Robitaille 2012 (George Robitaille, Department of Army Civilian, United States Army War College, March 21, 2012, “Small Modular Reactors: The Army’s Secure Source of Energy?,” Strategy Research Project)

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

#### Takes out military installations and causes mission disruption- Confusion causes nuclear escalation- SMRs key

**Andres and Breetz 2011** (Richard B. Andres, Professor of National Security Strategy at the National War College and a Senior fellow in 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. Breetz, doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, February 2011, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications,” National Defense University Strategic Forum, http://www.ndu.edu/press/lib/pdf/strforum/sf-262.pdf)

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 signifcantly reduced DOD energy consumption and green-house gas emissions at domestic bases. Despite strong efforts, however, two critical security issues have thus far proven resistant to existing solutions: bases’ vulnerability to civilian power outages, and the need to transport large quantities of fuel via convoys through hostile territory to forward locations. Each of these is explored below.¶ Grid Vulnerability. DOD is unable to provide its bases with electricity when the civilian electrical grid is offline for an extended period of time. Currently, domestic military installations receive 99 percent of their electricity from the civilian power grid. As explained in a recent study from the Defense Science Board:¶ DOD’s key problem with electricity is that critical missions, such as national strategic awareness and national command authorities, are almost **entirely dependent** on the national transmission grid . . . [which] is fragile, vulnerable, near its capacity limit, and outside of DOD control. In most cases, neither the grid nor on-base backup power provides sufficient reliability to ensure continuity of critical national priority functions and oversight of strategic missions in the face of a long term (several months) outage.7¶ The grid’s fragility was demonstrated during the 2003 Northeast blackout in which 50 million people in the United States and Canada lost power, some for up to a week, when one Ohio utility failed to properly trim trees. The blackout created cascading disruptions in sewage systems, gas station pumping, cellular communications, border check systems, and so forth, and demonstrated the interdependence of modern infrastructural systems.8 More recently, awareness has been growing that the grid is also vulnerable to purposive attacks. A report sponsored by the **D**epartment of **H**omeland **S**ecurity 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 func- tion for a period of hours or, at most, a few days on their own. If power were not restored after this amount of time, the results could be disastrous. First, military assets taken offline by the crisis would not be available to help with di- saster 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 un- derstanding that blinding an opponent with a grid black-out could escalate to **nuclear war**. America’s current opponents, however, may not share this fear or be deterred by this possibility. In 2008, the Defense Science Board stressed that DOD should mitigate the electrical grid’s vulnerabili- ties by turning military installations into “islands” of energy self-sufficiency.10 The department has made ef- forts to do so by promoting efficiency programs that lower power consumption on bases and by constructing renewable power generation facilities on selected bases. Unfortunately, these programs will not come close to reaching the goal of islanding the vast majority of bases. Even with massive investment in efficiency and renew- ables, most bases would not be able to function for more than a few days after the civilian grid went offline.¶ Unlike other alternative sources of energy, small reactors have the potential to solve DOD’s vulnerability to grid outages. Most bases have relatively light power 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 con- ceivable 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 dis- rupting civilian systems, but the powerful incentive to do so in order to win an ongoing battle or war would be greatly reduced.

#### Mission disruptions cause every hotspot to escalate

Kagan and O’Hanlon 2007 (Frederick Kagan, resident scholar at AEI, and Michael O’Hanlon, senior fellow in foreign policy at Brookings, April 24, 2007, “The Case for Larger Ground Forces,” 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 biparti- san 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 conse- quences with a few concrete examples, emphasiz- ing 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 inter-¶ national 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 noninterven- tion in Darfur troubles consciences from Europe to America’s Bible Belt to its bastions of liberal- ism, 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 con- vince many Americans that the war there truly was lost—but the costs of reaching such a con- clusion 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 capa- ble of a wide range of missions—including not only deterrence of great power conflict in deal- ing 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 down- side to a major program to strengthen the mil- itary 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 pru- dent, it is also badly overdue.

#### Collapses drone operations in Afghanistan

Aimone 2012 (Michael Aimone, Director¶ Business Enterprise Integration¶ Office of the Deputy Under Secretary of Defense, September 12, 2012, Testimony Before the House Committee on Homeland Security¶ Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies, http://homeland.house.gov/sites/homeland.house.gov/files/Testimony%20-%20Aimone.pdf)

DoD’s facility energy strategy is also focused heavily on grid security in the name of mission assurance. Although the Department’s fixed installations traditionally served largely as a platform for training and deployment of forces, in recent years they have begun to provide direct support for combat operations, such as unmanned aerial vehicles (UAVs) flown in Afghanistan from fixed installations here in the United States. Our fixed installations also serve as staging platforms for humanitarian and homeland defense missions. These installations are largely dependent on a commercial power grid that is vulnerable to disruption due to aging infrastructure, weather-related events, and potential kinetic, cyber attack. In 2008, the Defense Science Board warned that DoD’s reliance on a fragile power grid to deliver electricity to its bases places critical missions at risk.1

#### Drones key to contain insurgents

Dale 2011 (Catherine Dale, specialist in international security at the Congressional Research Service, March 9, 2011, “War in Afghanistan: Strategy, Operations, and Issues for Congress,” http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA542626)

By 2008, President Bush had reportedly authorized U.S. military cross-border operations into Pakistan, by ground or Predator unmanned aerial vehicles (UAV).210 Neither the Central Intelligence Agency nor the U.S. military officially confirms the use of the drone strikes.¶ To be clear, NATO’s policy for ISAF does not include cross-border strikes. Asked in July 2008 whether the Alliance would go after militants in Pakistan, Secretary-General Jaap de Hoop Scheffer said, “My answer is an unqualified ‘no.’ We have a United Nations mandate for Afghanistan and that’s it. If NATO forces are shot at from the other side of the border, there is¶ always the right to self-defense but you will not see NATO forces crossing into Pakistani territory.”211¶ According to publicly available reporting, based primarily on accounts from people on the ground, a major early focus of the drone strikes was the South Waziristan agency in the FATA, long the home base for the TTP, the Pakistani Taliban umbrella organization; a drone strike killed TTP leader Baitullah Mahsud in August 2009. Subsequently, the focus of the drone strikes shifted to the North Waziristan agency, understood to be the stronghold of the Haqqani network, one of the major insurgencies active in Afghanistan. Observers have suggested that under the Obama Administration, the frequency of the drone attacks has increased markedly.212¶ Senior ISAF officials have noted that cross-border attacks have yielded big operational and tactical benefits for the campaign in Afghanistan—by causing the insurgent networks to feel disconnected, and by prompting local residents in Pakistan to want al Qaeda and other outsiders to leave their communities.213

#### Even after 2014 drones key to contain Taliban and prevent Afghan collapse

Singh 2012 (Colonel Ajay Singh, October 3, 2012, “Afghanistan 2014 and Beyond,” South Asia Defence and Strategic Review, http://www.defstrat.com/exec/frmArticleDetails.aspx?DID=368)

When President Obama announced the termination of military operations in Afghanistan post 2014, he followed it up by saying, “In the pre-dawn darkness of Afghanistan we can see the light of a new day”. But then, perhaps he was just using his superb powers of oratory and his felicity with the language to justify the termination of US military operations in Afghanistan from December 2014. There is a grey darkness in Afghanistan now a prolonged dark interspersed with flashes of bombings and attacks. Yet, is this period - an uncertain, tentative period before the US completes its withdrawal, the dark of a pre-dawn era or the even more chilling darkness of another long, desolate night.¶ President Obama does seem to put timelines on his operations and so far most of these timelines have been adhered to. In July, at the NATO Chicago conference he announced that the US and NATO will end all combat operations by December 2013 and withdraw all troops less those engaged in essential security and advisory roles by 31 December 2014. This effectively draws the curtain on America's longest and most expensive war, one which has cost over $ 3 Trillion and claimed over 3600 lives. The fatigue of 12 years of inconclusive conflict is telling on the US and its allies. No President, especially in an election year, wants to face a mandate which is deeply against an unpopular war. Perhaps the timing of President Obama's withdrawal announcement has a lot to do with the US elections in November 2014. ¶ Yet it is not a complete withdrawal as such. The US will leave behind an estimated 20,000-30,000 troops in training and advisory duties and still retain some of its major bases to assist the Afghan National Security Force in counter terrorist actions. Bagram and Shamsi Air Fields will also be retained to launch continual drone attacks in Afghanistan and Pakistan. But will it suffice to ensure the stability of the war-torn nation and prevent it from slipping into chaos. Many fear a repeat of the post Soviet withdrawal period a vacuum of power that plunged the nation in to a civil war and brought the Taliban into power. The scenario in Afghanistan, post 2014, may not be so bleak, but the US withdrawal will definitely cause a power shift that will impact the entire region.¶ For one, the US aims in Afghanistan are not really completed. When it rushed into Afghanistan to extract retribution for the 9/11attacks, the immediate aim was the destruction of Al-Qaeda and its Taliban allies. Today it can claim to have virtually removed Al-Qaeda from Afghanistan. Osama Bin Laden has been spectacularly eliminated. Virtually the entire leadership has been wiped out in a series of drone attacks. Only the spiritual head, Al Zawahiri remains. Many of their cadres have shifted base towards Somalia and Yemen. Yet if Al Qaeda has been contained to a great extent, the Taliban is as active if not much more, as ever. The US policy of focusing exclusively on Al-Qaeda let the Taliban regroup after its initial reverses. Today, the major militant presence in Afghanistan is not of Al Qaeda, but the Taliban, which is gearing up for the post US withdrawal scenario. Gradually they have taken over the areas of Helmand, Ghazni and Anbar which have been vacated by NATO troops. As they consolidate, the fear is that, post 2014, they will simply step back into Afghanistan and regain power in the same manner that they did in the wake of the Soviet withdrawal.¶ The signs do seem to indicate that the Taliban are gearing up for a sustained offensive that will set the grounds for them to eventually come into power after the US withdrawal. There has been an intensification of attacks significantly almost all by the Taliban and none by Al Qaeda - in the period following the announcement of the withdrawal. There have been 34 major attacks with the deadliest being on the eve of the Id festival which killed over 50 Shai worshippers in their shrines. This is a grim reminder of the Taliban's propensity to target the minority Shia community, especially the Hazaras. The increase in their attacks also corresponds to the reduction in operations launched by NATO forces. As part of the pre-withdrawal plans, most operations, especially night operations are now conducted by the Afghan National Army and local police, with US forces in a advisory or supporting role. The linchpin of the US policy post 2014 is to develop the Afghan National Security Force to be strong enough to ensure the security of their own country. But at the moment, in spite of the huge investments in training and equipping the Afghan army, it does not seem to be up to the task. It was estimated that an Afghan Security Force of 3,52,000 would be required to ensure continual security. This figure was pruned down to 2,30,000 because of the exorbitant costs of $ 6 billion per year. (With the new figure, the price tag will drop to $ 4 billion per year). This parsimony may be a mistake in the long term. Even with 1,30,000 US troops already in the country, the Afghan Security Forces have been unable to curb the Taliban. After the withdrawal, even with a residual force of 20-30000 US troops, will the ANSF be able to resist a full-fledged Taliban offensive to take over their country.¶ There are other ominous signs. Taliban infiltration in the Security force is fairly rampant. There has been a series of attacks NATO troops from their local allies in the Afghan Security force. These “Green on Blue” attacks have claimed 45 NATO soldiers and wounded 69 others in this calendar year itself. Most of these attacks have been attributed to Taliban infiltration in the security forces. In fact, just last week NATO suspended training of the Afghan Local Police after a series of 12 insider attacks in the month of August alone. All this is not a happy augury for the capabilities of the Afghan Security Force to hold their country together post 2015, though in the long run, Afghanistan's security must be ensured by Afghans themselves. ¶ The US is taking pains to ensure that they still have a continual stake in Afghanistan's security so that it is not simply abandoned post 2014. The US signed a Strategic Partnership Agreement with Kabul that is valid for a decade after 2014 and assures it of continual US support. Afghanistan was also granted Major Non NATO Ally status in July thus giving it entry into a select club that includes Israel, Japan, Pakistan and South Korea. This will provide Afghanistan special privileges such as access to military equipment, training facilities and special grants. Surveillance and fire power capabilities will be provided. Drone and air attacks on militant hide outs on both sides of the Durand Line will continue. But in spite of the supporting role that the US will still play, will Anti-Taliban operations have the same momentum- especially when the operations will now be conducted by the Pushtoon dominated military against their own tribal brethren.

#### Afghanistan failure causes WWIII great power war

Fox 2011 (Robert Fox, international reporter and associate at the Corriere della Sera in Milan, July 12, 2011, “Afghanistan: If we’re not careful, WW3 is imminent,” The Week, http://goo.gl/PlUTV)

There are growing fears that a speedy withdrawal of western troops from Afghanistan, accompanied by a fudged deal to bring the Taliban back into power in some sort of coalition, could trigger another dreadful round of civil war. And, given the meddling already undertaken by neighbours such as Pakistan and Iran, this civil war could quickly become a regional war. This in turn could morph into a contest of global significance between India and China and their proxies and allies. In short, welcome to the Third World War in the 21st century. There is a list of concerns which suggest this might happen. First there is the endemic corruption in Kabul under President Karzai. This is about to be highlighted by the IMF's attempt to sort out the crash of the Kabul Bank, with a loss of some $700 million. The problem is not just the Kabul bank, but banks in general across Afghanistan, which the kleptocrats of Kabul seem to regard as their personal piggy banks. Then there is Karzai himself, who seems to be trying to bend or break the constitution so he can run for a third term in two years' time – banned under the present rules. The armed services and police are also a concern. Though recruiting and training have made huge strides, with more than 250,000 under arms now, there are worries about the continuing imbalance between the different ethnic groups, with the Tajiks and Hazara over-represented, and the recruiting of southern Pashtuns still limping. The danger is that the Afghan army will split on ethnic lines when Afghanistan gains full control of its security in 2015. In a civil war, the southern Pashtuns would turn to the Pakistan army and ISI intelligence service, who are more deeply involved in backing Islamist militants than previously thought, according to some devastating reports for the New York Times by Carlotta Gall.

#### Drones crush terrorists and solve militant takeover in Pakistan

**Nadim 2012** (Hussain Nadim, visiting scholar at the Woodrow Wilson Center, August 8, 2012, "How Drones Changed the Game in Pakistan," National Interest, nationalinterest.org/how-drones-changed-the-game-pakistan-7290)

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

#### Nothing else stopping Pakistan collapse loose nukes

Thiessen 2012 (Marc A. Thiessen, AEI fellow and member of the White House senior staff under President George W. Bush, March 19, 2012, “Five disasters we’ll face if U.S. retreats from Afghanistan,” Washington Post, http://www.washingtonpost.com/opinions/five-disasters-well-face-if-us-retreats-from-afghanistan/2012/03/19/gIQA04zCNS\_story\_1.html)

1. The drone war against al-Qaeda in Pakistan would likely cease. Eighty-three percent of Americans support targeted drone strikes against al-Qaeda leaders hiding in the tribal regions of Pakistan. Those strikes are dependent on forward bases in Afghanistan near the Pakistani border. The U.S. no longer operates drones from inside Pakistan. We cannot effectively conduct targeted strikes from Navy ships because Pakistan’s tribal regions are more than a thousand of miles from the sea. Bagram airbase near Kabul is also too far away for anything other than dropping bombs from F-15s. spotiSo if we want to continue the drone war against al-Qaeda, we must have a U.S. military presence not just in Afghanistan but in the Pashtun heartland — and we can’t have that presence if the Pashtun heartland is on fire. The Afghan government is not likely to allow us to keep bases in this area if we were doing nothing to stabilize the country. And if the region falls to the Taliban, we will lose access to these areas completely. Loss of these bases would also mean the loss of the intelligence networks on both sides of the border enabled by the U.S. military presence — and thus much of the targeting information we depend on. As a result, direct strikes in Pakistan could effectively cease, the pressure on the terrorists would be lifted, and al-Qaeda would be free to reconstitute.¶ 2. The risk that Pakistan (and its nuclear arsenal) falls to the extremists grows. With the pressure from the United States lifted, al-Qaeda and the Pakistani Taliban would be free to ramp up their efforts to destabilize Pakistan. In a worst-case scenario, they could topple the government and take control of Pakistan’s nuclear arsenal. In a “best-case” scenario, those within the Pakistani government who supported cooperating with the United States will be weakened, while those who have long argued for supporting the Islamists and terrorists against the United States will be strengthened. Either way, Pakistan becomes a facilitator of terror.

#### Pakistani militants cause Indo-Pak war

Vira and Cordesman 2011 (Varun Vira and Anthony H. Cordesman, “Pakistan: Violence vs. Stability,” CSIS, http://goo.gl/ZyS4q)

These conflicts have been augmented by violence and tensions inside the rest of Pakistan. In south Punjab, a historical hotbed of militancy, various groups once firmly tethered to state policy have begun to splinter and migrate to the tribal areas. These groups have considerable experience in combat and knowledge of the weapons and technologies needed for asymmetric warfare. They have joined tribal militant groups, and assisted them in bringing terrorist violence into the previously insulated urban centers of the Punjab and the Sindh. In Karachi, a key economic engine of Pakistan, ethno-sectarian violence has risen to new levels with the real danger of a slide back into the communal violence of the early 1990s. Such a reversal would be catastrophic for stability, exacerbating already chronic economic woes, whilst providing fodder for the sectarian and ethnic drivers of conflict in Pakistan. In Baluchistan, a fifth separatist insurgency has become more active since 2004, and is closely linked and influenced by regional geopolitics. The Baloch insurgency is distinct from other conflicts, primarily in that Sunni-Deobandi philosophies play little role, but it nonetheless benefits from many of the same drivers, including widespread impoverishment, chronic underdevelopment and alienation from mainstream Pakistan. The Challenges of External Relations Pakistan‟s focus on the challenge from India affects virtually every aspect of its external relations. This plays out in Afghanistan in the form of a competition for influence over the Afghan government where Pakistan attempts to use its ties to the Afghan Taliban, Haqqani network, and other movements to ensure its influence over the future of Afghanistan and to limit any threat of Pashtun independence movements. The end result is a fundamentally different perception of Pakistan‟s national interest from the US focus on Afghan security and stability. It is the reality behind the rhetoric of “ally” and “strategic partner” that has led to constant tension with the US. Cross-border violence into Afghanistan is a major irritant, and has resulted in deteriorating US-Pakistani relations. Similarly, the Indo-Pakistani border is one of the most tense on the planet, and secured on both sides by nuclear weapons. Cross-border violence into India can greatly escalate the prospects of large-scale war. Many Kashmiri militant groups have splintered, as in south Punjab, and the growing risk of militant proxies operating autonomously cannot be discounted, particularly to divert Pakistani military attention away from the tribal areas.

#### Guaranteed escalation: Miscalc, flight times, devolved authority, no stable deterrent

Yusuf 2011 (Moeed Yusuf, South Asia adviser at the United States Institute of Peace Center in the Center for Conflict Analysis and Prevention, January 25, 2011, “Stability in the Nuclear Context: Making South Asians Safe,” Jinnah Institute, http://goo.gl/FwYXH)

Crises between Pakistan and India represent a quantum leap in terms of the induction of instability inducing factors relevant to the nuclear calculus. To begin with, every crisis carries with it a realistic possibility of uncontrolled escalation leading to a deliberate or inadvertent nuclear strike. Not to mention, in the South Asian context, escalation represents uncharted territory, a dangerous proposition given that no escalation control mechanisms have been institutionalized. Yet, crises remain highly likely for more than one reason. There are outstanding contentious issues between the two sides which keep forcing them to the verge of a diplomatic breakdown. Moreover, both sides seem to believe that limited aggression under the nuclear umbrella is permissible and will not warrant a nuclear response. India’s limited war doctrine, Cold Start, formalizes this belief while Pakistan’s propensity to employ non-state actors on Indian soil in the past underscores its traditional propensity for similar risk taking. 12 In the absence of clearly defined nuclear red lines, it is very difficult to determine just what constitutes as ‘limited aggression’ for either side. A number of simulations the author has been part of point to wide divergence in how the two sides view the situation. Finally, nonstate actors are no longer playing to the tune of the Pakistani state and can engineer a Pakistan-India crisis on their own, Mumbai being a pertinent example. Most analysts suggest that a repeat of such an episode will see some form of Indian aggression followed by a Pakistani counterresponse; 13 what follows is anybody’s guess but it may well entail further escalation at a swift pace during which either side may cross the other’s nuclear red lines. In an escalated conflict, survivability of Indian and Pakistani nuclear arsenals shall remain intact and pre-emption against the nuclear forces would still be a far cry, even from the stronger party, India. Given Pakistan’s mobile delivery systems and a significant number of warheads, it would be impossible for New Delhi to guarantee that the entire arsenal will be successfully neutralized in a pre-emptive strike. This would hold even if Pakistan deployed its weapon systems during the course of an escalation. That said, there are two potential dangers in crisis situations. First, Pakistan and India use dualpurpose missiles and air craft for delivery. In the absence of advanced early warning capabilities, an incoming aircraft or missile could well be perceived as an attempt at pre-emption. The defender may panic and consider launching its own strike before it is too late. Second, it is worth pointing out the vulnerability of Pakistan’s nuclear decision making chain of command. Pakistan’s entire government and military top brass sit within 50 miles in Islamabad/Rawal Pindi and could potentially be neutralized in a pre-emptive strike that seeks to decapitate the country’s nerve center. For those who see this as rather farfetched – the author included – the concern is not as much that such an Indian strike would materialize but that Pakistani decision makers would have considered this possibility in their own contingency planning and taken precautionary measures. In the absence of a bilateral agreement that outlaws pre-emption of the nuclear chain of command, Pakistan may consider dispersing its leadership geographically or even devolving authority of launch to a lower level ex ante. A dispersed NCA amidst the fog of war would find it very difficult to make an informed decision while devolved authority would add to the risk of a premature or miscalculated launch. The challenge of preventing unauthorized or inadvertent launches increases multifold and crystallizes the kind of dangers India and Pakistan may end up subjecting their populations to in crisis situations. Their command and control structures may be robust enough to hold in peace time but the doctrinal and geographical asymmetries transform the equation under the stress of crises. For one, even in the absence of a sea-based capability which has to be constantly deployed for full effect, both sides would inevitably contemplate mating and subsequently deploying their ground and air based assets as a crisis escalates. This implies transportation, wide dispersal, ground preparations which may be misconstrued as an imminent attack by the adversary, and even predelegation of authority to launch. Pakistan, espousing ‘First Use’ and more vulnerable to total annihilation, will be more susceptible to these pressures. 14 In any case, all this adds significantly to the demands on the command and control structure: it necessitates safe transportation in an accident-prone, hot and dry South Asian climate, robust and authenticated communication systems and fool proof, redundant launch protocols under stressful situations. It remains unclear how much confidence the two sides have in their respective mechanisms but the very fact that they have never been tested in real life conditions make malfunctions quite likely if an escalated conflict is experienced. The possibility of a miscalculation in the South Asian case is also substantial given the geographical contiguity between Pakistan and India. The Cold War rivals had the luxury of sitting thousands of miles away and factoring in a decision time of over half an hour in any eventuality. In South Asia, the flight times for missiles between major urban cities are 5-15 minutes. In essence, there is virtually no time for informed decision making; the possibility of making overly conservative judgments about the other side’s intentions during a crisis, and subsequently of premature decisions, is therefore much greater than during the Cold War. This is especially true given that decision makers on both sides already suffer from acute cognitive dissonance about the other. Interestingly enough, even the usually cited remedy, an advanced early warning capability, may not deliver in South Asia; Pakistan and India are geographically too close for the technology to be able to work meaningfully. 15

#### Only SMRs solve- renewables fail

Barton 2011 Charles Barton, founder of the Nuclear Green Revolution blog, recognized by my peers among nuclear bloggers most of whom have technical training, and my work has been mentioned by the Wall Street Journal, MA in philosophy, April 30, 2011, “Future storm damage to the grid may carry unacceptable costs,” [http://nucleargreen.blogspot.com/2011\_04\_01\_archive.html](http://nucleargreen.blogspot.com/2011_04_01_archive.html%22%20%5Ct%20%22_blank))

Amory Lovins has long argued that the traditional grid is vulnerable to this sort of damage. Lovins proposed a paradigm shift from centralized to distributed generation and from fossil fuels and nuclear power to renewable based micro-generation. Critics have pointed to flaws in Lovins model. Renewable generation systems are unreliable and their output varies from locality to locality, as well as from day to day, and hour to hour. In order to bring greater stability and predictability to the grid, electrical engineers have proposed expanding the electrical transmission system with thousands of new miles of transmission cables to be added to bring electricity from high wind and high sunshine areas, to consumers. This would lead, if anything, to greater grid vulnerability to storm damage in a high renewable penetration situation. Thus Lovins renewables/distributed generation model breaks down in the face of renewables limitations. Renewables penetration, will increase the distance between electrical generation facilities and customer homes and businesses, increasing the grid vulnerable to large scale damage, rather than enhancing reliability. Unfortunately Lovins failed to note that the distributed generation model actually worked much better with small nuclearpower plants than with renewable generated electricity. Small nuclear plants could be located much closer to customer's homes, decreasing the probability of storm damage to transmission lines. At the very worst, small NPPs would stop the slide toward increased grid expansion. Small reactors have been proposed as electrical sources for isolated communities that are too remote for grid hookups. If the cost of small reactors can be lowered sufficiently it might be possible for many and perhaps even most communities to unhook from the grid while maintaining a reliable electrical supply. It is likely that electrical power will play an even more central role in a post-carbon energy era. Increased electrical dependency requires increased electrical reliability, and grid vulnerabilities limit electrical reliability. Storm damage can disrupt electrical service for days and evenweeks. In a future, electricity dependent economy, grid damage can actually impede storm recovery efforts, making large scale grid damage semi-self perpetuating. Such grid unreliability becomes a threat to public health and safety. Thus grid reliability will be a more pressing future issue, than it has been. It is clear that renewable energy sources will worsen grid reliability, Some renewable advocates have suggested that the so called "smart grid" will prevent grid outages. Yet the grid will never be smart enough to repair its own damaged power lines. In addition the "smart grid" will be venerable to hackers, and would be a handy target to statures. A smart grid would be an easy target for a Stuxnet type virus attack. Not only does the "smart grid" not solve the problem posed by grid vulnerability to storm damage, but efficiency, another energy approach thought to be a panacea for electrical supply problems would be equally useless. Thus, decentralized electrical generation through the use of small nuclear power plants offers real potential for increasing electrical reliability, but successful use of renewable electrical generation approaches may worsen rather than improved grid reliability.

### 1AC Russia adv

#### Rapid US SMR commercialization stops Russian market dominance- they’ll sell floating reactors globally

Ferguson 2010 (Dr. Charles D. Ferguson, President of the Federation of American Scientists, Adjunct Professor in the Security Studies Program at Georgetown University and Adjunct Lecturer in the National Security Studies Program at the Johns Hopkins University, May 19, 2010, 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://www.fas.org/press/\_docs/05192010\_Testimony\_HouseScienceCommHearing%20.pdf)

The United States and several other countries have considerable experience in building and operating small and medium power reactors. The U.S. Navy, for example, has used small power reactors since the 1950s to provide propulsion and electrical power for submarines, aircraft carriers, and some other surface warships. China, France, Russia, and the United Kingdom have also developed nuclear powered naval vessels that use small reactors. Notably, Russia has deployed its KLT-40S and similarly designed small power reactors on icebreakers and has in recent years proposed building and selling barges that would carry these types of reactors for use in sea-side communities throughout the world. China has already exported small and medium power reactors. In 1991, China began building a reactor in Pakistan and started constructing a second reactor there in 2005. In the wake of the U.S.-India nuclear deal, Beijing has recently reached agreement with Islamabad to build two additional reactors rated at 650 MWe.2¶ One of the unintended consequences of more than 30 years of sanctions on India’s nuclear program is that India had concentrated its domestic nuclear industry on building small and medium power reactors based on Canadian pressurized heavy water technology, or Candu-type reactors. Pressurized heavy water reactors (PHWRs) pose proliferation concerns because they can be readily operated in a mode optimal for producing weapons-grade plutonium and can be refueled during power operations. Online refueling makes it exceedingly difficult to determine when refueling is occurring based solely on outside observations, for example, through satellite monitoring of the plant’s operations. Thus, the chances for potential diversion of fissile material increase. This scenario for misuse underscores the need for more frequent inspections of these facilities. But the limited resources of the International Atomic Energy Agency have resulted in a rate of inspections that are too infrequent to detect a diversion of a weapon’s worth of material.3 The opening of the international nuclear market to India may lead to further spread of PHWR technologies to more states. For example, last year, the Nuclear Power Corporation of India, Ltd. (NPCIL) expressed interest in selling PHWRs to Malaysia.4 NPCIL is the only global manufacturer of 220 MWe PHWRs. New Delhi favors South-to-South cooperation; consequently developing states in Southeast Asia, sub-Saharan Africa, and South America could become recipients of these technologies in the coming years to next few decades. Many of these countries would opt for small and medium power reactors because their electrical grids do not presently have the capacity to support large power reactors and they would likely not have the financial ability to purchase large reactors.¶ 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¶ Given the differences in design philosophy among these vendors and the fact that none of these designs have penetrated the commercial market, it is too soon to tell which, if any, will emerge as market champions. Nonetheless, because of the early stage in development, the United States has an opportunity to state clearly the criteria for successful use of SMRs. But because of the head start of China and India, the United States should not procrastinate and should take a leadership role in setting the standards for safe, secure, and proliferation-resistant SMRs that can compete in the market. Several years ago, the United States sponsored assessments to determine these criteria.9 While the Platonic ideal for small modular reactors will likely not be realized, it is worth specifying what such an SMR would be. N. W. Brown and J. A. Hasberger of the Lawrence Livermore National Laboratory assessed that reactors in developing countries must:¶ • “achieve reliably safe operation with a minimum of maintenance and supporting infrastructure;¶ • offer economic competitiveness with alternative energy sources available to the candidate sites;¶ • demonstrate significant improvements in proliferation resistance relative to existing reactor systems.”10¶ Pointing to the available technologies at that time from Argentina, China, and Russia, they determined that “these countries tend to focus on the development of the reactor without integrated considerations of the overall fuel cycle, proliferation, or waste issues.” They emphasized that what is required for successful development of an SMR is “a comprehensive systems approach that considers all aspects of manufacturing, transportation, operation, and ultimate disposal.”

#### Al Qaeda will attack floating SMRS- collapses more than half of global trade

Nitkin and Andreyev 2011 (Alexander Nikitin, former Russian submarine officer and nuclear safety inspector, and Leonid Andreyev, Bellona researcher and Doctor of Economics, 2011, “Floating nuclear power plants,” Bellona, http://www.bellona.org/filearchive/fil\_fnpp-en.pdf)

Physical security of nuclear sites plays an important role in advancing the goals of nuclear non- proliferation and in countering the threat of terrorism. This is why physical protection of floating nuclear power plants will be one of the critical issues in ensuring the safety of these facilities in the context of export deliveries. If this Russian technology is exported and put to use on an international scale, it must be guaranteed, first and foremost, that this activity would comply with the Treaty on the Non- Proliferation of Nuclear Weapons (NPT),xxiv as well as be in accordance with two IAEA documents – the Convention on the Physical Protection of Nuclear Material (CPPNM)xxv and Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities.xxvi¶ Several reports have studied the possibilities of using floating nuclear power plants in Asia [16]. These reports point out that Southeast Asia is one of the world’s most troubling hot spots in terms of international terrorism – a given, to a large extent, of the particular geography of the region. This is where strategic international trade routes lie, along which between 200 and 600 commercial vessels pass daily, carrying crude oil and other hydrocarbon fues, as well as chemicals, exported and imported by Japan, China, South Korea, and other Asia-Pacific countries. This is also where important sea and air routes cross toward South Asia and the Middle East. In the UN’s estimates, up to 80 percent of the six billion tonnes of cargoes traded annually in the world is shipped by sea – and of that percentage, almost 75 percent is moved through one of the five shipping “pinch points” – the narrow waterways of the Panama and Suez Canals, the Strait of Gibraltar and the Strait of Hormuz, as well as the Strait of Malacca in Southeast Asia. The news agency World Net Daily has reported that the international militant Islamist network al-Qaeda has already managed to procure two dozen vessels for the group’s terrorist activities. Al-Qaeda, the World Net Daily said, may use its ships to take a cargo of deadly chemicals, or a so-called “dirty bomb” – a radiological weapon capable of dispersing radioactive material across a wide area by means of conventional explosives – or even nuclear weapons to a civilian port in order to carry out a terrorist attack there. These ships are, in essence, the suicide bombers of the terrorist future. Even without taking into account the ever-present piracy risks that the international shipping trade is facing daily, there is the real threat that the most important shipping routes and fairways may prove vulnerable to an attack by al-Qaeda or a like-minded group with close ties with it [12]. Indonesia and Malaysia, as countries that have, among other potential customers, already expressed an interest in Russia’s FNPP project, are of most concern in that regard, since a combination of their geography, the booming shipping trade along their coastlines, and other factors forms just such conditions that create a considerable risk of terrorist attacks at sea. This risk is compounded, furthermore, by the alarming statistics of pirate attacks in the region. For a floating nuclear power plant lying at anchor at its place of operation, the threat of falling prey to a pirate or terrorist attack and its crew being captured for ransom, or to use as hostages in a negotiation, is very real – and so is the risk that the nuclear materials or radioactive waste on board may also be hijacked in the process for use in further criminal activities. Analyses have shown that operating a floating nuclear power plant in the waters off the shores of the island states of Indonesia and Malaysia may not just be unsafe for those countries and their closest neighbours, but may also pose a global risk. Should a terrorist attack scenario be carried out successfully and the nuclear vessel captured, with the nuclear materials and/or radioactive waste on board falling into the wrong hands, these materials may then be used to perpetrate criminal acts elsewhere in the world. Additionally, the reports that examine the prospects of operating floating nuclear power plants in the Asia-Pacific region also mention the dangers and risks that arise in case of an outbreak of armed hostilities on the territory of the customer country.

#### They have the capability

Lawlor 2011 (Major General Bruce Lawlor, served on the White House’s Homeland Security Council and was the first chief of staff for the Department of Homeland Security and currently director with Virginia Tech's Simulation and Decision Informatics Laboratory, December 15, 2011, “The Black Sea: Center of the nuclear black market,” Bulletin of the Atomic Scientists, http://thebulletin.org/web-edition/features/the-black-sea-center-of-the-nuclear-black-market)

Harvard's Project on Managing the Atom has published a comprehensive report on this threat, combining several well-known facts to create an unsettling picture. First, several terrorist groups, particularly Al Qaeda, have been trying to get their hands on a nuclear weapon for years. Osama bin Laden referred to it as a "religious duty" and embraced the idea of an American Hiroshima. Al Qaeda operatives have consulted with nuclear experts, tested conventional explosives for use in nuclear bombs, and attempted to purchase working nuclear devices. There is nothing to suggest that bin Laden's death has ended this quest. Second, the Harvard study notes that if a sophisticated terrorist group acquired sufficient weapon-grade material, it would be able to build at least a crude, gun-type atomic bomb (WMD Commission, 2005). A nuclear device of this type wouldn't be transported to the target by a sophisticated delivery system; its more likely delivery mode would be a rental truck. Third, although terrorist groups may not be able to manufacture the plutonium or weapon-grade uranium to make a crude bomb, it is not beyond their ability to buy or steal it. And fourth, nuclear smuggling is very difficult to combat. Globalization, huge profit margins, and organized crime have created a multibillion-dollar illicit-trafficking market that is producing ever more sophisticated methods of keeping contraband from being discovered. Nuclear contraband has become a part of that illicit market.

#### Every plant is ten nuclear weapons

Grossman 2010 (Karl Grossman, full professor of journalism at the State University of New York College, July 28, 2010, “Floating Chernobyls,” Counterpunch, http://nuclearfreeplanet.org/blogs/counterpunch--karl-grossman-floating-chernobyls.html)

In a chapter on the floating plants as “an attractive object of nuclear terrorism,” the book cites an impossibility of providing “protection from torpedo attack or from underwater saboteurs, and on the surface from a rocket-bombing strike.” Further, the “spreading” of the floating plants “all over the world will allow” this to be done “much easier and with more efficiency.” Moreover, each floating nuclear plant will contain “the ready material for ten nuclear bombs in the way of enriched uranium of weapon quality.”

#### Causes sustained shut-down of trade, spurs protectionism and collapses the global economy

Richardson 2004 (Michael Richardson, former Asia Editor of the International Herald Tribune and a Visiting Senior Research Fellow at the Institute of Southeast Asian Studies, 2004, “A Time Bomb for Global Trade,” google books)

A nuclear 9/11 would make the World Trade Center attacks look like a warning shot. It would be impossible to calculate the economic costs, because there is no way to calculate how long it would take for citizens to recover the confidence they need to spend and invest. The public would assume that if the terrorists had one nuclear weapon, they could get another. If they would use it in one city, they would use it in another. If even one goes off, it’s hard to see how we would recover. We have to prevent it from happening- ever. Former US Senator and arms control expert, Sam Nunn, who co-chairs the Nuclear Threat Initiatve. The use of either a nuclear or powerful radiological bomb in a major port-city would cut the arteries of maritime commerce if it was believed to have come by sea. It would halt many of the world’s trade and severely damage the global economy, as governments scrambled to put in place extra security measures to proect their people, cities and economies. Such measures would be drastic and include: lengthy cargo inspections in the ports of the affected country, as well as in ports of nations that did extensive sea trade with it, or even the complete closure of ports for an indefinite period, while extra checks and safeguards were put in place to allay public anxiety.

#### Protectionism lowers the threshold for all conflict – makes escalation more likely – causes a laundry list of impacts

Patrick 2009 (Stewart Patrick, senior fellow and director of the Program on International Institutions and Global Governance at the Council on Foreign Relations, March 2009 “Protecting Free Trade” The National Interest http://nationalinterest.org/article/protecting-free-trade-3060)

President Obama and his foreign counterparts should reflect on the lessons of the 1930s-and the insights of Cordell Hull. The longest-serving secretary of state in American history (1933-1944), Hull helped guide the United States through the Depression and World War II. He also understood a fundamental truth: "When goods move, soldiers don't." In the 1930s, global recession had catastrophic political consequences-in part because policymakers took exactly the wrong approach. Starting with America's own Smoot Hawley Tariff of 1930, the world's major trading nations tried to insulate themselves by adopting inward looking protectionist and discriminatory policies. The result was a vicious, self-defeating cycle of tit-for-tat retaliation. As states took refuge in prohibitive tariffs, import quotas, export subsidies and competitive devaluations, international commerce devolved into a desperate competition for dwindling markets. Between 1929 and 1933, the value of world trade plummeted from $50 billion to $15 billion. Global economic activity went into a death spiral, exacerbating the depth and length of the Great Depression. The economic consequences of protectionism were bad enough. The political consequences were worse. As Hull recognized, global economic fragmentation lowered standards of living, drove unemployment higher and increased poverty-accentuating social upheaval and leaving destitute populations "easy prey to dictators and desperadoes." The rise of Nazism in Germany, fascism in Italy and militarism in Japan is impossible to divorce from the economic turmoil, which allowed demagogic leaders to mobilize support among alienated masses nursing nationalist grievances. Open economic warfare poisoned the diplomatic climate and exacerbated great power rivalries, raising, in Hull's view, "constant temptation to use force, or threat of force, to obtain what could have been got through normal processes of trade." Assistant Secretary William Clayton agreed: "Nations which act as enemies in the marketplace cannot long be friends at the council table." This is what makes growing protectionism and discrimination among the world's major trading powers today so alarming. In 2008 world trade declined for the first time since 1982. And despite their pledges, seventeen G-20 members have adopted significant trade restrictions. "Buy American" provisions in the U.S. stimulus package have been matched by similar measures elsewhere, with the EU ambassador to Washington declaring that "Nobody will take this lying down." Brussels has resumed export subsidies to EU dairy farmers and restricted imports from the United States and China. Meanwhile, India is threatening new tariffs on steel imports and cars; Russia has enacted some thirty new tariffs and export subsidies. In a sign of the global mood, WTO antidumping cases are up 40 percent since last year. Even less blatant forms of economic nationalism, such as banks restricting lending to "safer" domestic companies, risk shutting down global capital flows and exacerbating the current crisis. If unchecked, such economic nationalism could raise diplomatic tensions among the world's major powers. At particular risk are U.S. relations with China, Washington's most important bilateral interlocutor in the twenty-first century. China has called the "Buy American" provisions "poison"-not exactly how the Obama administration wants to start off the relationship. U.S. Treasury Secretary Timothy Geithner's ill-timed comments about China's currency "manipulation" and his promise of an "aggressive" U.S. response were not especially helpful either, nor is Congress' preoccupation with "unfair" Chinese trade and currency practices. For its part, Beijing has responded to the global slump by rolling back some of the liberalizing reforms introduced over the past thirty years. Such practices, including state subsidies, collide with the spirit and sometimes the law of open trade. The Obama administration must find common ground with Beijing on a coordinated response, or risk retaliatory protectionism that could severely damage both economies and escalate into political confrontation. A trade war is the last thing the United States needs, given that China holds $1 trillion of our debt and will be critical to solving flashpoints ranging from Iran to North Korea. In the 1930s, authoritarian great-power governments responded to the global downturn by adopting more nationalistic and aggressive policies. Today, the economic crisis may well fuel rising nationalism and regional assertiveness in emerging countries. Russia is a case in point. Although some predict that the economic crisis will temper Moscow's international ambitions, evidence for such geopolitical modesty is slim to date. Neither the collapse of its stock market nor the decline in oil prices has kept Russia from flexing its muscles from Ukraine to Kyrgyzstan. While some expect the economic crisis to challenge Putin's grip on power, there is no guarantee that Washington will find any successor regime less nationalistic and aggressive. Beyond generating great power antagonism, misguided protectionism could also exacerbate political upheaval in the developing world. As Director of National Intelligence Dennis Blair recently testified, the downturn has already aggravated political instability in a quarter of the world's nations. In many emerging countries, including important players like South Africa, Ukraine and Mexico, political stability rests on a precarious balance. Protectionist policies could well push developing economies and emerging market exporters over the edge. In Pakistan, a protracted economic crisis could precipitate the collapse of the regime and fragmentation of the state. No surprise, then, that President Obama is the first U.S. president to receive a daily economic intelligence briefing, distilling the security implications of the global crisis.

#### Russia will use SMR exports to undermine US influence in Latin America

Dobransky 2011 (Steve Dobransky. Adjunct Professor at Cleveland State University in IR, March 2011, “The Nuclear Penetration of the Monroe Doctrine,” paper presented at the annual meeting of the International Studies Association Annual Conference "Global Governance: Political Authority in Transition,” http://www.airpower.au.af.mil/apjinternational/apj-s/2011/2011-1/2011\_1\_02\_dobransky\_eng\_s.pdf)

Russia has shown in recent experience that one nuclear power plant constructed is usually not enough. Led by Rosatom and Atomstroyexport, Russia’s state-controlled civilian nuclear power corporations, billions of dollars in potential nuclear power plant opportunities await throughout Latin America.2 Once the deal enters the construction phase, there may be no stopping the Russians in using it as the model to build many more nuclear power plants in Venezuela and the rest of Latin America. With more nuclear deals will likely come an increasing dependence on Russia for future-enriched uranium, expertise, and maintenance, which are all usually incorporated into a nuclear energy contract. This may seriously challenge and undermine America’s power and influence in the region. Furthermore, as shown in the last several years between Russia and Venezuela, with a nuclear energy deal often comes many more economic and military agreements worth billions of dollars between the partners. Thus, a nuclear energy agreement can go well beyond the contract itself or, at the very least, significantly improve a nuclear supplying country’s chances of winning other valuable agreements with the customer in competitive economic situations. This also could weaken the U.S. and its control over the region.3 In the end, once the Russo-Venezuelan precedent is set, the U.S. and others will have to accept is as a legitimate framework for other extra-hemispheric powers to work within. This may lead to a flood of nuclear reactor deals between Russia and the rest of Latin America. It may lead other countries, especially China, into the fray as well. Considering the vast opportunities for nuclear power plant development and the finite amount of uranium, it is well understood that nuclear energy will become more of a zero-sum game in the coming decades, especially in terms of new plant development. And, this will make it an extremely valuable endeavor in the future. Overall, the U.S. must do a much better job in defining and modernizing the Monroe Doctrine for the 21st century. Then, the U.S. must compete more aggressively and effectively with other countries seeking to penetrate the region through nuclear energy deals and other major agreements. The Russo-Venezuelan nuclear energy deal is likely just the first of many more challenges to come to the U.S.’s dominance and leadership in the region.

#### Time is running out- Russian foothold massive accelerates development

Dobransky 2011 (Steve Dobransky. Adjunct Professor at Cleveland State University in IR, March 2011, “The Nuclear Penetration of the Monroe Doctrine,” paper presented at the annual meeting of the International Studies Association Annual Conference "Global Governance: Political Authority in Transition,” http://www.airpower.au.af.mil/apjinternational/apj-s/2011/2011-1/2011\_1\_02\_dobransky\_eng\_s.pdf)

Russia is implementing a strategy of moving full speed ahead with exporting nuclear reactors to the entire world. These efforts can greatly increase its capabilities and personnel and, thereafter, be directed vigorously at Latin America. Russia, at first, focused on regional deals with Eastern Europe, China, India, Iran, and other close-by neighbors, and now it is focusing on worldwide contracts. Not concerned with other countries’ domestic politics or regional issues, Russia is intent on making billions of dollars with whoever is willing to sign a nuclear deal with it. So far, Iran has been in the front of the line, with the recent completion of the Bushehr nuclear power plant. More Russian reactors are expected to be built in Iran. Russia also has signed a deal recently with India to build at least six nuclear reactors. Many more there and elsewhere are likely to follow. The only thing holding back the Russians from running the nuclear power plant table is the Russians themselves and their still-growing export capacity. More deals, however, mean more experience, customers, and reduced costs/increased profits overall.9 They also tend to lead to many more trade agreements in other areas, both military and non- military items, as Russia’s recent multi-million dollar tank deal with Venezuela demonstrates.10 Russia will soon become (if it has not already) the go-to place for affordable nuclear power plants for developing countries, with no political strings attached. And, it will reap the benefits in that area and, likely, many more areas.

#### US leadership prevents Latin America collapse- Russian dominance ensures instability and gives them unstoppable global leverage

Dobransky 2011 (Steve Dobransky. Adjunct Professor at Cleveland State University in IR, March 2011, “The Nuclear Penetration of the Monroe Doctrine,” paper presented at the annual meeting of the International Studies Association Annual Conference "Global Governance: Political Authority in Transition,” http://www.airpower.au.af.mil/apjinternational/apj-s/2011/2011-1/2011\_1\_02\_dobransky\_eng\_s.pdf)

Finally, the U.S. can just go all-out and compete with the Russians and others in the nuclear energy field throughout Latin America and the rest of the world. The U.S. can use all of its powers, influences, and position to run the nuclear energy gauntlet in Latin America. If this option is pursued, the U.S. could make billions of dollars. And, it may transform the Latin American countries into much more compliant and friendly states, by engendering a tremendous amount of influence and goodwill throughout the region; though, on the other hand, it may make them a lot more independent of the U.S. and outside energy sources and supply lines. In the long term, it may even help prevent a major economic collapse of Latin American countries due to future major shortages and extreme costs of energy resources, primarily oil. This could save the U.S. much money, influence, and hardship by not having the negative impact of collapsing and unstable Latin American countries, as well as allowing the U.S. to avoid the pressures to intervene to protect American interests and citizens.¶ In the end, if the U.S. does not fundamentally reassess its current nuclear energy policies particularly towards Latin America, then Russia may very well supplant the U.S. as the most influential power in Latin America and throughout the world. The Monroe Doctrine, subsequently, will go from penetrated to destroyed. Energy security will be the supreme power and goal in the world in the coming decades. The Russians are going full speed ahead in promoting energy as a foreign policy instrument that has the potential to reap billions of dollars and tremendous diplomatic influence. Will the U.S. alter course and react accordingly, especially in its own “backyard”? The U.S. needs to fully consider all the consequences of maintaining the status quo. Nuclear exports hold the promise of greater political, economic, and security influence. On the other hand, lost nuclear energy opportunities will mean significant reductions in power, money, and position. It is ultimately up to the U.S. to determine whether to meet the Russian challenge in the nuclear energy arena or to throw up the flag and go out with a whimper. The U.S. can compete full-scale with the Russians and others in the nuclear energy field, stand by on the sidelines and try to minimize the nuclear expansion in Latin America, or go all-out to quarantine the region in some form or another. The U.S. must soon determine its policy stance and clearly define and update the Monroe Doctrine. But, if complete inaction is the final choice, then there is no need to worry. The Russians will be sure to turn off the lights when the U.S. is¶ gone—and, turn on its nuclear energy plants in Latin America. Thus will go the nuclear chess board and Russia’s ascendance. And, thus, will go the Monroe Doctrine.

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#### That causes global conflicts

Cohen 2009 (Ariel Cohen, Senior Research Fellow for Russian and Eurasian Studies and International Energy Policy, The Kathryn and Shelby Cullom Davis Institute for International Studies, March 19, 2009, “How the Obama Administration Should Engage Russia,” http://www.heritage.org/research/testimony/how-the-obama-administration-should-engage-russia)

Despite the economic crisis that provided a reality check for Moscow, Russia is doing its best to continue to pursue a broad, global, revisionist foreign policy agenda that seeks to undermine what it views as a U.S.-led international security architecture. Russia's rulers want to achieve a world order in which Russia, China, Iran, Syria, and Venezuela will form a counter-weight to the United States. Moscow is doing so despite the dwindling currency reserves and a severe downturn in its economic performance due to plummeting energy and commodity prices.[18]¶ In December 2008, the Russian navy conducted maneuvers in the Caribbean with Venezuela, while the Russian air force's supersonic Tupolev TU-160 "Blackjack" bombers and the old but reliable TU-95 "Bear" turboprop bombers flew patrols to Venezuela, as well as close to U.S. air space in the Pacific and the Arctic.[19]¶ A top Russian Air Force general recently announced that the Kremlin is considering a Venezuelan offer to base strategic bombers on a military airfield on La Orchila island off the coast of Venezuela. The Russian government is also considering basing bombers out of Cuban territory, where there are four or five airfields with 4,000-meter-long runways. The Air Force official remarked that "if the two chiefs of state display such a political will, we are ready to fly there."[20]¶ Russia is also developing the Syrian ports of Tartus and Latakia in order to manage an expanded Russian naval presence in the Mediterranean, and may possibly revive an anchorage in Libya and Yemen.[21] These are only some examples of how Moscow is implementing its global agenda. While some of these moves may be mostly symbolic, combined with a $300 billion military modernization program they signal a much more aggressive and ambitious Russian global posture. Russia is also overtly engaging the Hezbollah and Hamas terrorist groups.¶ If Moscow's vision were to be realized, given the large cast of state and non-state "bad actors" currently on the international stage, Russia's notion of "multipolarity" would engender an even more unstable and dangerous world. Additionally, the very process of trying to force such a transition risks destabilizing the existing international system and its institutions while offering no viable alternatives.

#### Those go nuclear

Weitz 2011 (Richard Weitz, Senior Fellow and Director of the Center for Political-Military Analysis at Hudson Institute, November 2011, “Can We Manage a Declining Russia?” Hudson Institute, http://www.hudson.org/files/publications/CanWeManageDecliningRussiaWeitzNov2011.pdf)

The cornerstone of Russia's defense has been, and continues to be, nuclear weapons. Russia's ongoing difficulties in modernization and reconfiguration of its conventional forces have led the country to rely increasingly on its nuclear weapons for even limited conflict scenarios along Russia's periphery. The Russian attitude towards nuclear weapons should be taken in context: Russia expects a rise in the number of nuclear states by 2020, leading to calls for increased, rather than decreased, nuclear arms production. Given Russia's limited conventional military forces, its reliance on nuclear defense will continue, despite their limited effectiveness. Russia's thinking about nuclear weapons will be strongly affected by whoever is its chief decision maker and the coalition supporting him (or her). Given the lack of democracy in defense policy, there is a strong temptation to use military force to solve political problems at home and abroad. In addition, Russian leaders' rhetoric constantly support the perception of war and conflict against domestic and foreign enemies, mostly due to the structure of Russian politicscreating a tendency to militarize elements of everyday life. Along with perceived internal pressures, Russia sees itself as essentially isolated in the world. Its consistent paranoia is that outside rivalsand countries desire to seize Russia's natural resources or deny it its rightful place in world affairs. This perception of enemies on all sides supports the Russian militaristic attitudes, and its attachment to nuclear weapons. The emphasis on nuclear use also reflects Russia's weaknesses in other, more conventional areas. The fact that Russia views the use of nuclear devices in regional conflicts (rather than the worldwide conflicts that many Western analysts perceive as the only time such weapons should be used) shows the huge divergence between Russian perceptions of the usefulness of nuclear weapons and that of the West. Russia also rationalizes its use of nuclear weapons by assuming local internal conflicts could lead to larger conflicts (falling more into the Western model of conventional nuclear weapons use). To Russian leaders, NATO's recent behavior in Libya reflects an international decision to act on behalf of one side in a civil war only because of its values (Libya being a significant Russian client), with similar fears that Syria will become another element in NATO's moralistic foreign policy.

#### Latin American instability escalates draws in great powers

Rochlin 1994 (James Francis Rochlin, Professor of Political Science at Okanagan University, 1994, “Discovering the Americas: The Evolution of Canadian Foreign Policy Towards Latin America,” pages 130-131)

While there were economic motivations for Canadian policy in Central America, security considerations were perhaps more important. Canada possessed an interest in promoting stability in the face of a potential decline of U.S. hegemony in the Americas. Perceptions of declining U.S. influence in the region – which had some credibility in 1979-1984 due to the wildly inequitable divisions of wealth in some U.S. client states in Latin America, in addition to political repression, under-development, mounting external debt, anti-American sentiment produced by decades of subjugation to U.S. strategic and economic interests, and so on – were linked to the prospect of explosive events occurring in the hemisphere. Hence, the Central American imbroglio was viewed as a fuse which could ignite a cataclysmic process throughout the region. Analysts at the time worried that in a worst-case scenario, instability created by a regional war, beginning in Central America and spreading elsewhere in Latin America, might preoccupy Washington to the extent that the United States would be unable to perform adequately its important hegemonic role in the international arena – a concern expressed by the director of research for Canada’s Standing Committee Report on Central America. It was feared that such a predicament could generate increased global instability and perhaps even a hegemonic war. This is one of the motivations which led Canada to become involved in efforts at regional conflict resolution, such as Contadora, as will be discussed in the next chapter.

### 1AC Plan

#### Plan: The United States Federal Government should offer substantial competitive power purchase agreements for electricity from small modular nuclear reactors for military installations in the United States.

### 1AC Solvency

#### No disads- Obama’s already pushing SMRs- DOE incentives now- other nuclear fights inevitable too

Ervin 12/28 (Dan Ervin, professor of finance at Salisbury University, “Dan Ervin: Modular reactors are the future of nuclear energy,” delmarvaNow, http://www.delmarvanow.com/article/20121230/OPINION03/312300005)

The Obama administration’s decision to kick-start commercial use of small modular reactors has made one thing clear: The notion that nuclear power is slipping away is wrong. Although nuclear power faces difficult challenges, industry and government are working together to forge a new path.¶ The Department of Energy has earmarked funds for a new public-private partnership to help develop innovative small reactors that are about one-third the size of those in large conventional nuclear plants. These small reactors are modular, meaning they will be built in factories before they are shipped and installed at nuclear sites. This production method has the potential to reduce the cost of nuclear power significantly.¶ Southern Co. has begun building two new nuclear plants in Georgia using new construction techniques that could convince other companies nuclear plants are easier to build than otherwise thought.¶ Congress is planning to take up comprehensive legislation on nuclear waste next year using a “consent-based approach” to finding a site for a deep-geologic repository or an interim storage facility. Both would hold high-level waste and used fuel. Such an approach was recommended earlier in the year by a high-level blue-ribbon commission.

**But the DOD’s key- Only way to solve barriers and achieve commercialization**

Andres and Breetz 2011 (Richard B. Andres, 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. Breetz, doctoral candidate in the Department of Political Science at the Massachusetts institute of technology, February 2011, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications,” National Defense University Strategic Forum, http://www.ndu.edu/press/lib/pdf/strforum/sf-262.pdf)

The preceding analysis suggests that DOD should seriously consider taking a leadership role on small reactors. This new technology has the potential to solve two of the most serious energy-related problems faced by the department today. Small reactors could island domestic military bases and nearby communities, thereby protect- ing them from grid outages. They could also drastically reduce the need for the highly vulnerable fuel convoys used to supply forward operating bases abroad.¶ The technology being proposed for small reactors (much of which was originally developed in U.S. Gov- ernment labs) is promising. A number of the planned designs are self-contained and highly mobile, and could meet the needs of either domestic or forward bases. Some promise to be virtually impervious to accidents, with design characteristics that might allow them to beused even in active operational environments. These re- actors are potentially safer than conventional light wa- ter reactors. The argument that this technology could be useful at domestic bases is virtually unassailable. The argument for using this technology in operational units abroad is less conclusive; however, because of its poten- tial to save lives, it warrants serious investigation.¶ Unfortunately, the technology for these reactors is, for the most part, caught between the drawing board and production. Claims regarding the field utility and safety of various reactors are plausible, but authoritative evalu- ation will require substantial investment and technology demonstration. In the U.S. market, DOD could play an important role in this area. In the event that the U.S. small reactor industry succeeds without DOD support, the types of designs that emerge might not be useful for the department since some of the larger, more efficient designs that have greater appeal to private industry would not fit the department’s needs. Thus, there is significant incentive for DOD to intervene to provide a market, both to help the industry survive and to shape its direction.¶ Since the 1970s, in the **U**nited **S**tates, **only the military** has overcome the considerable barriers to building nuclear reactors. This will probably be the case with small reactors as well. If DOD leads as a first mover in this market—initially by providing analysis of costs, staffing, reactor lines, and security, and, when possible, by moving forward with a pilot installation—the new technology will likely survive and be applicable to DOD needs. If DOD does not, it is possible the tech- nology will be unavailable in the future for either U.S. military or commercial use.

#### PPAs key- Incentivizes production- R&D projects don’t commercialize

Madia 2012 (William Madia, Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University, previously the Laboratory Director at the Oak Ridge National Laboratory, Spring 2012, “SMALL MODULAR REACTORS: A POTENTIAL GAME-CHANGING TECHNOLOGY,” Stanford Energy Club, http://energyclub.stanford.edu/index.php/Journal/Small\_Modular\_Reactors\_by\_William\_Madia)

Throughout the history of NPP development, plants grew in size based on classic “economies of scale” considerations. Bigger was cheaper when viewed on a cost per installed kilowatt basis. The drivers that caused the industry to build bigger and bigger NPPs are being offset today by various considerations that make this new breed of SMRs viable. ¶ ¶ Factory manufacturing is one of these considerations. Most SMRs are small enough to allow them to be factory built and shipped by rail or barge to the power plant sites. Numerous industry “rules of thumb” for factory manufacturing show dramatic savings as compared to “on-site” outdoor building methods. Significant schedule advantages are also available because weather delay considerations are reduced. Of course, from a total cost perspective, some of these savings will be offset by the capital costs associated with building multiple modules to get the same total power output. Based on analyses I have seen, overnight costs in the range of $5000 to $8000 per installed kilowatt are achievable. If these analyses are correct, it means that the economies of scale arguments that drove current designs to GW scales could be countered by the simplicity and factory-build possibilities of SMRs.¶ ¶ No one has yet obtained a design certification from the Nuclear Regulatory Commission (NRC) for an SMR, so we must consider licensing to be one of the largest unknowns facing these new designs. Nevertheless, since the most developed of the SMRs are mostly based on proven and licensed components and are configured at power levels that are passively safe, we should not expect many new significant licensing issues to be raised for this class of reactor. Still, the NRC will need to address issues uniquely associated with SMRs, such as the number of reactor modules any one reactor operator can safely operate and the size of the emergency planning zone for SMRs.¶ ¶ To determine if SMRs hold the potential for changing the game in carbon-free power generation, it is imperative that we test the design, engineering, licensing, and economic assumptions with some sort of public-private development and demonstration program. Instead of having government simply invest in research and development to “buy down” the risks associated with SMRs, I propose a more novel approach. Since the federal government is a major power consumer, it should commit to being the “first mover” of SMRs. This means purchasing the first few hundred MWs of SMR generation capacity and dedicating it to federal use. The advantages of this approach are straightforward. The government would both reduce licensing and economic risks to the point where utilities might invest in subsequent units, thus jumpstarting the SMR industry. It would then also be the recipient of additional carbon-free energy generation capacity. This seems like a very sensible role for government to play without getting into the heavy politics of nuclear waste, corporate welfare, or carbon taxes.

#### No commercialization without the DOD

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

Recently, the Clean Air Task Force and our colleagues at The Consortium for Science, Policy and Outcomes at Arizona State University, assessed the opportunities and challenges at the U.S. Department of Defense for accelerating a national and even global transition to advanced and clean energy technologies. Building on background papers, a workshop, new research, and a previous project that articulated foundational principles for federal energy innovation policies, this report identified the sources of DoD’s success in fostering new technology that can be applied to both civilian energy innovation efforts and future defense-related energy efforts. Unlike most other agencies, including the Energy Department, the Pentagon is the ultimate customer for the new technology it helps create, spending some $200 billion each year on R&D and procurement. The implications of DoD’s role as customer have not been widely appreciated, as: · DoD, uniquely in government, supports multi-year, billion-dollar “end to end” innovation efforts that produce technology that is continuously tested, deployed and refined on bases and in the field, providing **real world feedback** that leads to **increases in performance** and **reductions in cost**. By contrast, most of the federal government’s civilian energy innovation efforts involve research loosely connected at best with the few commercialization efforts that it supports. · DoD and its contractors know how to **bring together multiple innovations** to achieve **system-level advances** leading to **big performance gains** (examples range from nuclear submarines to unmanned aircraft to large-scale information systems). This systems approach is precisely what is needed to advance clean energy technologies. · Relatively stable, multi-year funding allows the Pentagon to pursue “long cycle” innovation that is necessary for large, capital- intensive technologies and supports a highly capable contractor base that can respond to changing national security demands. · The Pentagon’s scope and budget has allowed it to **experiment** with new and **creative innovation tools**

such as the well-known Defense Advanced Projects Research Agency, which has produced extraordinary technological breakthroughs; and the Environmental Security Technology Certification Program, which develops and demonstrates cost-effective improvements in environmental and energy technologies for military installations and equipment. · Because of DoD’s size and demands for performance and reliability, it is unique among government and private sector organizations as a **demonstration test-bed**. Smart-grid technologies and advanced energy management systems for buildings are already poised to benefit from this aspect of the Pentagon’s innovation system. · DoD has collaborated effectively with other federal agencies, including the Department of Energy and its predecessors (for example, to advance nuclear energy technologies). Continuing competition and cooperation between DoD and DOE will spur energy innovation. DoD’s innovation capabilities can enhance U.S. national security, improve U.S. international competitiveness, and spur global energy restructuring and greenhouse gas emissions reductions. At the same time, while providing enormous opportunities to develop and test energy efficiency technologies and small scale distributed energy appropriate to forward bases, the Pentagon is unlikely to become an all-purpose hub for advancing all categories of clean-energy technologies, because its energy innovation activities will be sustainable only where they can support the nation’s defense capabilities. Therefore, many other large-scale technologies that are of great importance to improving the environment, such as carbon-free central station generation or zero carbon transportation, may not as easily fit with DoD’s mission. Possible exceptions might include small modular nuclear reactors that can be used for producing independent, non-grid power at military bases, or, conceivably, zero-carbon liquid fuels other than anything resembling current generation biofuels. In any case, the challenge for military-led energy innovation is to further define and delineate avenues for improved clean-energy performance that are linked to the national strategic mission. History shows that when such linkages are strong, DoD’s innovation capabilities are **second to none**. But perhaps the more important lesson from this work is that a serious American program of civilian energy innovation could profitably look to Pentagon history for clues about how to succeed. Stable and significant funding; “end to end” thinking on long innovation cycles; procurement of advanced energy technology at commercial scale as well as research and testing; and institutional experimentation and diversity using multiple institutional channels – these have been important reasons that the United States has the most lethal and effective military arsenal in world history. If we’re serious about maintaining American superiority in the energy technology domain, some of this “defense innovation DNA” needs to be replicated or adapted to meet the challenge.

**SMRs are cost-effective, safe and can be commercialized fast**

**Szondy 2012** (David, freelance writer based in Monroe, Washington. An award-winning playwright, he has contributed to Charged and iQ magazine and is the author of the website Tales of Future Past, February 16, "Feature: Small modular nuclear reactors - the future of energy?", www.gizmag.com/small-modular-nuclear-reactors/20860/)

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