# 1AC

## plan

#### The United States Federal Government should acquire, through Other Transactions authority, electricity from small modular reactors for its military installations in the United States.

## solvency

#### Other Transactions authority leads to effective and quick acquisition

Dix et al 3

Nancy Dix, and Fernard Lavallee, partners in the San Diego and Washington, D.C., offices of Gray Cary, and Kimberly Welch, senior associate, specialize in specialize in government contracts, government contracts litigation, and intellectual property, Fall 2003, FEAR AND LOATHING OF FEDERAL CONTRACTING: ARE COMMERCIAL COMPANIES REALLY AFRAID TO DO BUSINESS WITH THE FEDERAL GOVERNMENT? SHOULD THEY BE?, 33 Pub. Cont. L.J. 5

DARPA has taken the position that OT authority permits tremendous flexibility in the terms and conditions that can be negotiated under such agreements, and, consequently, that there are a great variety of uses for the OT instrument. For example, DARPA has pioneered the use of OTs for research and technology development projects performed as multiparty cooperative arrangements involving cost sharing and advancing dual-use technologies. While the principal purpose of these transactions frequently is like traditional federal assistance, that is, other than to acquire goods and services for the direct benefit and use of the Government, DARPA does take the view that some OTs can be used for acquisition. n62

Proponents of OTs coined the phrase "freedom of contract" to describe the flexibility offered by OTs. Other Transactions are meant to present the Government and contractor with a "blank page" from which to begin when negotiating such instruments. Generally speaking, the terms and conditions of an OT are negotiable; however, DARPA has a well-defined "opening position." DARPA's opening position usually includes, for example, restrictions on foreign access to technology and a Bayh-Dole treatment for patents, without a requirement for the flow-down of the Bayh-Dole provisions.

The "freedom of contract" aspect also acknowledges that OTs are subject to even fewer laws and regulations than Cooperative Agreements or CRADAs. In December 1996, Under Secretary of Defense Paul Kaminski published a memorandum to the secretaries of the military departments and directors of defense agencies that identifies statutes that "are not necessarily applicable to 'other transactions.'" n63

The OT provides both the Government and contractors with unparalleled opportunities to negotiate terms and conditions designed to maintain a contractor's competitive advantage in the commercial marketplace while providing the Government with timely and affordable access to cutting-edge technologies and services. n64 In many respects, the OT is the ultimate in streamlined federal acquisition, allowing the Government to "do business the way business does business." The latitude afforded to the Government by OTs enables the sovereign to attract contractors that traditionally would not, or could not, do business with the Government.

#### Incentives inevitable

Jeffrey Tomich 11-2, energy reporter for the St Louis Dispatch, “Ameren, Westinghouse still waiting for decision on nuclear grant”, <http://www.stltoday.com/business/local/ameren-westinghouse-still-waiting-for-decision-on-nuclear-grant/article_1b46d35b-eda4-5c15-9b08-b0ed80caf2bf.html>

It was six months ago that Ameren Missouri and Westinghouse officials joined Gov. Jay Nixon on the lawn of the governor’s mansion to announce plans to pursue a first-of-its-kind mini nuclear reactor that would be built next to the utility’s Callaway plant.

The effort had bipartisan political support. Other Missouri electricity suppliers were on board, as well as the state’s university system. Everything seemed in place — almost.

The whole plan hinged on getting at least a share of a $452 million federal grant to advance commercialization of next-generation nuclear technology.

Today, a month after the Department of Energy was supposed to announce who would share the federal money, Ameren and Westinghouse are still waiting. And with the presidential election just days away, heightened scrutiny of energy technology subsidies, a growing budget deficit and a potential change in administrations are looming.

An Energy Department spokeswoman said applications are still under review. She didn’t say when a decision would be made.

The companies have reason to be anxious. The government has laid out an ambitious timetable for those who share the award. The winning teams are expected to have the next-generation reactors running by 2022, leaving a decade to design, license and build a new breed of nuclear plant.

“The team is kind of counting on that (grant) right now,” Joe Zwetolitz, president of Westinghouse Americas, said Tuesday at a conference for potential suppliers at the Renaissance Grand Hotel in downtown St. Louis. “It’s really necessary to help spur development.”

President Barack Obama announced the availability of grant funding for so-called small nuclear reactors in March during a stop in Columbus, Ohio, as part of his all-of-the-above energy strategy. Two projects will share the $452 million over a five-year span.

The small-scale reactors, generally less than a third the size of today’s plants, have been touted by the nuclear industry as carbon-free sources of around-the-clock electric generation that offer safety benefits and would be easier for utilities to finance and deploy.

That’s only part of the reason the federal government is willing to throw almost half a billion dollars at developing the technology. The Obama administration also sees modular nuclear plants as another piece of an American manufacturing revival — one with potential to generate thousands of jobs building components that can be shipped overseas.

The possibility for jobs is also a big draw for Nixon and other local politicians, especially because Westinghouse has said it would build a manufacturing plant in Missouri if it wins the grant and a market for the mini reactors develops.

The Ameren-Westinghouse team is one of four that applied for the federal grant in May. Other competing ventures include established names, such as Babcock & Wilcox Co., as well as NuScale Power LLC and Holtec International Inc., both relative newcomers.

Nick Cunningham, a policy analyst for the American Security Project, a nonprofit research group, believes the upcoming election may have temporarily derailed an announcement, but he believes it will come eventually since both candidates are on record as supporting advances of nuclear power.

“I think it will move forward next year,” he said.

Westinghouse officials say they’re ready to submit design certification for the small reactor to the Nuclear Regulatory Commission next year. And while Ameren’s timing is less certain, the utility could apply for a construction and operating license as early as 2014.

## adv 1

#### Adv 1 DOD

#### DoD bases are vulnerable now – SMR’s solve

Robitaille 12

(George, Department of Army Civilian, United States Army War College, “Small Modular Reactors: The Army’s Secure Source of Energy?” 21-03-2012, 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.

#### Those communication breakdowns go nuclear

Andres and Breetz 11

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

#### DOD is critical to mass adoption and commercialization

Andres and Breetz 11

Richard 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 Breetz, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, Small Nuclear Reactorsfor Military Installations:Capabilities, Costs, andTechnological Implications, [www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf](http://www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf)

Thus far, this paper has reviewed two of DOD’s most pressing energy vulnerabilities—grid insecurity and fuel convoys—and explored how they could be addressed by small reactors. We acknowledge that there are many uncertainties and risks associated with these reactors. On the other hand, failing to pursue these technologies raises its own set of risks for DOD, which we review in this section: first, small reactors may fail to be commercialized in the United States; second, the designs that get locked in by the private market may not be optimal for DOD’s needs; and third, expertise on small reactors may become concentrated in foreign countries. By taking an early “first mover” role in the small reactor market, DOD could mitigate these risks and secure the long-term availability and appropriateness of these technologies for U.S. military applications. The “Valley of Death.” Given the promise that small reactors hold for military installations and mobility, DOD has a compelling interest in ensuring that they make the leap from paper to production. However, if DOD does not provide an initial demonstration and market, there is a chance that the U.S. small reactor industry may never get off the ground. The leap from the laboratory to the marketplace is so difficult to bridge that it is widely referred to as the “Valley of Death.” Many promising technologies are never commercialized due to a variety of market failures— including technical and financial uncertainties, information asymmetries, capital market imperfections, transaction costs, and environmental and security externalities— that impede financing and early adoption and can lock innovative technologies out of the marketplace. 28 In such cases, the Government can help a worthy technology to bridge the Valley of Death by accepting the first mover costs and demonstrating the technology’s scientific and economic viability.29 [FOOTNOTE 29: There are numerous actions that the Federal Government could take, such as conducting or funding research and development, stimulating private investment, demonstrating technology, mandating adoption, and guaranteeing markets. Military procurement is thus only one option, but it has often played a decisive role in technology development and is likely to be the catalyst for the U.S. small reactor industry. See Vernon W. Ruttan, Is War Necessary for Economic Growth? (New York: Oxford University Press, 2006); Kira R. Fabrizio and David C. Mowery, “The Federal Role in Financing Major Inventions: Information Technology during the Postwar Period,” in Financing Innovation in the United States, 1870 to the Present, ed. Naomi R. Lamoreaux and Kenneth L. Sokoloff (Cambridge, MA: The MIT Press, 2007), 283–316.] Historically, nuclear power has been “the most clear-cut example . . . of an important general-purpose technology that in the absence of military and defense related procurement would not have been developed at all.”30 **Government involvement is likely to be crucial for innovative, next-generation nuclear technology** as well. Despite the widespread revival of interest in nuclear energy, Daniel Ingersoll has argued that radically innovative designs face an uphill battle, as “the high capital cost of nuclear plants and the painful lessons learned during the first nuclear era have created a prevailing fear of first-of-a-kind designs.”31 In addition, Massachusetts Institute of Technology reports on the Future of Nuclear Power called for the Government to provide modest “first mover” assistance to the private sector due to several barriers that have hindered the nuclear renaissance, such as securing high up-front costs of site-banking, gaining NRC certification for new technologies, and demonstrating technical viability.32 It is possible, of course, that small reactors will achieve commercialization without DOD assistance. As discussed above, they have garnered increasing attention in the energy community. Several analysts have even argued that small reactors could play a key role in the second nuclear era, given that they may be the only reactors within the means of many U.S. utilities and developing countries.33 However, given the tremendous regulatory hurdles and technical and financial uncertainties, it appears far from certain that the U.S. small reactor industry will take off. If DOD wants to ensure that small reactors are available in the future, then it should pursue a leadership role now. Technological Lock-in. A second risk is that if small reactors do reach the market without DOD assistance, the designs that succeed may not be optimal for DOD’s applications. Due to a variety of positive feedback and increasing returns to adoption (including demonstration effects, technological interdependence, network and learning effects, and economies of scale), the designs that are initially developed can become “locked in.”34 Competing designs—even if they are superior in some respects or better for certain market segments— can face barriers to entry that lock them out of the market. If DOD wants to ensure that its preferred designs are not locked out, then it should take a first mover role on small reactors. It is far too early to gauge whether the private market and DOD have aligned interests in reactor designs. On one hand, Matthew Bunn and Martin Malin argue that what the world needs is cheaper, safer, more secure, and more proliferation-resistant nuclear reactors; presumably, many of the same broad qualities would be favored by DOD.35 There are many varied market niches that could be filled by small reactors, because there are many different applications and settings in which they can be used, and it is quite possible that some of those niches will be compatible with DOD’s interests.36 On the other hand, DOD may have specific needs (transportability, for instance) that would not be a high priority for any other market segment. Moreover, while DOD has unique technical and organizational capabilities that could enable it to pursue more radically innovative reactor lines, DOE has indicated that it will focus its initial small reactor deployment efforts on LWR designs.37 **If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now**. Taking a first mover role does not necessarily mean that DOD would be “picking a winner” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, **DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.** Domestic Nuclear Expertise. From the perspective of larger national security issues, if DOD does not catalyze the small reactor industry, there is a risk that expertise in small reactors could become dominated by foreign companies. A 2008 Defense Intelligence Agency report warned that the United States will become totally dependent on foreign governments for future commercial nuclear power unless the military acts as the prime mover to reinvigorate this critical energy technology with small, distributed power reactors.38 Several of the most prominent small reactor concepts rely on technologies perfected at Federally funded laboratories and research programs, including the Hyperion Power Module (Los Alamos National Laboratory), NuScale (DOE-sponsored research at Oregon State University), IRIS (initiated as a DOE-sponsored project), Small and Transportable Reactor (Lawrence Livermore National Laboratory), and Small, Sealed, Transportable, Autonomous Reactor (developed by a team including the Argonne, Lawrence Livermore, and Los Alamos National Laboratories). However, there are scores of competing designs under development from over a dozen countries. If DOD does not act early to support the U.S. small reactor industry, there is a chance that the industry could be dominated by foreign companies. Along with other negative consequences, the decline of the U.S. nuclear industry decreases the NRC’s influence on the technology that supplies the world’s rapidly expanding demand for nuclear energy. Unless U.S. companies begin to retake global market share, in coming decades France, China, South Korea, and Russia will dictate standards on nuclear reactor reliability, performance, and **proliferation resistance**.

#### It’s safe and bypasses the NRC

Loudermilk 11

Micah J. Loudermilk, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, 5/31/11, Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs, [www.ensec.org/index.php?option=com\_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375](http://www.ensec.org/index.php?option=com_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375)

Path forward: Department of Defense as first-mover Problematically, despite the immense energy security benefits that would accompany the wide-scale adoption of small modular reactors in the US, with a difficult regulatory environment, anti-nuclear lobbying groups, skeptical public opinion, and of course the recent Fukushima accident, the nuclear industry faces a tough road in the battle for new reactors. While President Obama and Energy Secretary Chu have demonstrated support for nuclear advancement on the SMR front, progress will prove difficult. However, a potential route exists by which small reactors may more easily become a reality: the US military. The US Navy has successfully managed, without accident, over 500 small reactors on-board its ships and submarines throughout 50 years of nuclear operations. At the same time, serious concern exists, highlighted by the Defense Science Board Task Force in 2008, that US military bases are tied to, and almost entirely dependent upon, the fragile civilian electrical grid for 99% of its electricity consumption. To protect military bases’ power supplies and the nation’s military assets housed on these domestic installations, the Board recommended a strategy of “islanding” the energy supplies for military installations, thus ensuring their security and availability in a crisis or conflict that disrupts the nation’s grid or energy supplies. DOD has sought to achieve this through decreased energy consumption and renewable technologies placed on bases, but these endeavors will not go nearly far enough in achieving the department’s objectives. However, by placing small reactors on domestic US military bases, DOD could solve its own energy security quandary—providing assured supplies of secure and constant energy both to bases and possibly the surrounding civilian areas as well. Concerns over reactor safety and security are alleviated by the security already present on installations and the military’s long history of successfully operating nuclear reactors without incident. Unlike reactors on-board ships, small reactors housed on domestic bases would undoubtedly be subject to Nuclear Regulatory Commission (NRC) regulation and certification, however, with strong military backing, adoption of the reactors may prove significantly easier than would otherwise be possible. Additionally, as the reactors become integrated on military facilities, general fears over the use and expansion of nuclear power will ease, creating inroads for widespread adoption of the technology at the private utility level. Finally, and perhaps most importantly, action by DOD as a “first mover” on small reactor technology will preserve America’s badly struggling and nearly extinct nuclear energy industry. The US possesses a wealth of knowledge and technological expertise on SMRs and has an opportunity to take a leading role in its adoption worldwide. With the domestic nuclear industry largely dormant for three decades, the US is at risk of losing its position as the global leader in the international nuclear energy market. If the current trend continues, the US will reach a point in the future where it is forced to import nuclear technologies from other countries—a point echoed by Secretary Chu in his push for nuclear power expansion. Action by the military to install reactors on domestic bases will guarantee the short-term survival of the US nuclear industry and will work to solidify long-term support for nuclear energy. Conclusions In the end, small modular reactors present a viable path forward for both the expansion of nuclear power in the US and also for enhanced US energy security. Offering highly safe, secure, and proliferation-resistant designs, SMRs have the potential to bring carbon-free baseload distributed power across the United States. Small reactors measure up with, and even exceed, large nuclear reactors on questions of safety and possibly on the financial (cost) front as well. SMRs carry many of the benefits of both large-scale nuclear energy generation and renewable energy technologies. At the same time, they can reduce US dependence on fossil fuels for electricity production—moving the US ahead on carbon dioxide and GHG reduction goals and setting a global example. While domestic hurdles within the nuclear regulatory environment domestically have proven nearly impossible to overcome since Three Mile Island, military adoption of small reactors on its bases would provide energy security for the nation’s military forces and may create the inroads necessary to advance the technology broadly and eventually lead to their wide-scale adoption.

#### DOD SMRs key to water diplomacy---only way to ensure effective supplies in drought-affected areas

Pfeffer, 1

(Physical Scientist- Army Nuclear and Chemical Agency, MS-Physics at Johns Hopkins, “Nuclear Power: An option for the Army’s Future,” http://www.almc.army.mil/alog/issues/SepOct01/MS684.htm)

The idea of using nuclear power to produce synthetic fuels, originally proposed in 1963, remains feasible today and is gaining significant attention because of recent advances in fuel cell technology, hydrogen liquefaction, and storage. At the same time, nuclear power has become a significant part of the energy supply in more than 20 countries—providing energy security, reducing air pollution, and cutting greenhouse gas emissions. The performance of the world's nuclear power plants has improved steadily and is at an all-time high. Assuming that nuclear power experiences further technological development and increased public acceptance as a safe and efficient energy source, its use will continue to grow. Nuclear power possibly could provide district heating, industrial process heating, desalination of seawater, and marine transportation. Demand for cost-effective chemical fuels such as hydrogen and methanol is expected to grow rapidly. Fuel cell technology, which produces electricity from low-temperature oxidation of hydrogen and yields water as a byproduct, is receiving increasing attention. Cheap and abundant hydrogen eventually will replace carbon-based fuels in the transportation sector and eliminate oil's grip on our society. But hydrogen must be produced, since terrestrial supplies are extremely limited. Using nuclear power to produce hydrogen offers the potential for a limitless chemical fuel supply with near-zero greenhouse gas emissions. As the commercial transportation sector increasingly moves toward hydrogen fuel cells and other advanced engine concepts to replace the gasoline internal combustion engine, DOD eventually will adopt this technology for its tactical vehicles. The demand for desalination of seawater also is likely to grow as inadequate freshwater supplies become an urgent global concern. Potable water in the 21st century will be what oil was in the 20th century—a limited natural resource subject to intense international competition. In many areas of the world, rain is not always dependable and ground water supplies are limited, exhausted, or contaminated. Such areas are likely to experience conflict among water-needy peoples, possibly prompting the deployment of U.S. ground forces for humanitarian relief, peacekeeping, or armed intervention. **A mobile desalination plant using waste heat from a nuclear reactor could help prevent conflicts** or **provide emergency supplies of freshwater to indigenous populations**, and to U.S. deployed forces if necessary. Promising Technology for Tomorrow Compact reactor concepts based on high-temperature, gas-cooled reactors are attracting attention worldwide and could someday fulfill the role once envisioned for the energy depot. One proposed design is the pebble bed modular reactor (PBMR) being developed by Eskom in South Africa. Westinghouse, BNFL Instruments Ltd., and Exelon Corporation currently are supporting this project to develop commercial applications. A similar design is the remote site-modular helium reactor (RS-MHR) being developed by General Atomics. If proven feasible, this technology could be used to replace retiring power plants, expand the Navy's nuclear fleet, and provide mobile electric power for military or disaster relief operations. Ideally, modular nuclear power plants could be operated by a small staff of technicians and monitored by a central home office through a satellite uplink. The technology of both the PBMR and the RS-MHR features small, modular, helium-cooled reactors powered by ceramic-coated fuel particles that are inherently safe and cannot melt under any scenario. This results in simpler plant design and lower capital costs than existing light water reactors. The PBMR, coupled with a direct-cycle gas turbine generator, would have a thermal efficiency of about 42 to 45 percent and would produce about 110 megawatts of electricity (MWe). The smaller RS-MHR would produce about 10 to 25 MWe, which is sufficient for powering remote communities and military bases. Multiple modules can be installed on existing sites and refueling can be performed on line, since the fuel pebbles recycle through the reactor continuously until they are expended. Both designs also feature coolant exit temperatures high enough to support the thermochemical water-splitting cycles needed to produce hydrogen. For military applications, RS-MHR equipment could be transported inland by truck or railroad, or single modules could be built on barges and deployed as needed to coastal regions. The Army's nuclear reactor on the barge Sturgis, which provided electric power to the Panama Canal from 1968 to 1976, demonstrated the feasibility of this concept. In fact, the military previously used several power barges (oil-fired, 30-MWe power plants) during World War II and in Korea and Okinawa as emergency sources of electric power. Research teams around the world also are examining other reactor concepts based on liquid-metal-cooled reactor systems with conventional sodium or lead-alloy coolants and advanced water-cooled systems. The Department of Energy (DOE) is supporting research and development of innovative concepts that are based on ultra-long-life reactors with cartridge cores. These reactors would not require refueling, and they could be deployed in the field, removed at the end of their service life, and replaced by a new system. The proposed international reactor innovative and secure (IRIS) design, funded by DOE's Nuclear Energy Research Initiative, would have a straight burn core lasting 8 years and may be available by 2010. Based on increasing costs of fossil fuels, a growing consensus that greenhouse gas emissions must be reduced, and a growing demand for energy, there is little doubt that we will continue to see significant advances in nuclear energy research and development. Nuclear power is expected to grow in the 21st century, with potential benefits applicable to the military. Small, modular nuclear power reactors in mobile or portable configurations, coupled with hydrogen production and desalination systems, could be used to produce fuel and portable water for combat forces deployed in remote areas and reduce our logistics requirements. Assuming the inevitability of hydrogen fuel replacing fossil fuels, a clearly defined objective that was missing in 1966 now exists. The partnership between DOD and the former AEC to develop Army nuclear reactors contributed to the technology of both military and small commercial power plants. This historical relationship should be renewed based on recent technological advances and projected logistics requirements. DOD logistics planners should reconsider military applications of nuclear power and support ongoing DOE research and development initiatives to develop advanced reactors such as RS-MHR, IRIS, and others. For the Army to fight and win on tomorrow's distant battlefields, nuclear power will have to play a significant role.

#### Military SMRs key to mobile desalination and water delivery—only energy source that solve

Butler 10

Lieutenant Colonel, Glen, Why the Marine Corps should lead the environmental and energy way forward and how to do it http://www.mca-marines.org/gazette/not-green-enough

Environmental and energy (E2) issues have been politically ladened topics throughout their existence in the public’s consciousness. In the 1970s, E2-concerned citizens were stereotypically depicted as hippies building solar farms on communes, although OPEC’s (Organization of Petroleum Exporting Country’s) actions and the oil embargo of 1973 shot fuel dependency into the mainstream. Nevertheless, the country took little sustained notice after a brief period of heightened concern. In the 1980s and 1990s, the Marine Corps’ E2 was largely focused on compliance with existing regulations, prevention of oil spills and hazardous material incidents, and stewardship of threatened or endangered species. However, “green fever” transitioned E2 from an emotional peacenik mantra—first into the marketer’s delight, and more recently, into genuine national concern. The government, for its part, has brought in another important consideration particularly emphasized within the last few years—E2 as a national security linchpin.1 Whether you stand behind global warming or “climategate” matters little; we as Marines should understand that these issues are not Republican or Democrat and not a mere debate between Al Gore and Sean Hannity.2 E2 issues are now at the forefront of everything we do, validated by a preponderance of Federal directives and related military mandates. Both the Secretary of the Navy (SecNav) and Commandant of the Marine Corps (CMC) have made their positions clear via broad and innovative guidance.3 From the CMC’s Marine Energy Assessment Team and Expeditionary Energy Office to Secretary Raymond Mabus’ “Great Green Fleet,”4 the Navy-Marine Team has never had stronger green leadership. Nevertheless, **the Marine Corps has yet to fully seize the moment and take truly bold and daring steps.** Most every Service and successful organization has embraced the green revolution in some form, but **the Marine Corps has work remaining if it desires to lead the charge in typical Marine fashion**. With support to our combat deployed forces remaining the number one priority, it is understandable that expeditionary energy is the focus. But if installations are truly the fifth element of the MAGTF,5 this emphasis must be broadened to include warfighters’ stateside homes. There are many avenues in the E2 arena to accomplish this; here are just a few recommendations. Back Policy With Resources Much green verbiage today is delivered in neat, round goals (“reduce XXX 20 percent by 2020,” etc.) bathed in cliché ecoterms like “alternative,” “renewable,” “clean,” and “sustainable.”6 Yet without resources to support those goals, this is but a promulgation of the ends but not the ways or means. To help correct this problem the Marine Corps should lead endeavors for joint force planning, identify potentially synergetic projects, lobby for substantial E2-targeted resources,7 and develop more Marine-specific, Corps-wide guidance to secure future mission capabilities. Continue Multifaceted Approach, but Standardize Best Practices Many significant E2 initiatives exist across the Corps, yet most remain a patchwork of uncoupled and often competing efforts cobbled together by energetic commanders and creative action officers. We need a centralized, web-based hub to share best practices, voice concerns, and foster additional E2 learning,8 and all bases and stations should establish dedicated, robust energy websites.9 Although installations should retain a degree of flexibility to suit local nuances of region, they should capitalize on successful programs by replication through directives and with resources from the top; where good ideas exist, adopt these best practices Service-wide.10 Pursue bold, long-term programs but also easy quick-kills to show progress and produce a gradual paradigm shift.11 Even so, be leery of excessive “innovations” that substitute unnecessary inconvenience (like trayless mess halls) in place of education and impractical rationing that ignores realities of operational requirements, mission expansion, and population growth.12 Focus on educating Marines and families to make proper choices. Enhance Education For better linkage with our Operating Forces, infuse the E2 sector across the fifth element with uniformed Marines. Just as developing computer/Internet technology and operations necessitated the creation of new computer-related MOSs/billets in the 1990s, so too should we now lean forward and inject professionally trained active duty officers into the E2 field (not just civilian logisticians).13 Higher level guidance on E2 issues is (overly) abundant,14 yet the education piece—(key to drive a cultural shift and often the most effective method for positive change) is severely lacking. Our resident and nonresident professional military education curricula lack any modern E2 instruction.15 The majority of actionable and educational initiatives are left to the local commander’s own resourcefulness. In addition to attendance at E2 conferences16 and liaison between the new Marine Corps/Navy Energy Offices, the Marine Corps should collaborate with our Navy leadership to develop high-quality educational programs, available on a variety of levels (from MarineNet to The Basic School to the war colleges to the Naval Postgraduate School), to ensure that our next generation of Marines and sailors is poised to lead the way forward in E2 fields, including renewable, alternative and, yes, nuclear energy technologies. Consider Nuclear Power On 16 March 1979, The China Syndrome opened in theaters across the country, depicting a fictitious story about a reporter witnessing an accident at the Ventanna nuclear plant outside Los Angeles and the subsequent evil plot to suppress the truth. Twelve days later the Three Mile Island partial core meltdown in Pennsylvania helped propel The China Syndrome to theatrical success and permanently scarred the American psyche. The nail in the nuclear energy coffin was the nuclear disaster 7 years later at Chernobyl, in the Ukrainian Soviet Socialist Republic.17 But despite these stains on the nuclear power industry, the time has never been better for the Marine Corps (and Navy) to dive in than now. Here’s why. First, the political climate, though still tenuous, is shifting to favorable, with the change coming from the top down. During his 27 January 2010 State of the Union address, President Barack Obama echoed themes from his campaign trail by clearly voicing his intention to include nuclear power in American’s playbook of energy security options.18 Similarly, as the Department of Energy’s (DoE’s) Secretary of Energy, Steven Chu has articulated similar sentiments, declaring that “President Obama and I are committed to restarting the nuclear industry in the United States.”19 Many other political leaders and policymakers indeed support a true “nuclear renaissance,”20 and the growing momentum stands a chance to bury the ghosts of Chernobyl once and for all. Second, with our **well-replicated but limited pursuit of the standard renewable energies,21 we’re putting all energy eggs in one basket, a vessel unlikely to hold a sufficient load for success**. Currently pursued renewable energy sources do have limitations.22 More importantly, with military installations relying almost exclusively on external sources for energy, and those sources largely unpredictable, unsecured, and reliant on foreign-based oil,23 if energy security is truly a national security issue, then nuclear power should be considered. Solar demonstrations at Miramar and Barstow are not enough. Third, nuclear technology today has advanced well beyond the days of Three Mile Island. Specifically, small modular reactors (**SMRs) offer great potential to safely and effectively provide energy island/net zero capabilities to Marine Corps** and Navy **installations** across the country.24 SMRs have relatively low plant cost, can replace aging fossil plants, and do not emit greenhouse gasses. Some are as small as a “hot tub” and can be stored underground, dramatically increasing safety and security from terrorist threats.25 Encouragingly, in fiscal year 2010 (FY10) the DoE allocated $0 to the U.S. SMR Program; in FY11, they’ve requested $38.9 million. This funding is to support two main activities—public/private partnerships to advance SMR designs and research and development and demonstrations. According to the DoE’s website, one of the planned program accomplishments for FY11 is to “collaborate with the Department of Defense (DoD) . . . to assess the feasibility of SMR designs for energy resources at DoD installations.”26 The Marine Corps should vigorously seek the opportunity to be a DoD entity providing one platform for this feasibility assessment.27 Fourth, SMR technology offers the Marine Corps another unique means to lead from the front—not just of the other Services but also of the Nation, and even the world.28 This potential Pete Ellis moment should be seized. There are simple steps we could take,29 and others stand ready to lead if we are not.30 But **the temptation to “wait and see**” and “let the others do it; **then we’ll adopt it” mentality is not always best.** Energy security demands boldness, not timidity. To be fair, nuclear technology comes with challenges, of course, and with questions that have been kicked around for decades. An April 1990 Popular Science article asked, “Next Generation Nuclear Reactors—Dare we build them?” and included some of the same verbiage heard in similar discussions today.31 Compliance with National Environment Policy Act requirements necessitates lengthy and detailed preaction analyses, critical community support must be earned, and disposal challenges remain. Still, none of these hurdles are insurmountable.32 Yet despite the advances in safety, security, and efficiency in recent years, nuclear in the energy equation remains the new “n-word” for most military circles. And despite the fact that the FY10 National Defense Authorization Act called on the DoD to “conduct a study [of] the feasibility of nuclear plants on military installations,” the Office of the Secretary of Defense has yet to fund the study.33 Fifth, the cumbersome, bureaucratic certification process of the Nuclear Regulatory Commission (NRC), often enough to scare away potential entrepreneurs and investors, is not necessarily a roadblock to success. The NRC is “responsible for licensing and regulating the operation of commercial nuclear power plants in the United States.” Military installations offer unique platforms that could likely bypass an extended certification process. With established expertise and a long safety record in nuclear reactor certification, operations, training, and maintenance, the Naval Nuclear Propulsion Program comprises the civilian and military personnel who: . . . design, build, operate, maintain, and manage the nuclear-powered ships and the many facilities that support the U.S. nuclear-powered naval fleet.”34 Bypassing the NRC and initiating SMR experimentation under ADM Hyman Rickover’s legacy umbrella of naval reactors could shorten the process to a reasonable level for Marine and naval installations.35 Finally, Marine Corps-SMR technology opens the pathway for related endeavors and synergetic undertakings. The Army has several smart and influential individuals poised to partner in nuclear energy endeavors, and our naval brethren enjoy a long history of nuclear reactor expertise. Partnerships and enhanced use leases to support SMR deployments should be leveraged.**36 As the collective military expertise in SMR technology grows**, additional capabilities, such as expeditionary and vehicular power sources, could be explored. And **related technologies, such as** hybrid/electric vehicle power storage and recharging facilities and **water desalination plants, could collocate with nuclear plants on installations to both use the energy.**37 Explore Desalination Desalination is another evolving technology that many avoid discussing, mainly because it is still a very expensive and immature technology with problems such as high energy consumption, brine disposal, and potential for harm to marine life. But once again, fear of the challenges should not prevent expanded exploration in this area. Worldwide, there are over 13,000 desalination plants, collectively producing more than 12 billion gallons of water each day, many of them in the Middle East, but the trend is spreading to the United States.38 Camp **Pendleton surfaced** in 2009 **as a potential** desalination **plant location, but the official Marine Corps stance has been hesitant** rather than an eager courtship of the opportunity.39 Indeed, many major Marine bases are in coastal areas and could benefit from SMR/desalination cogeneration plants. Potential **future Marine sites** like Guam could undeniably benefit from such advancements,40 and as the number of reverse osmosis sites increases, the cost per unit will decrease. The CMC has repeatedly explained how the Marine Corps Warfighting Laboratory looked 25 years into the future and believes that, by then, **water will be as precious a commodity as oil**, so the time to start preparing for that dire situation is now.41 Overall, the Navy-Marine Team has made huge strides in the E2 fields, yet much remains to be accomplished. E2 is more than compact fluorescent lightbulbs and protection of sea turtles and tern nests. The warfighting mission will always come first, but combat mission accomplishment and E2 goals are not mutually exclusive; the first can be strengthened through the latter. When considering the Marine Corps’ Service Campaign Plan 2009–2015,42 we should remember that one of the CMC’s seven main focus areas in his planning guidance is to “Posture the Marine Corps for the Future.” A decade ago, some discussed the “Revolution in Military Affairs.” Now is the time to be bold and daring, to recognize that the Marine Corps is not yet green enough. Now is the time to embark on a revolution in environmental and energy affairs. Our natural, and national, security depends on it.43 “What the Navy and Marine Corps are doing now is great, but I am here to encourage you and us to go farther—to dream what might be rather than to simply accept what is. Bold steps are in our nature as Americans and what make us a great nation; no one has ever gotten anything big done by being timid.”

#### Domestic military demonstration spills-over

Galloway 10

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

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

#### Water assistance vital to effective public diplomacy—key to combat perception of American foreign policy as militarized

Seib, 10

(Professor of journalism and public diplomacy and director of the Center on Public Diplomacy-USC, Considering Water Diplomacy, 6/29, http://www.huffingtonpost.com/philip-seib/considering-water-diploma\_b\_629487.html)

The vitality and seriousness with which the institute addresses such issues is a reminder **that water-related assistance is an underused tool of public diplomacy**. Rather than an "advertising" approach to public diplomacy ("We are wonderful! Love us!"), water diplomacy answers a crucial question often asked by recipients of public diplomacy efforts but just as often ignored by public diplomacy planners: "What can you do for us?" Throughout the world, few things are more precious than a safe and abundant water supply. **A country that can help another nation improve the availability and quality of water is likely to win friends, regardless of how the respective governments get along**. Water diplomacy is an excellent tool for the United States to use in improving relations with Syria, which is enduring a prolonged drought, and other **countries where the public has been indifferent or even hostile toward American interests, but would welcome water-related assistance.** Public diplomacy does not need to be a unilateral enterprise. Engaging in water diplomacy offers the United States an opportunity to develop international partnerships for creating and delivering public diplomacy programs. A U.S.-Singapore joint venture in this field would enhance both countries' credentials as leaders in improving lives throughout the world, and for the United States it would be an improvement on the go-it-alone approach that characterizes much of its foreign policy. Private sector participation by foundations and corporations should be another facet of such partnerships, and could include funding for research into ways to combat water-borne diseases. Developing the concept of water diplomacy requires an essential, but often neglected, element of public diplomacy: imagination. Too much public diplomacy today has become a process of simply going through the motions in overblown public relations campaigns that misjudge the needs and underestimate the sophistication of global publics. **Actually improving people's lives** is given short shrift, and as a result public diplomacy fails to reach its potential as a means of advancing national interests.

#### Public diplomacy key to AFRICOM effectiveness

Seib, 9

(Professor of Public Diplomacy & International Relations-USC, America’s New Approach to Africa: AFRICOM and Public Diplomacy, http://uscpublicdiplomacy.org/CPD\_Perspectives.pdf)

Regardless of what reasons are proffered for AFRICOM’s importance, public diplomacy is often cited as **an essential element of the command’s work**. Ryan Henry, principal deputy undersecretary of defense for policy, has stated that “AFRICOM, at its core, is about public diplomacy, which is **critical to its mission** and how we as a nation compete not only in Africa but in the wider marketplace of ideas concerning governance and security facing key regions, critical indigenous peoples, and global stakeholders throughout the world today. Whether you want to call it ‘soft power’ or ‘smart power,’ or even just ‘the right power,’ the bottom line is we have created, for a variety of reasons, a national security structure that today is currently out of balance and is biased toward the military toolset.” He added: “AFRICOM is a risk-laden experiment on the part of government and the Department of Defense specifically on how to more holistically engage the continent of Africa, a specific region of emerging interest. **And public diplomacy is a fundamental element of its success**. **We cannot continue to pursue 21st century missions** in an information digital network age with bureaucratic constructs and thinking laid out as part of the Industrial Age in the aftermath of World War II.” Despite efforts by Gates and his deputies to assuage **concerns about further militarization of U.S. foreign policy**, such worries **cast a shadow on AFRICOM’s prospects**. As the Barack Obama administration begins, the Pentagon’s role in public diplomacy is still being defined. So too is the American view of Africa and Africa’s perception of America.

#### Solves global climate adaptation

Yackle, 7

(MA -Naval War College, “Global Climate Change: Threat Multiplier for AFRICOM?,” http://www.dtic.mil/dtic/tr/fulltext/u2/a476789.pdf)

Adaptation is not a proactive approach - it is purely reactive. Should the combatant commander fail to start planning for climate change then the response will continue to be a reactive force vice a proactive force. Africa’s population size produces an unprecedented number of people who are competing for the same basic needs – food, water, and shelter. The availability of these necessities is diminishing due in part to global climate change. When access to water, for example, is becoming so scarce, people’s desperation for survival leads to irrational behavior. Darfur is the first climate change war and should provoke planning to mitigate the risks of similar conflicts. History sets a foundation for planning; however, as the situation changes, so must the planning. Water scarcity is now being mitigated through the production of fossil aquifers and wastewater reclamation. More and more conflicts are driven by internal and local pressures. Poverty and instability are changing the national security issues. Climate change is presenting a serious threat to resources that create the world-wide balance that we are accustomed to. It will affect an unprecedented number of people simultaneously. Africa will suffer more than other nations from the effects of climate change, yet it has the least ability to survive by merely adapting. “Climate change could exacerbate current instability in Africa in a number of ways. Droughts, floods, and other effects of climate change could lead to crop failures, massive refugee flows, and significant damage to African economies and societies. The chaos and desperation of these tragedies could help undermine governments, increase civil unrest, and promote extremism in a number of countries.” – General Ward The expansive impact of climate change in Africa will require multinational and multi-agency cooperation, supported by the military range of operations, on a much broader scale than is currently projected. Previous attention to environmental scarcities has been focused at the tactical level. For instance, CJTF-HOA has been involved in the critical tasks of infrastructure reconstruction, drilling wells for water, building roads and renovating schools, and military training to assist in counterterrorism efforts. A recent change, illustrated by the UN’s first climate change brief, has moved the discussion to the national and strategic level. As a result, U.S. leaders are now identifying climate change as a global threat multiplier and recognizing the need to protect national interests as well as state stability throughout Africa. Addressing climate change at both the tactical and national levels is crucial for planning to mitigate the effects; however, the geographic combatant commander at the operational level must also be actively involved. The African commander must be prepared for the predicted changes that will occur as a result of global climate change. The potential for an increased magnitude of humanitarian assistance and disaster relief support is intrinsically linked to controlling instability throughout the region. Environmental scarcity used to be a regional problem; however, the predicted global effects now require it to be considered when planning stability operations. Scarcity also affects the economy and is a source of human migration. A weak government, further weakened into a failed state when unable to cope with climate change effects, will result in regional conflicts and power struggles. Now is the time for AFRICOM to take the initiative and plan for this impending threat. Subsequently, an interagency response is needed for the operations that shape theaters in order to promote stability and peace – Phase Zero operations. Fortunately, AFRICOM has a unique command and control structure that will be partially staffed with senior civilian representation providing capability to plan and execute Phase Zero operations effectively. This structure will enable the combatant commander to engage the government, nongovernment relief agencies, and international assistance agencies to build African government capacity and infrastructure so they will be able to confront global climate change as it occurs. Also, the interagency response will be more effectual within a new Joint Interagency Coordination Group for Climate Change (JIACG-CC). This internal command JIACG-CC would be comprised of personnel from both the Civil-Military Activities and the Military Operations components to cultivate a unity of effort. No additional man-power would be required given that the JIAC-CC would be comprised of personnel currently employed at the command. This new JIAC-CC would be a temporary planning cell formed to fill the void of current direction from a higher authority to plan for climate change. Moreover, this planning will be different in nature to traditional military planning as it does not have a known timeframe. Thus, climate change may happen catastrophically in the short-term or evolve at a more gradual pace. The speed of the change and the extent to which it occurs will necessitate contingencies for both short-range and long-term planning. As such, the planning cell will need to create plans for both timeframes and further define them to separate African geographic regions. Once these plans are created for each region, the planning cell will need continuously update the plans as the onset of climate change dictates. The JIAC-CG **will not only prepare AFRICOM but serve as a learning tool for other geographic commands to emulate**. Furthermore, AFRICOM has the opportunity to learn from and use the initiatives that CJTF-HOA has already developed. The CJTF’s experience and cultural sensitivity will offer immense benefits for the new African command to garner as it becomes operational in its Area of Responsibility. Should CJTF-HOA remain under the U.S. Central Command structure, a coordination cell between the two combatant commanders will need to be created to streamline the effort between the two commands. Lastly, the combatant commander should take advantage of centers such as the Naval War College’s War Gaming Department to exercise the new response plans. Consequently, the African commander’s role in planning for climate change will create a more structured and focused reaction to the effects of climate change. Without prior planning, reactionary chaos will likely be the result and the U.S will have lost a positive step towards acting proactively with its African partner. Although the African combatant commander does not have the formal tasking to plan for the effects of global climate change, taking the initiative to plan for it now will ensure readiness to deal with the catastrophic events predicted. Stability in Africa is important for protecting U.S. strategic and economic interests. In accessing future threats, environmental scarcities have a role in promoting regional tensions and conflict, such as seen in Darfur, coupled with the exportation of terrorism. Moreover, large population migrations and permanent displacement of people will need to be prevented for both economic and political ramifications. Stability on this continent hinges on mitigating the effects of global climate change. A unity of effort generated within the unique African command structure to create a JIATF-Climate Change would effectively fill the interlude from current lack of directed Department of Defense planning for climate change. Accordingly, not only will the time gap be proactively filled, the effects of this new threat will be mitigated. Additionally, the JIACG-CC’s interim structure would ensure multinational, multiagency and military efforts in the African Area of Responsibility are synchronized and implemented with utmost efficiency and effectiveness. Immediate planning will allow for more coordinated and proportional responses to the speed and onset of climate change. In conclusion, pessimism when faced with such an enormous problem may overwhelm, but proactive and timely planning to tackle wicked problems will produce manageable solutions. The AFRICOM combatant commander has the opportunity to proactively plan for a threat that demands a military problem-solving-like approach.

#### Extinction

Romero, 8

(Purple, reporter for ABS-CBN news, 05/17/2008, Climate change and human extinction--are you ready to be fossilized? http://www.abs-cbnnews.com/nation/05/16/08/climate-change-and-human-extinction-are-you-ready-be-fossilized)

Climate change killed the dinosaurs. Will it kill us as well? Will we let it destroy the human race? This was the grim, depressing message that hung in the background of the Climate Change Forum hosted on Friday by the Philippine National Red Cross at the Manila Hotel. "Not one dinosaur is alive today. Maybe someday it will be our fossils that another race will dig up in the future, " said Roger Bracke of the International Federation of Red Cross and Red Crescent Societies, underscoring his point that no less than extinction is faced by the human race, unless we are able to address global warming and climate change in this generation. Bracke, however, countered the pessimistic mood of the day by saying that the human race still has an opportunity to save itself. This more hopeful view was also presented by the four other speakers in the forum. Bracke pointed out that all peoples of the world must be involved in two types of response to the threat of climate change: mitigation and adaptation. "Prevention" is no longer possible, according to Bracke and the other experts at the forum, since climate change is already happening. Last chance The forum's speakers all noted the increasing number and intensity of devastating typhoons--most recently cyclone Nargis in Myanmar, which killed more than 100,000 people--as evidence that the world's climatic and weather conditions are turning deadly because of climate change. They also reminded the audience that deadly typhoons have also hit the Philippines recently, particularly Milenyo and Reming, which left hundreds of thousands of Filipino families homeless. World Wildlife Fund Climate and Energy Program head Naderev Saño said that "this generation [is] the last chance for the human race" to do something and ensure that humanity stays alive in this planet. According to Saño, while most members of our generation will be dead by the time the worst effects of climate change are felt, our children will be the ones to suffer. How will Filipinos survive climate change? Well, first of all, they have to be made aware that climate change is a problem that threatens their lives. The easiest way to do this – as former Consultant for the Secretariats of the UN Convention on Climate Change Dr. Pak Sum Low told abs-cbnews.com/Newsbreak – is to particularize the disasters that it could cause. Talking in the language of destruction, Pak and other experts paint this portrait of a Philippines hit by climate change: increased typhoons in Visayas, drought in Mindanao, destroyed agricultural areas in Pampanga, and higher incidence rates of dengue and malaria. Sañom said that as polar ice caps melt due to global warming, sea levels will rise, endangering coastal and low-lying areas like Manila. He said Manila Bay would experience a sea level increase of 72 meters over 20 years. This means that from Pampanga to Nueva Ecija, farms and fishponds would be in danger of being would be inundated in saltwater. Sañom added that Albay, which has been marked as a vulnerable area to typhoons, would be the top province at risk. Sañom also pointed out that extreme weather conditions arising from climate change, including typhoons and severe droughts, would have social, economic and political consequences: Ruined farmlands and fishponds would hamper crop growth and reduce food sources, typhoons would displace people, cause diseases, and limit actions in education and employment. Thus, Saño said, while environmental protection should remain at the top of the agenda in fighting climate change, solutions to the phenomenon "must also be economic, social, moral and political." Mitigation Joyceline Goco, Climate Change Coordinator of the Environment Management Bureau of the Department of Environment and Natural Resources, focused her lecture on the programs Philippine government is implementing in order to mitigate the effects of climate change. Goco said that the Philippines is already a signatory to global agreements calling for a reduction in the "greenhouse gasses"--mostly carbon dioxide, chloroflourocarbons and methane--that are responsible for trapping heat inside the planet and raising global temperatures. Goco said the DENR, which is tasked to oversee and activate the Clean Development Mechanism, has registered projects which would reduce methane and carbon dioxide. These projects include landfill and electricity generation initiatives. She also said that the government is also looking at alternative fuel sources in order do reduce the country's dependence on the burning of fossil fuels--oil--which are known culprits behind global warming. Bracke however said that mitigation is not enough. "The ongoing debate about mitigation of climate change effects is highly technical. It involves making fundamental changes in the policies of governments, making costly changes in how industry operates. All of this takes time and, frankly, we're not even sure if such mitigation efforts will be successful. In the meantime, while the debate goes on, the effects of climate change are already happening to us." Adaptation A few nations and communities have already begun adapting their lifestyles to cope with the effects of climate change. In Bangladesh, farmers have switched to raising ducks instead of chickens because the latter easily succumb to weather disturbances and immediate effects, such as floods. In Norway, houses with elevated foundations have been constructed to decrease displacement due to typhoons. In the Philippines main body for fighting climate change, the Presidential Task Force on Climate Change, (PTFCC) headed by Department on Energy Sec. Angelo Reyes, has identified emission reduction measures and has looked into what fuel mix could be both environment and economic friendly. The Department of Health has started work with the World Health Organization in strengthening its surveillance mechanisms for health services. However, bringing information hatched from PTFCC’s studies down to and crafting an action plan for adaptation with the communities in the barangay level remains a challenge. Bracke said that the Red Cross is already at the forefront of efforts to prepare for disasters related to climate change. He pointed out that since the Red Cross was founded in 1919, it has already been helping people beset by natural disasters. "The problems resulting from climate change are not new to the Red Cross. The Red Cross has been facing those challenges for a long time. However, the frequency and magnitude of those problems are unprecedented. This is why the Red Cross can no longer face these problems alone," he said. Using a medieval analogy, Bracke said that the Red Cross can no longer be a "knight in shining armor rescuing a damsel in distress" whenever disaster strikes. He said that disaster preparedness in the face of climate change has to involve people at the grassroots level. "The role of the Red Cross in the era of climate change will be less as a direct actor and increase as a trainor and guide to other partners who will help us adapt to climate change and respond to disasters," said Bracke. PNRC chairman and Senator Richard Gordon gave a picture of how the PNRC plans to take climate change response to the grassroots level, through its project, dubbed "Red Cross 143". Gordon explained how Red Cross 143 will train forty-four volunteers from each community at a barangay level. These volunteers will have training in leading communities in disaster response. Red Cross 143 volunteers will rely on information technology like cellular phones to alert the PNRC about disasters in their localities, mobilize people for evacuation, and lead efforts to get health care, emergency supplies, rescue efforts, etc.

## adv 2

#### Adv 2 hydrogen

#### SMR development allows hydrogen fuel cell transition—spills over to military transportation

Alt Energy Today, 10/25

(“Alternative Energy The Ways that the Military is Using,” http://www.alternative-energy-today.com/the-ways-that-the-military-is-using-alternative-energy/)

One thing that the military leaders stress is the desire for the forces deployed in the theater to be able to be more alternative energy-independent. Currently the US military has policies and procedures in place to interact with allies or sympathetic local populaces to help its forces in the field get their needed energy and clean water when engaged in a foreign military campaign. However, this is not wholly reliable, as the US might well find itself facing unilateral military activities, or have itself in a situation where its allies cannot help it with the resources it needs to conduct its military actions successfully. The US military is very interested in certain alternative energy that, with the right research and development technologically, can make it energy independent, or at least a great deal more so, on the battlefield. One of the things that greatly interests the military along these lines is **the development of small nuclear reactors,** which could be portable, for producing theater-local electricity. The military is impressed with how clean-burning nuclear reactors are and how energy efficient they are. Making them portable for the typical warfare of today’s highly mobile, small-scaled military operations is something they are researching. The most prominent thing that the US military thinks these small nuclear reactors **would be useful for** involves **the removal of hydrogen (for fuel cell) from seawater.** It also thinks that converting seawater to hydrogen fuel in this way would have less negative impact on the environment than its current practices of remaining supplied out in the field. **Seawater is, in fact, the military’s highest interest when it comes to the matter of alternative energy supply. Seawater can be endlessly “mined” for hydrogen, which in turn powers advanced fuel cells.** Using OTEC, seawater can also be endlessly converted into desalinated, potable water. Potable water and hydrogen for power are two of the things that a near-future deployed military force will need most of all. In the cores of nuclear reactors—which as stated above are devices highly interesting, in portable form, to the US military—we encounter temperatures greater than 1000 degrees Celsius. When this level of temperature is mixed with a thermo-chemical water-splitting procedure, we have on our hands the most efficient means of breaking down water into its component parts, which are molecular hydrogen and oxygen. The minerals and salts that are contained in seawater would have to be extracted via a desalination process in order to make the way clear for the water-splitting process. These could then be utilized, such as in vitamins or in salt shakers, or simply sent back to the ocean (recycling). **Using the power of nuclear reactors to extract this hydrogen from the sea, in order to then input that into fuel cells to power advanced airplanes, tanks, ground vehicles**, and the like, is clearly high on the R & D priority list of the military.

#### Tech is viable—just need hydrogen fuel

Chuck Squatriglia, Wired, 4/22/11, Discovery Could Make Fuel Cells Much Cheaper, www.wired.com/autopia/2011/04/discovery-makes-fuel-cells-orders-of-magnitude-cheaper/

One of the biggest issues with hydrogen fuel cells, aside from the lack of fueling infrastructure, is the high cost of the technology. Fuel cells use a lot of platinum, which is frightfully expensive and one reason we’ll pay $50,000 or so for the hydrogen cars automakers say we’ll see in 2015. That might soon change. Researchers at Los Alamos National Laboratory have developed a platinum-free catalyst in the cathode of a hydrogen fuel cell that uses carbon, iron and cobalt. That could make the catalysts “two to three orders of magnitude cheaper,” the lab says, thereby significantly reducing the cost of fuel cells. Although the discovery means we could see hydrogen fuel cells in a wide variety of applications, it could have the biggest implications for automobiles. Despite the auto industry’s focus on hybrids, plug-in hybrids and battery-electric vehicles — driven in part by the Obama administration’s love of cars with cords — several automakers remain convinced hydrogen fuel cells are the best alternative to internal combustion. Hydrogen offers the benefits of battery-electric vehicles — namely zero tailpipe emissions — without the drawbacks of short range and long recharge times. Hydrogen fuel cell vehicles are electric vehicles; they use a fuel cell instead of a battery to provide juice. You can fill a car with hydrogen in minutes, it’ll go about 250 miles or so and the technology is easily adapted to everything from forklifts to automobiles to buses. Toyota, Mercedes-Benz and Honda are among the automakers promising to deliver hydrogen fuel cell vehicles in 2015. Toyota has said it has cut the cost of fuel cell vehicles more than 90 percent by using less platinum — which currently goes for around $1,800 an ounce — and other expensive materials. It plans to sell its first hydrogen vehicle for around $50,000, a figure Daimler has cited as a viable price for the Mercedes-Benz F-Cell (pictured above in Australia). Fifty grand is a lot of money, especially something like the F-Cell — which is based on the B-Class compact — or the Honda FCX Clarity. Zelenay and Wu in the lab. In a paper published Friday in Science, Los Alamos researchers Gang Wu, Christina Johnston and Piotr Zelenay, joined by Karren More of Oak Ridge National Laboratory, outline their platinum-free cathode catalyst. The catalysts use carbon, iron and cobalt. The researchers say the fuel cell provided high power with reasonable efficiency and promising durability. It provided currents comparable to conventional fuel cells, and showed favorable durability when cycled on and off — a condition that quickly damages inferior catalysts. The researchers say the carbon-iron-cobalt catalyst completed the conversion of hydrogen and oxygen into water, rather than producing large amounts of hydrogen peroxide. They claim the catalyst created minimal amounts of hydrogen peroxide — a substance that cuts power output and can damage the fuel cell — even when compared to the best platinum-based fuel cells. In fact, the fuel cell works so well the researchers have filed a patent for it. The researchers did not directly quantify the cost savings their cathode catalyst offers, which would be difficult because platinum surely would become more expensive if fuel cells became more prevalent. But the lab notes that iron and cobalt are cheap and abundant, and so the cost of fuel cell catalysts is “definitely two to three orders of magnitude cheaper.” “The encouraging point is that we have found a catalyst with a good durability and life cycle relative to platinum-based catalysts,” Zelenay said in a statement. “For all intents and purposes, this is a zero-cost catalyst in comparison to platinum, so it directly addresses one of the main barriers to hydrogen fuel cells.”

#### Navy developing new underwater capabilities now

Paul Szoldra, Business Insider, 1/17/13, The Pentagon Wants To Scatter Weapons Under The World's Oceans To Activate On Demand, www.businessinsider.com/navy-darpa-develop-underwater-weapon-upward-falling-payloads-ufp-2013-1

The U.S. Navy is attempting to develop a stealth underwater system capable of providing worldwide "operational support and situational awareness," according to a Jan. 11 release from the Defense Advanced Research Projects Agency (DARPA).

The announcement, called "Falling Up", cites cost and complexity that limits the Navy from operating over vast areas.

That makes a lot of sense, considering the cost of ships, which are expensive and limited in scope -keep going up.

And as the technology of unmanned systems has been realized in Iraq & Afghanistan with the use of drones, the Navy wants to get in on the action.

The concept of DARPA's Upward Falling Payloads (UFP) would be "deployable, unmanned, distributed systems that lie on the deep-ocean floor in special containers for years at a time." They can then be woken up remotely and recalled to the surface to send back data.

#### Hydrogen fuel cell critical to effectiveness

Cai et al 7

Cai, Browning, Brett, Brandona, Department of Earth Science and Engineering, Imperial College London, 2007, Hybrid Fuel Cell / Battery Power Systems for Underwater Vehicles, http://www.seasdtc.com/events/2008\_conference/downloads/pdf/propulsion\_power\_generation\_and\_energy\_management/PPEM003\_paper.pdf

A system-level design and analysis of the power system for a lightweight unmanned underwater vehicle (UUV) is presented with recommendations of viable technologies that can meet the UUV mission requirements. A hybrid fuel cell / battery system is designed to power the UUV as it has advantages over a pure fuel cell or battery system. The power system is designed to use a lithium-ion battery hybridised with a polymer electrolyte fuel cell. The analysis is focused on the mass, size, and the energy balance of the system components. It is shown that hydrogen and oxygen storage systems dominate the mass and volume of the energy system compared to the fuel cell and battery. Liquid oxygen is recommended for oxidant storage based on the mission length requirement.

Unmanned underwater vehicles (UUVs) are ideally suited to provide surveillance, remote sensing and communication relay capabilities for both military and civilian applications. Practical examples include oceanographic data gathering, environmental monitoring, mine detecting and coastal defence. The power system of a UUV has long been a major consideration in designing and manufacturing these vehicles for particular missions. This is because the power system usually determines the ultimate performance (e.g. **endurance, cruising speed and distance**) of a UUV. The work reported here aims to investigate viable power system architectures that meet the requirement of UUVs.

Stealth is the highest design priority of a UUV as it enables the UUV to operate anywhere, at any time, without being detected. Besides helping to avoid detection, stealth enhances a submarine’s ability (by eliminating / reducing selfnoise) to detect targets. To meet the stealth requirement, an air independent power (AIP) system is beneficial to UUVs. The ideal AIP source for a submarine will be quiet, have a low thermal signature, will not need to discharge anything from the submarine system, and will of course be capable of operating without atmospheric air. In its simplest form, the AIP power source is a battery. However, batteries alone encounter technology difficulties for use as the power source of UUVs, as current battery technologies cannot provide sufficient endurance to allow for large area coverage and short turnaround time between missions. Hybrid fuel cell / battery systems have a number of advantages over either stand-alone fuel cells or batteries. For example, the battery would enable instant cold-start operation whilst the fuel cell was initiating. The battery, as the dynamic energy storage device, would supply peak and pulse power and power for start-up of the hybrid system. The fuel cell, as the device that converts the energy from the fuel, supplies base-load power and recharges the battery. A hybrid system would allow both components to be of smaller dimensions and operate with higher efficiency, since neither would have to provide the full load power.

#### UUVs key to ISR and naval power

Troy Vandenberg, Naval Postgraduate School, 2010, Manning and maintainability of a submarine Unmanned Undersea Vehicle (UUV) program a systems engineering case study, https://calhoun.nps.edu/public/bitstream/handle/10945/5226/10Sep\_Vandenberg.pdf?sequence=1

Future naval battles will rely heavily on advantages gained through the combination of strategies, tactics, procedures, and technologies called network-centric warfare and implemented through the strategy of ForceNet. These ideas rely heavily on Joint Force assets working together with common communication nodes. Large-scale undersea networks, like those adhering to ForceNet, will be used heavily in the future of USW, with UUVs acting as crucial communication nodes to and from submarine and surface assets. The following subsections will outline three different submarine missions and the future involvement UUVs will have with those missions. Each of the three missions (ISR, Communications, and ASW) can be evaluated as part of the overall ForceNet image.

Many missions may require the submarine to have the ability to launch and recover a UUV, but this is not a necessary factor in analyzing the possible mission sets. Currently, launch and recovery efforts have been possible via torpedo tubes and vertical launch tubes, but none of the missions discussed in this thesis require this to happen. Moving forward in the militarization of UUVs, it is important to remove the “platformcentric” thinking of programs and analyze how systems can interact with other systems.

1. Intelligence, Surveillance, and Reconnaissance

One of the many examples of applying ForceNet to ISR for the submarine force is through a program titled Persistent Littoral Undersea Surveillance Network (PLUSNet), a multi-institution effort combining key government assets via ONR and Space and Naval Warfare Systems Command (SPAWAR). PLUSNet is an unmanned systems approach to undersea surveillance that involves the use of mature technologies. The system involved an autonomously processed cable-free nested communication network with fixed and mobile sensor nodes (Martin, 2005).

In any ISR example, including PLUSNet, there are four fundamental tasks necessary to complete the mission: collect, communicate, process, and act. These tasks are performed in various different ways by a number of unique systems (both manned and unmanned). In the case of UUVs, however, one vessel has the ability—given the appropriate payloads—to perform all four tasks on board. One UUV can include sensors that collect the data, a platform that communicates and processes the data, and an implementer on board that takes action via movement, external communication, or weapon deployment (Fletcher, 2001). This concept is currently the main focus of UUV platform development for the Navy, namely a single, multi-payload UUV that can handle long (greater than 30 days) ISR missions.

Figure 10. Operational concept of PLUSNet (From: Martin, 2005)

However, one UUV does not have to have all three systems (sensor, platform, and implementer) on board to perform the tasks, as is the case of collaboratively networked UUV groups. Instead of having one large scale UUV with multiple payloads performing multiple missions, the groups of small UUVs would include single payloads performing individual missions. These UUVs would then communicate data amongst themselves and/or a larger node (either a separate UUV or manned vessel) to gain a common operational picture of the battlespace. Currently, DARPA has given some funding to develop grouped UUV programs, but this is not the main focus of the submarine force.

In both cases, unmanned systems add a strategic advantage to the war-fighter and will allow friendly forces to gather ISR information from locations otherwise currently inaccessible or of high risk to manned systems. Possible ISR missions using these strategies include (Department of the Navy, 2004):

Deployment of leave-behind surveillance sensors or sensor arrays Specialized mapping and object detection and localization could deploy one or more UUVs a safe distance from the shoreline and sit out of harm’s way while they patrol harbors, collecting ISR data and eventually returning to the host platform to refuel, upload data, and receive necessary operator level maintenance. This mission will free up valuable time for the submarine and the Special Operating Forces (SOF) on board to perform other valuable missions. Ultimately, due to the simplistic nature and emerging technologies, the submarine ISR mission-set will see the first full scale use of UUVs.

2. Communications

Communication is an important aspect for all military operations. UGVs and UAVs have distinct advantages of being able to easily communicate large amounts of data over long distances in air. Underwater communications, however, are not quite as simple and pose many problems in the area of USW. One solution to the problem of undersea communication is a concept called “Seaweb.” Seaweb uses battery-limited sensor technology to set up a wide-area network with expendable network nodes. In an article entitled “Enabling Undersea ForceNET with Seaweb Acoustic Networks” in the Biennial Review 2003, author Joseph Rice of SPAWAR San Diego concluded that:

Undersea, off-board, autonomous systems will enhance the war-fighting effectiveness of submarines, maritime patrol aircraft, amphibious forces, battle groups, and space satellites. Wide-area sensor grids, leave behind multi-static sonar sources, mine-hunting robots, and AUVs are just a few of the battery-powered, deployable devices that will augment space and naval platforms. (Rice, 2003)

#### Nuclear war

Eaglen 11, research fellow for national security – Heritage, and McGrath, former naval officer and director – Delex Consulting, Studies and Analysis, 5/16/’11

(Mackenzie and Bryan, “Thinking About a Day Without Sea Power: Implications for U.S. Defense Policy,” Heritage Foundation)

Global Implications. Under a scenario of dramatically reduced naval power, **the** **U**nited **S**tates **would cease to be active in any international alliances.** While it is reasonable to assume that land and air forces would be similarly reduced in this scenario, the lack of credible maritime capability to move their bulk and establish forward bases would render these forces irrelevant, even if the Army and Air Force were retained at today’s levels. In Iraq and Afghanistan today, 90 percent of material arrives by sea, although material bound for Afghanistan must then make a laborious journey by land into theater.

China’s claims on the South China Sea, previously disputed by virtually all nations in the region and routinely contested by U.S. and partner naval forces, are accepted as a fait accompli, effectively **turning the region into a “Chinese lake.”** China establishes expansive oil and gas exploration with new deepwater drilling technology and secures its local sea lanes from intervention. Korea, unified in 2017 after the implosion of the North, signs a mutual defense treaty with China and solidifies their relationship.

Japan is increasingly isolated and in 2020–2025 executes long-rumored plans to create an indigenous nuclear weapons capability.[11] By 2025, Japan has 25 mobile nuclear-armed missiles ostensibly targeting China, toward which Japan’s historical animus remains strong.

China’s entente with Russia leaves the Eurasian landmass dominated by Russia looking west and China looking east and south. Each cedes a sphere of dominance to the other and remains largely unconcerned with the events in the other’s sphere.

Worldwide, trade in foodstuffs collapses. Expanding populations in the Middle East increase pressure on their governments, which are already stressed as the breakdown in world trade disproportionately affects food importers. Piracy increases worldwide, driving food transportation costs even higher.

In the Arctic, Russia aggressively asserts its dominance and effectively shoulders out other nations with legitimate claims to seabed resources. No naval power exists to counter Russia’s claims.

India, recognizing that its previous role as a balancer to China has lost relevance with the retrenchment of the Americans, agrees to supplement Chinese naval power in the Indian Ocean and Persian Gulf to protect the flow of oil to Southeast Asia. In exchange, China agrees to exercise increased influence on its client state Pakistan.

The great typhoon of 2023 strikes Bangladesh, killing 23,000 people initially, and 200,000 more die in the subsequent weeks and months as the international community provides little humanitarian relief. Cholera and malaria are epidemic.

Iran dominates the Persian Gulf and is a nuclear power. Its navy aggressively patrols the Gulf while the Revolutionary Guard Navy harasses shipping and oil infrastructure to force Gulf Cooperation Council (GCC) countries into Tehran’s orbit. Russia supplies Iran with a steady flow of military technology and nuclear industry expertise. Lacking a regional threat, the Iranians happily control the flow of oil from the Gulf and benefit economically from the “protection” provided to other GCC nations.

In Egypt, the decade-long experiment in participatory democracy ends with the ascendance of the Muslim Brotherhood in a violent seizure of power. The United States is identified closely with the previous coalition government, and riots break out at the U.S. embassy. Americans in Egypt are left to their own devices because the U.S. has no forces in the Mediterranean capable of performing a noncombatant evacuation when the government closes major airports.

Led by Iran, a coalition of Egypt, Syria, Jordan, and Iraq attacks Israel. Over 300,000 die in six months of fighting that includes a limited nuclear exchange between Iran and Israel. Israel is defeated, and the State of Palestine is declared in its place. Massive “refugee” camps are created to house the internally displaced Israelis, but a humanitarian nightmare ensues from the inability of conquering forces to support them.

The NATO alliance is shattered. The security of European nations depends increasingly on the lack of external threats and the nuclear capability of France, Britain, and Germany, which overcame its reticence to military capability in light of America’s retrenchment. Europe depends for its energy security on Russia and Iran, which control the main supply lines and sources of oil and gas to Europe. Major European nations stand down their militaries and instead make limited contributions to a new EU military constabulary force. No European nation maintains the ability to conduct significant out-of-area operations, and Europe as a whole maintains little airlift capacity.

Implications for America’s Economy. If the United States slashed its Navy and ended its mission as a guarantor of the free flow of transoceanic goods and trade, globalized world trade would decrease substantially. As early as 1890, noted U.S. naval officer and historian Alfred Thayer Mahan described the world’s oceans as a “great highway…a wide common,” underscoring the long-running importance of the seas to trade.[12]

#### Effective UUVs necessary to deter Chinese submarine movement—otherwise, they’ll patrol off the US coast causing crisis situations

Michael Robinson, Defense and Technology Specialist, 1/14/13, moneymorning.com/2013/01/14/this-profit-play-builds-hunter-drones-to-counter-the-chinese-sub-threat/

That's why I was glad to learn recently that SAIC is taking a leadership role in a major defense trend unmanned vehicles, usually referred to as drones. SAIC is helping the Pentagon pioneer underwater drones that can detect a new generation of ultra-quiet diesel-electric submarines that threaten U.S. security. In a moment I will share those details with you. But first, I want to make sure you know why I spend time talking to senior leaders like Beyster. See, these guys are not only big thinkers driving the Era of Radical Change, but many of them are also profit machines. They often define U.S. entrepreneurship the unique quality that makes America the perennial leader in global high tech ... and in the creation of wealth for its free-market investors. An entrepreneur himself, Beyster is known for taking two bold management steps. First, he laid the groundwork for employee ownership of a publicly traded firm. That may sound like an inherent contradiction. But not the way Beyster did it. At the time I talked with him, only the employees could own stock in SAIC. Beyster stands out today as a leader in pushing the concept of employee-owned firms. After he retired as CEO, the company launched an IPO, and its shares are publicly traded still. (In fact, to better focus on a changing market, SAIC later this year plans to split into two publicly traded firms.) Second, Beyster became the ultimate change agent. He created an atmosphere that catered to entrepreneurs which turned SAIC into an incubator for innovation. Indeed, many of Beyster's "employees" went off to start their own firms. Between 1975 and 2003 the 18-year stretch for which Beyster kept records roughly four dozen alumni started new companies. No doubt, most never became household names. You likely never heard of Michael A. Chipman. Fact is, he created a little software package called TurboTax. Shortly after going public in 1993, Intuit Inc. (NasdaqGS: INTU) acquired that firm and has gone on to return roughly 2,600% to investors. In 2004, Beyster retired from the company he'd founded back in 1969, at the height of the Vietnam War. But his focus on making sure that SAIC would remain a technical leader lives on today. That's clear from the recent news that the mid-cap firm just got a key "drone" contract with DARPA, the Pentagon's research unit. These days, most drones are airborne, and are known as "unmanned aerial vehicles," or UAVs. They represent a major trend toward pilotless military planes. But under a contract worth at least $58 million, SAIC will build and test an unmanned underwater vehicle (UUV) with a very special purpose. Simply put, DARPA wants a robotic anti-submarine vehicle a "sub-hunter" drone that can operate for extended periods, and cover thousands of miles of ocean as it does so. You see, China, North Korea and Iran between them now have 73 diesel-electric "boats," as they're known in military parlance. About half are the new, super-quiet subs. And more are on the way. In an era in which ultra-modern nuclear subs get all the headlines, here's a stunner: Diesel-electric technology which dates back to the late 1920s is one of the biggest sources of worry in the Pentagon's shadowy corridors. And for good reason. The propulsion systems of these boats are nearly silent. Diesel-electrics run on big diesel motors when running on the surface, but switch to batteries when submerged. That power system is nearly silent, making it the perfect design for the shallow waters just off our coastlines. These submarines also possess the "passive" sonar systems that make it possible for these submarines to sit and listen, submerged and quiet, just off our shores. It's a nasty package, and one that can't be ignored: We don't want the silent subs of our enemies to be able to launch a first strike on the U.S. from as little as a mile away. I believe this technology is vital, and the sooner we field these drones, known as ACTUVs, the better. It will give us an edge over China we'll be able to find their quiet subs long before they can find ours, shifting the balance of power back to the United States.

#### Extinction

Wittner 11

(Lawrence S. Wittner, Emeritus Professor of History at the State University of New York/Albany, Wittner is the author of eight books, the editor or co-editor of another four, and the author of over 250 published articles and book reviews. From 1984 to 1987, he edited Peace & Change, a journal of peace research., 11/28/2011, "Is a Nuclear War With China Possible?", www.huntingtonnews.net/14446)

While nuclear weapons exist, there remains a danger that they will be used. After all, for centuries national conflicts have led to wars, with nations employing their deadliest weapons. The current deterioration of U.S. relations with China might end up providing us with yet another example of this phenomenon. The gathering tension between the United States and China is clear enough. Disturbed by China’s growing economic and military strength, the U.S. government recently challenged China’s claims in the South China Sea, increased the U.S. military presence in Australia, and deepened U.S. military ties with other nations in the Pacific region. According to Secretary of State Hillary Clinton, the United States was “asserting our own position as a Pacific power.” But need this lead to nuclear war? Not necessarily. And yet, there are signs that it could. After all, both the United States and China possess large numbers of nuclear weapons. The U.S. government threatened to attack China with nuclear weapons during the Korean War and, later, during the conflict over the future of China’s offshore islands, Quemoy and Matsu. In the midst of the latter confrontation, President Dwight Eisenhower declared publicly, and chillingly, that U.S. nuclear weapons would “be used just exactly as you would use a bullet or anything else.” Of course, China didn’t have nuclear weapons then. Now that it does, perhaps the behavior of national leaders will be more temperate. But the loose nuclear threats of U.S. and Soviet government officials during the Cold War, when both nations had vast nuclear arsenals, should convince us that, even as the military ante is raised, nuclear saber-rattling persists. Some pundits argue that nuclear weapons prevent wars between nuclear-armed nations; and, admittedly, there haven’t been very many—at least not yet. But the Kargil War of 1999, between nuclear-armed India and nuclear-armed Pakistan, should convince us that such wars can occur. Indeed, in that case, the conflict almost slipped into a nuclear war. Pakistan’s foreign secretary threatened that, if the war escalated, his country felt free to use “any weapon” in its arsenal. During the conflict, Pakistan did move nuclear weapons toward its border, while India, it is claimed, readied its own nuclear missiles for an attack on Pakistan. At the least, though, don’t nuclear weapons deter a nuclear attack? Do they? Obviously, NATO leaders didn’t feel deterred, for, throughout the Cold War, NATO’s strategy was to respond to a Soviet conventional military attack on Western Europe by launching a Western nuclear attack on the nuclear-armed Soviet Union. Furthermore, if U.S. government officials really believed that nuclear deterrence worked, they would not have resorted to championing “Star Wars” and its modern variant, national missile defense. Why are these vastly expensive—and probably unworkable—military defense systems needed if other nuclear powers are deterred from attacking by U.S. nuclear might? Of course, the bottom line for those Americans convinced that nuclear weapons safeguard them from a Chinese nuclear attack might be that the U.S. nuclear arsenal is far greater than its Chinese counterpart. Today, it is estimated that the U.S. government possesses over five thousand nuclear warheads, while the Chinese government has a total inventory of roughly three hundred. Moreover, only about forty of these Chinese nuclear weapons can reach the United States. Surely the United States would “win” any nuclear war with China. But what would that “victory” entail? A nuclear attack by China would immediately slaughter at least 10 million Americans in a great storm of blast and fire, while leaving many more dying horribly of sickness and radiation poisoning. The Chinese death toll in a nuclear war would be far higher. Both nations would be reduced to smoldering, radioactive wastelands. Also, radioactive debris sent aloft by the nuclear explosions would blot out the sun and bring on a “nuclear winter” around the globe—destroying agriculture, creating worldwide famine, and generating chaos and destruction.

## adv 3

#### Adv 3 is Russia

#### SMRs revitalize the US nuclear industry and international competitiveness

Fred McGoldrick, CSIS, Former Senior Official, U.S. Department of Energy and the U.S. Department of State, negotiated U.S. peaceful nuclear cooperation agreements, served in the U.S. Mission to the International Atomic Energy Agency, Jan 2013, Nuclear Trade Controls, http://csis.org/files/publication/130122\_McGoldrick\_NuclearTradeControls\_Web.pdf

Some argue that one of these impediments is the stricter conditions that the United States imposes on its nuclear exports compared to other suppliers. This charge may contain a grain of truth. Some foreign utilities and their governments may think twice about purchasing U.S. nuclear equipment and enrichment services because of the extensive nature of U.S. consent rights and the conservative exercise of those controls by the United States in the past. After the Carter administration’s grudging and protracted handling of reprocessing requests, some foreign utilities sought other sources of supply for enrichment services. Today, however, **the U**nited **S**tates **is not challenging the fuel-cycle choices of other** advanced **nuclear states**. Moreover, although members of the NSG do not implement the guidelines in a uniform manner, and some have loosely interpreted them, international nuclear trade rules among the major suppliers have been largely harmonized. Thus, the disparities in nuclear export controls between the United States and other suppliers have been greatly reduced. Whether the remaining existing disparities or new ones that may arise with new suppliers will affect U.S. competitiveness remains to be seen. The U.S. nuclear industry has recently published a report concluding that the U.S. nuclear export control system is more complex, inefficient, and restrictive and places more onerous burdens on U.S. exporters than some of its key competitors in the international market.61 The report concludes that the differences in the U.S. and non-U.S. export control regimes impose a competitive disadvantage on commercial nuclear exporters from the United States. While there is some validity to the report’s argument that U.S. export laws and regulations may impose unnecessarily burdensome requirements on U.S. companies and that the approval of export applications may take an unreasonably long time, **it is not clear that the U.S. system is causing serious damage to the competitiveness of the U**nited **S**tates **in the international market** at the present time. Moreover, although the American regime for controlling nuclear exports should be streamlined and made more efficient, it is not the main reason for the decline in the U.S. share of the international market. Other factors are far more important: ■ The emergence of other suppliers long ago undermined the monopoly of supply that the United States enjoyed in the early days nuclear energy. This was an inevitable development, and the future is likely to see the arrival of even more suppliers. ■ The international playing field is not level. The nuclear export industries of other major suppliers have strong governmental and financial support that the U.S. nuclear export industry does not enjoy. ■ The United States has not built new domestic nuclear power plants in over 30 years. Countries seeking to develop nuclear power are likely to turn for assistance to those states that have growing domestic nuclear power programs, offer competitive fuel-cycle services, and support the development of advanced technologies. Although U.S. skills in operating and regulating nuclear power plants are highly valued, manufacturing and construction effectiveness (which brings down costs) does not have the same credibility it once had. As a result, the ability of the United States to participate competitively in the international nuclear market has been weakened. Overcoming these developments and obstacles will not be easy. Subsidies for U.S. nuclear exports may be one way to put American industry on a more competitive footing with nuclear exporters in other countries. However, financial support for U.S. nuclear exports has long been controversial and is likely to become even more so in the future, particularly in light of severe constraints on the U.S. budget.62 To retain a role in the international marketplace, some U.S. companies have entered into alliances with foreign suppliers. Toshiba’s purchase of Westinghouse and the creation of General Electric1–Hitachi Nuclear Energy are examples of such ventures. However, it is not clear how the uncertain future of the post-Fukushima Japanese nuclear industry will affect these ventures. In any event, forging such alliances with foreign firms may be one avenue for promoting U.S. nuclear exports. Revitalizing and rebuilding the domestic nuclear industry also faces significant challenges. The low price of natural gas plants and the absence of a national nuclear waste policy will significantly slow the nuclear renaissance, and post-Fukushima public concerns and new safety regulations may create additional brakes on nuclear power plant construction. However, the development of small modular reactors, if they prove economically competitive and meet safety standards, **could not only** rejuvenate the U.S. domestic nuclear industry **but also boost the** competiveness **of the U**nited **S**tates **in the** international market**, particularly in** developing countries. Although some have expressed concerns about the proliferation implications of laser isotope separation technology, if the General Electric-Hitachi Global Laser Enrichment Uranium Enrichment Facility, a venture owned by GE, Hitachi, and Cameco Corporation, can satisfy proliferation concerns and meet the economic expectations of its supporters, it could give the United States a strong cost advantage in the global enrichment market. One step the United States could take to strengthen its role in the international market and promote its nonproliferation would be to establish a national nuclear waste program that would allow for taking back at least limited quantitites of spent fuel produced from U.S. nuclear exports. This may ultimately prove too hard to do, but it is well worth the effort.

#### Causes exports—small key

Ken Silverstein, Forbes, 1/15/13, After Fukushima, U.S. Seeks to Advance Small Nuclear Reactors, www.forbes.com/sites/kensilverstein/2013/01/15/after-fukushima-u-s-seeks-to-advance-small-nuclear-reactors/

“Restarting the nation’s nuclear industry and advancing small modular reactor technologies will help create new jobs and export opportunities for American workers and businesses, and ensure we continue to take an all-of-the-above approach to American energy production,” says Energy Secretary Steven Chu. To that end, the Obama administration is partnering with Babcock & Wilcox and Bechtel to develop those smaller nuclear reactors for the federally-owned utility Tennessee Valley Authority. The Department of Energy is expected to invest about $450 million in the project, which equates to roughly half of the overall cost. Industry will pony up the other half. Babcock builds smaller nuclear units of 100 megawatts, which can also be aggregated together to supply as much power as a base-load nuclear generator, or 1,000 megawatts. The modules are stored underground. Christopher Mowry, president of Babcock, says that TVA should expect to have those units running by 2020. Beyond the federal wholesaler of electricity, he says that other potential clients exist: smaller utilities that can only afford to make “bite size” investments in nuclear energy that include the electric cooperatives and municipalities. “I’d like to rebuild the United States first and then sell oversees,” says Mowry, who spoke with this reporter. Smaller nuclear units are just as viable in other nations where the transmission grids can’t handle larger generation. Once the concept is shown to be feasible, the developers can then build on the smaller facilities to form a larger base-load plant. Currently, 104 nuclear reactors are located here in the United States. But half of them are nearing their retirement, although regulators will likely extend their lives to meet an expected increase in electricity demand. Southern Co. and Scana Corp. have gotten federal regulatory approval in the last year to expand their existing nuclear campuses. Smaller reactors, though, have a place: They might not only serve niche markets but they could also replace at least some of those bigger and more centralized nuclear generation. The right-sized reactors are expected to operate at high efficiencies and to have built-in advantages, ultimately giving those investments a respectable return. Such units, for example, generally come with a nuclear waste storage containment device. The facilities could also be used to create drinkable water supplies in those countries where such a resource is in short supply. According to the Sandia National Laboratory, these smaller reactors would be factory built and mass-assembled, with potential production of 50 a year. They would all have the exact same design, allowing for easier licensing and deployment than large-scale facilities. Mass production will keep the costs down to between $250 million and $500 million per unit. “This small reactor … could supply energy to remote areas and developing countries at lower costs and with a manufacturing turnaround period of two years as opposed to seven for its larger relatives,” says Tom Sanders, who has been working with Sandia. “It could also be a more practical means to implement nuclear base-load capacity **comparable to natural gas**-fired generating stations and with more manageable financial demands than a conventional power plant.” In the case of Sandia, the right-sized reactors would generate their own fuel as they operate. They are designed to have an extended operational life and would only need to be refueled a few times during its projected 60-year lifespan. At the same time, the reactor system would have no need for fuel handling, all of which helps to alleviate proliferation concerns. Conventional nuclear power plants in the U.S. have their reactors refueled once every 18 to 24 months. The issue that manufacturers of small reactors have is that they are relying on the venture capital community to back their ideas. While they may be worthy, they must still endure years of regulatory scrutiny before they would get the permission to be built in this country. Investors don’t want to tie up their money for that long. That’s why the Energy Department is getting involved. Consider NuScale: It says that by taking its smaller modules and ultimately forming a 540 megawatt plant that it would cost between $2.2 billion and $2.5 billion. That’s marginally less expensive than a traditional plant. At a few billion, the company says that utilities would not be taking the kind of risks they might otherwise be incurring if they were to build a larger $10 billion facility. For most companies, the amount of money is too great, especially in the aftermath of a recession, credit crunch and Japanese nuclear crisis. “**We saw the economic value of taking virtually the entire nuclear system, including its containment, to a factory where they could be manufactured under more controlled conditions**,” says Paul Lorenzini, founder of NuScale, in a previous talk with this writer. He goes on to say that smaller units are extremely safe because they are immune from the type of events that occurred in Japan. Right-sized nuclear reactors face the same financial and regulatory obstacles as do their bigger brothers. **But** if the smaller and scalable technologies prove effective, they will establish valuable niche markets for themselves not just among the TVAs of the world but also among those local utilities and less developed countries that need a clean and continuous source of power.

#### Quick commercialization of SMRs key—any alternative can’t displace Russian reactors

Charles D. Ferguson, President, Federation of American Scientists, 5/19/2010, 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 Southto-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.5 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 U**nited **S**tates **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.”

#### US nuclear energy market control of Latin America key to prevent Latin America instability and Russian regional dominance

Steve Dobransky, Cleveland State University International Relations Adjunct Professor, March 2011, The Nuclear Penetration of the Monroe Doctrine, 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.

#### US leadership in Latin America necessary to contain escalatory instability and make international institutions effective

Christopher Sabatini, editor-in-chief of Americas Quarterly and senior director of policy at Americas Society/Council of the Americas, and Ryan Berger, policy associate at the Americas Society/Council of the Americas, 6/13/2012, Why the U.S. can't afford to ignore Latin America, globalpublicsquare.blogs.cnn.com/2012/06/13/why-the-u-s-cant-afford-to-ignore-latin-america/

Speaking in Santiago, Chile, in March of last year, President Obama called Latin America “a region on the move,” one that is “more important to the prosperity and security of the United States than ever before.” Somebody forgot to tell the Washington brain trust. The Center for a New American Security, a respected national security think tank a half-mile from the White House, recently released a new series of policy recommendations for the next presidential administration. The 70-page “grand strategy” report only contained a short paragraph on Brazil and made only one passing reference to Latin America. Yes, we get it. The relative calm south of the United States seems to pale in comparison to other developments in the world: China on a seemingly inevitable path to becoming a global economic powerhouse, the potential of political change in the Middle East, the feared dismemberment of the eurozone, and rogue states like Iran and North Korea flaunting international norms and regional stability. But the need to shore up our allies and recognize legitimate threats south of the Rio Grande goes to the heart of the U.S.’ changing role in the world and its strategic interests within it. Here are three reasons why the U.S. must include Latin America in its strategic calculations: 1. Today, pursuing a global foreign policy requires regional allies. Recently, countries with emerging economies have appeared to be taking positions diametrically opposed to the U.S. when it comes to matters of global governance and human rights. Take, for example, Russia and China’s stance on Syria, rejecting calls for intervention. Another one of the BRICS, Brazil, tried to stave off the tightening of U.N. sanctions on Iran two years ago. And last year, Brazil also voiced its official opposition to intervention in Libya, leading political scientist Randall Schweller to refer to Brazil as “a rising spoiler.” At a time of (perceived) declining U.S. influence, it’s important that America deepens its ties with regional allies that might have been once taken for granted. As emerging nations such as Brazil clamor for permanent seats on the U.N. Security Council and more representatives in the higher reaches of the World Bank and the International Monetary Fund, the U.S. will need to integrate them into global decision-making rather than isolate them. If not, they could be a thorn in the side of the U.S. as it tries to implement its foreign policy agenda. Worse, they could threaten to undermine efforts to defend international norms and human rights. 2. Latin America is becoming more international. It’s time to understand that the U.S. isn’t the only country that has clout in Latin America. For far too long, U.S. officials and Latin America experts have tended to treat the region as separate, politically and strategically, from the rest of the world. But as they’ve fought battles over small countries such as Cuba and Honduras and narrow bore issues such as the U.S.-Colombia free-trade agreement, other countries like China and India have increased their economic presence and political influence in the region. It’s also clear that countries such as Brazil and Venezuela present their own challenges to U.S. influence in the region and even on the world forum. The U.S. must embed its Latin America relations in the conceptual framework and strategy that it has for the rest of the world, rather than just focus on human rights and development as it often does toward southern neighbors such as Cuba. 3. There are security and strategic risks in the region. Hugo Chavez’s systematic deconstruction of the Venezuelan state and alleged ties between FARC rebels and some of Chavez’s senior officials have created a volatile cocktail that could explode south of the U.S. border. FARC, a left-wing guerrilla group based in Colombia, has been designated as a “significant foreign narcotics trafficker” by the U.S. government. At the same time, gangs, narcotics traffickers and transnational criminal syndicates are overrunning Central America. In 2006, Mexican President Felipe Calderón launched a controversial “war on drugs” that has since resulted in the loss of over 50,000 lives and increased the levels of violence and corruption south of the Mexican border in Guatemala, El Salvador, Honduras and even once-peaceful Costa Rica. Increasingly, these already-weak states are finding themselves overwhelmed by the corruption and violence that has come with the use of their territory as a transit point for drugs heading north. **Given** their **proximity and close historical and political connections with Washington**, the U.S. will find it increasingly difficult not to be drawn in. Only this case, it won’t be with or against governments — as it was in the 1980s — but in the far more complex, sticky situation of failed states. There are many other reasons why **Latin America is important to U.S. interests**. It is a market for more than 20% of U.S. exports. With the notable exception of Cuba, it is nearly entirely governed by democratically elected governments — a point that gets repeated ad nauseum at every possible regional meeting. The Western Hemisphere is a major source of energy that has the highest potential to seriously reduce dependence on Middle East supply. And through immigration, Latin America has close personal and cultural ties to the United States. These have been boilerplate talking points since the early 1990s. But the demands of the globe today are different, and they warrant a renewed engagement with Latin America — a strategic pivot point for initiatives the U.S. wants to accomplish elsewhere. We need to stop thinking of Latin America as the U.S. “backyard” that is outside broader, global strategic concerns.

#### Escalating instability in Latin America causes global war

Rochlin ’94(James Francis, Prof. Pol. Sci. @ Okanagan University College, “Discovering the Americas: the evolution of Canadian foreign policy towards Latin America”, p. 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.

#### Russia control of Latin America causes US-Russia conflict

Peter Zeihan, Stratfor, 9/18/2008, The Russian Resurgence and the New-Old Front, www.stratfor.com/weekly/20080915\_russian\_resurgence\_and\_new\_old\_front

Russia is attempting to reforge its Cold War-era influence in its near abroad. This is not simply an issue of nostalgia, but a perfectly logical and predictable reaction to the Russian environment. Russia lacks easily definable, easily defendable borders. There is no redoubt to which the Russians can withdraw, and the only security they know comes from establishing buffers -- buffers which tend to be lost in times of crisis. The alternative is for Russia to simply trust other states to leave it alone. Considering Russia's history of occupations, from the Mongol horde to Napoleonic France to Hitler's Germany, it is not difficult to surmise why the Russians tend to choose a more activist set of policies. As such, the country tends to expand and contract like a beating heart -- gobbling up nearby territories in times of strength, and then contracting and losing those territories in times of weakness. Rather than what Westerners think of as a traditional nation-state, Russia has always been a multiethnic empire, heavily stocked with non-Russian (and even non-Orthodox) minorities. Keeping those minorities from damaging central control requires a strong internal security and intelligence arm, and hence we get the Cheka, the KGB, and now the FSB. Nature of the Budding Conflict Combine a security policy thoroughly wedded to expansion with an internal stabilization policy that institutionalizes terror, and it is understandable why most of Russia's neighbors do not like Moscow very much. A fair portion of Western history revolves around the formation and shifting of coalitions to manage Russian insecurities. **In the American case** specifically, **the issue is one of continental control**. The United States is the only country in the world that effectively controls an entire continent. Mexico and Canada have been sufficiently intimidated so that they can operate independently only in a very limited sense. (Technically, Australia controls a continent, but with the some 85 percent of its territory unusable, it is more accurate in geopolitical terms to think of it as a small archipelago with some very long bridges.) This grants the United States not only a potentially massive internal market, but also the ability to project power without the fear of facing rearguard security threats. U.S. forces can be focused almost entirely on offensive operations, whereas potential competitors in Eurasia must constantly be on their guard about the neighbors. The only thing that could threaten U.S. security would be the rise of a Eurasian continental hegemon. For the past 60 years, Russia (or the Soviet Union) has been the only entity that has had a chance of achieving that, largely due to its geographic reach. U.S. strategy for coping with this is simple: containment, or the creation of a network of allies to hedge in Russian political, economic and military expansion. NATO is the most obvious manifestation of this policy imperative, while the Sino-Soviet split is the most dramatic one. Containment requires that United States counter Russian expansionism at every turn, crafting a new coalition wherever Russia attempts to break out of the strategic ring, and if necessary committing direct U.S. forces to the effort. The Korean and Vietnam wars -- both traumatic periods in American history -- were manifestations of this effort, as were the Berlin airlift and the backing of Islamist militants in Afghanistan (who incidentally went on to form al Qaeda). The Georgian war in August was simply the first effort by a resurging Russia to pulse out, expand its security buffer and, ideally, in the Kremlin's plans, break out of the post-Cold War noose that other powers have tied. The Americans (and others) will react as they did during the Cold War: by building coalitions to constrain Russian expansion. In Europe, the challenges will be to keep the Germans on board and to keep NATO cohesive. In the Caucasus, the United States will need to deftly manage its Turkish alliance and find a means of engaging Iran. In China and Japan, economic conflicts will undoubtedly take a backseat to security cooperation. Russia and the United States will struggle in all of these areas, consisting as they do the Russian borderlands. Most of the locations will feel familiar, as Russia's near abroad has been Russia's near abroad for nearly 300 years. Those locations -- the Baltics, Austria, Ukraine, Serbia, Turkey, Central Asia and Mongolia -- that defined Russia's conflicts in times gone by will surface again. Such is the tapestry of history: the major powers seeking advantage in the same places over and over again. The New Old-Front But not all of those fronts are in Eurasia. So long as U.S. power projection puts the Russians on the defensive, it is only a matter of time before something along the cordon cracks and the Russians are either fighting a land war or facing a local insurrection. Russia must keep U.S. efforts dispersed and captured by events as far away from the Russian periphery as possible -- preferably where Russian strengths can exploit American weakness. So where is that? Geography dictates that U.S. strength involves coalition building based on mutual interest and long-range force projection, and internal U.S. harmony is such that America's intelligence and security agencies have no need to shine. Unlike Russia, the United States does not have large, unruly, resentful, conquered populations to keep in line. In contrast, recall that the multiethnic nature of the Russian state requires a powerful security and intelligence apparatus. No place better reflects Russia's intelligence strengths and America's intelligence weakness than Latin America. The United States faces no traditional security threats in its backyard. South America is in essence a hollow continent, populated only on the edges and thus lacking a deep enough hinterland to ever coalesce into a single hegemonic power. Central America and southern Mexico are similarly fractured, primarily due to rugged terrain. Northern Mexico (like Canada) is too economically dependent upon the United States to seriously consider anything more vibrant than ideological hostility toward Washington. Faced with this kind of local competition, the United States simply does not worry too much about the rest of the Western Hemisphere -- except when someone comes to visit. Stretching back to the time of the Monroe Doctrine, Washington's Latin American policy has been very simple. The United States does not feel threatened by any local power, but it feels inordinately threatened by any Eastern Hemispheric power that could ally with a local entity. Latin American entities cannot greatly harm American interests themselves, but they can be used as fulcrums by hostile states further abroad to strike at the core of the United States' power: its undisputed command of North America. It is a fairly straightforward exercise to predict where Russian activity will reach its deepest. One only needs to revisit Cold War history. Future Russian efforts can be broken down into three broad categories: naval interdiction, drug facilitation and direct territorial challenge.

#### Extinction

Corcoran 9

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That brings us to Russia, our former main adversary, now a competitive partner and still a potential future adversary, particularly as relations have gradually soured in recent years. Russia is the only other nation with a formidable arsenal of some three thousand strategic weapons. Our opposing arsenals were built up in the period when Mutually Assured Destruction (MAD) was the underlying strategic concept -- each side deterred from striking the other by the prospect of assured retaliatory destruction. The situation became even madder as both sides worked to develop a capability to destroy the other's strike force with a crippling first strike. This resulted in further large increases in the sizes of the arsenals, as well as early warning systems and hair-trigger launch-on-warning alert procedures. The final result was an overall system in which each side could destroy the other in a matter of minutes. And it also raised another chilling specter, Nuclear Winter, in which the atmospheric dust raised from a major nuclear exchange would block sunlight for an extended period and essentially destroy human civilization globally. The collapse of the Soviet Union collapsed this threat, but did not eliminate it. US and Russian nuclear forces remained frozen in adversarial positions. The May 2002 Moscow Treaty began to address this legacy and is leading to a reduction in strategic nuclear forces down to levels of about two thousand on each side by 2012. These levels are still sufficient to destroy not only both nations but also human civilization. It is hard to even construct scenarios where the use of even a few strategic nuclear weapons does not risk a total escalation. Strikes on Russian warning facilities or strike forces would almost certainly bring a wave of retaliatory strikes. Strikes on hardened command centers would be of questionable effectiveness and also risk total escalation. In addition, successful elimination of Russian leaders could greatly complicate any efforts to stop escalation short of a total nuclear exchange.

#### Effective international institutions solve extinction

Gwynne Dyer, Ph.D. in Military History from University of London, 12/30/2004, The end of war, Toronto Star, Lexis

War is deeply embedded in our history and our culture, probably since before we were even fully human, but weaning ourselves away from it should not be a bigger mountain to climb than some of the other changes we have already made in the way we live, given the right incentives. And we have certainly been given the right incentives: The holiday from history that we have enjoyed since the early '90s may be drawing to an end, and another great-power war, fought next time with nuclear weapons, may be lurking in our future.. The "firebreak" against nuclear weapons use that we began building after Hiroshima and Nagasaki has held for well over half a century now. But the proliferation of nuclear weapons to new powers is a major challenge to the stability of the system. So are the coming crises, mostly environmental in origin, which will hit some countries much harder than others, and may drive some to desperation. Add in the huge impending shifts in the great-power system as China and India grow to rival the United States in GDP over the next 30 or 40 years and it will be hard to keep things from spinning out of control. With good luck and good management, we may be able to ride out the next half-century without the first-magnitude catastrophe of a global nuclear war, but the potential certainly exists for a major die-back of human population. We cannot command the good luck, but good management is something we can choose to provide. It depends, above all, on preserving and extending the multilateral system that we have been building since the end of World War II. The rising powers must be absorbed into a system that emphasizes co-operation § Marked 19:56 § and makes room for them, rather than one that deals in confrontation and raw military power. If they are obliged to play the traditional great-power game of winners and losers, then history will repeat itself and everybody loses. Our hopes for mitigating the severity of the coming environmental crises also depend on early and concerted global action of a sort that can only happen in a basically co-operative international system. When the great powers are locked into a military confrontation, there is simply not enough spare attention, let alone enough trust, to make deals on those issues, so the highest priority at the moment is to keep the multilateral approach alive and avoid a drift back into alliance systems and arms races. And there is no point in dreaming that we can leap straight into some never-land of universal brotherhood; we will have to confront these challenges and solve the problem of war within the context of the existing state system.

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#### Financial incentives induce production using cash – that includes power purchasing

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

In this paper, "financial incentives" are taken to mean disbursements 18 of public funds or contingent commitments to individuals and organizations, intended to encourage, support or induce certain behaviours in accordance with express public policy objectives. They take the form of grants, contributions, repayable contributions, loans, loan guarantees and insurance, subsidies, procurement contracts and tax expenditures.19 Needless to say, the ability of government to achieve desired behaviour may vary with the type of incentive in use: up-front disbursements of funds (such as with contributions and procurement contracts) may put government in a better position to dictate the terms upon which assistance is provided than contingent disbursements such as loan guarantees and insurance. In some cases, the incentive aspects of the funding come from the conditions attached to use of the monies.20 In others, the mere existence of a program providing financial assistance for a particular activity (eg. low interest loans for a nuclear power plant, or a pulp mill) may be taken as government approval of that activity, and in that sense, an incentive to encourage that type of activity has been created.21 Given the wide variety of incentive types, it will not be possible in a paper of this length to provide anything more than a cursory discussion of some of the main incentives used.22 And, needless to say, the comments made herein concerning accountability apply to differing degrees depending upon the type of incentive under consideration.

By limiting the definition of financial incentives to initiatives where *public funds are either disbursed or contingently committed*, a large number of regulatory programs with incentive *effects* which exist, but in which no money is forthcoming,23 are excluded from direct examination in this paper. Such programs might be referred to as *indirect* incentives. Through elimination of indirect incentives from the scope of discussion, thedefinition of the incentive instrument becomes both more manageable and more particular. Nevertheless, it is possible that much of the approach taken here may be usefully applied to these types of indirect incentives as well.24 Also excluded from discussion here are social assistance programs such as welfare and *ad hoc* industry bailout initiatives because such programs are not designed primarily to *encourage* behaviours in furtherance of specific public policy objectives. In effect, these programs are assistance, but they are not incentives.

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

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

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

## states

#### Current acquisitions favor old tech – the plan’s signal is key

CNA 10, non-profit research organization that operates the Center for Naval Analyses and the Institute for Public Research, “Powering America’s Economy: Energy Innovation at the Crossroads of National Security Challenges”, July, <http://www.cna.org/sites/default/files/research/WEB%2007%2027%2010%20MAB%20Powering%20America%27s%20Economy.pdf>

In our final discussion, we consider the end of the innovation pipeline—deployment—and we look at how fine-tuning the incentives might help pull more innovative, new energy technologies through the pipeline. Energy use at installations is governed under a stricter rubric than operational energy: a variety of regulatory and legislative mandates have steered DOD toward lowering energy consumption, increasing use of renewables, and promoting conservation and energy efficiency. However, the adoption of new clean energy technologies is still hampered in key installation acquisition programs. To help achieve its energy goals, DOD often employs two mechanisms: the Energy Conservation Investment Program (ECIP) and Energy Savings Performance Contracts (ESPCs). The ECIP program is backed by Congressional appropriations (through military construction funding), and it is designed to allow installations to purchase technologies that save money through conserving energy [55]. The program is viewed widely as being successful, cited as saving more than two dollars for each dollar invested. ESPCs are contracting vehicles that allow DOD to invest in energy-related improvements without expending funds appropriated by Congress. Through ESPCs, DOD partners with private firms that make the energy improvements; in return, the firms’ investments are paid back through the energy savings. While these programs have improved installation energy use, as they are currently structured, they favor older technologies that are well-established on the commercial market. This is especially the case for ESPCs, which are inherently risk averse. The private sector firms that enter into these contracts only do so if they are guaranteed to make a profit; as such, the energy improvements are done so with tried-and-tested technologies whose payback schedules and energy savings are well-defined. Many of these investments are also made with small profit margins. As such, companies are not willing to take risks on these contracts by using new and perhaps unproven technologies. Altering these programs to reduce the advantages provided to already commercialized products will encourage the acquisition of more innovative technologies on installations. One change could include a guaranteed return on investment (similar to that given on older technologies) for those developers proposing cutting-edge technologies. Another change could include giving first preference to innovations that come from public/private partnerships (incubators, energy hubs, etc.). Given DOD’s size and the fact that installations mirror U.S. infrastructure, the use of innovative technologies on its installations provides a clear demand signal to the developer.

#### Nrc = da

CSPO 10, Consortium for Science, Policy and Outcomes at ASU, “four policy principles for energy innovation & climate change: a synthesis”, June, <http://www.catf.us/resources/publications/files/Synthesis.pdf>

Government purchase of new technologies is a powerful way to accelerate innovation through increased demand (Principle 3a). We explore how this principle can be applied by considering how the DoD could purchase new nuclear reactor designs to meet electric power needs for DoD bases and operations. Small modular nuclear power reactors (SMRs), which generate less than 300 MW of power (as compared to more typical reactors built in the 1000 MW range) are often listed as a potentially transformative energy technology. While typical traditional large-scale nuclear power plants can cost five to eight billion dollars, smaller nuclear reactors could be developed at smaller scale, thus not presenting a “bet the company” financial risk. SMRs could potentially be mass manufactured as standardized modules and then delivered to sites, which could significantly reduce costs per unit of installed capacity as compared to today’s large scale conventional reactor designs. It is likely that some advanced reactors designs – including molten salt reactors and reactors utilizing thorium fuels – could be developed as SMRs. Each of these designs offers some combination of inherently safe operation, very little nuclear proliferation risk, relatively small nuclear waste management needs, very abundant domestic fuel resources, and high power densities – all of which are desirable attributes for significant expansion of nuclear energy. Currently, several corporations have been developing small nuclear reactors. Table 2 lists several of these companies and their reactor power capacities, as well as an indication of the other types of reactor innovations that are being incorporated into the designs. Some of these technologies depend on the well-established light water reactor, while others use higher energy neutrons, coolants capable of higher temperature operation, and other innovative approaches. Some of these companies, such as NuScale, intend to be able to connect as many as 24 different nuclear modules together to form one larger nuclear power plant. In addition to the different power ranges described in Table 2, these reactors vary greatly in size, some being only 3 to 6 feet on each side, while the NuScale reactor is 60 feet long and 14 feet in diameter. Further, many of these reactors produce significant amounts of high-temperature heat, which can be harnessed for process heating, gas turbine generators, and other operations. One major obstacle is to rapid commercialization and development are prolonged multi-year licensing times with the Nuclear Regulatory Commission. Currently, the NRC will not consider a reactor for licensing unless there is a power utility already prepared to purchase the device. Recent Senate legislation introduced by Senator Jeff Bingaman (D-NM) has pushed for DOE support in bringing down reactor costs and in helping to license and certify two reactor designs with the NRC. Some additional opportunities to facilitate the NRC licensing process for innovative small modular reactors would be to fund NRC to conduct participatory research to get ahead of potential license applications (this might require ~$100million/year) and potentially revise the current requirement that licensing fees cover nearly all NRC licensing review costs. One option for accelerating SMR development and commercialization, would be for DOD to establish SMR procurement specifications (to include cost) and agree to purchase a sufficient amount of SMR’s to underwrite private sector SMR development. Of note here may be that DARPA recently (3/30/10) issued a “Request for Information (RFI) on Deployable Reactor Technologies for Generating Power and Logistic Fuels”2 that specifies may features that would be highly desirable in an advanced commercial SMR. While other specifications including coproduction of mobility fuel are different than those of a commercial SMR power reactor, it is likely that a core reactor design meeting the DARPA inquiry specifications would be adaptable to commercial applications. While nuclear reactors purchased and used by DOD are potentially exempt from many NRC licensing requirements3, any reactor design resulting from a DOD procurement contract would need to proceed through NRC licensing before it could be commercially offered. Successful use of procured SMR’s for DOD purposes could provide the knowledge and operational experience needed to aid NRC licensing and it might be possible for the SMR contractor to begin licensing at some point in the SMR development process4. Potential purchase of small modular nuclear reactors would be a powerful but proven way in which government procurement of new energy technologies could encourage innovation. Public procurement of other renewable energy technologies could be similarly important.

#### Only military SMR’s will be usable on bases

Andres and Breetz 11

Richard 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 Breetz, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, Small Nuclear Reactorsfor Military Installations:Capabilities, Costs, andTechnological Implications, [www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf](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 protecting 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. Government 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 be used even in active operational environments. These reactors are potentially safer than conventional light water 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 potential 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 evaluation 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 United States, 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 technology will be unavailable in the future for either U.S. military or commercial use.

## natural gas demand – russia

#### Collapse inevitable

Brinded 1-25

Lianna, “WEF Paints Bleak Outlook for Russia's Economy,” <http://www.ibtimes.co.uk/articles/427882/20130125/wef-russia-report-oil-energy-vladimir-putin.htm>

In WEF's benchmark Scenarios for the Russian Federation report, the group outlined three scenarios for the Russian economy, which all paint a bleak outlook unless significant changes in its domestic institutional environment are made as the country's GDP is so closely tied to oil prices. Russia has enjoyed record growth rates and a dramatic rise in living standards for much of its urban population after the spectacular rise in oil prices from 2000 to 2008, in tandem with economic reforms of the early 2000s, fostered a more stable environment [Figure 1]. Despite being hit hard by the global economic crisis in 2008 and 2009, the country even managed to rebound from an 8 percent drop in the economy, within a couple of years. But as IBTimes UK detailed in December last year, Russia faces a drop in 2013 GDP to 2.5 percent, from 3.4 percent in 2012. Forecasts also detail a 1.6 percent rise in inflation to reach 6.7 percent by the end of this year for Russia. Supporting this, WEF says that this growth trajectory is not sustainable and significant challenges remain, particularly in reducing the country's strong reliance on its oil and gas exports and in revitalising the economy [Figure 2] "The price of oil and gas on global and regional markets, and developments in the global energy landscape more generally, are critical to Russia's future economic development. For the most part, Russia is a price-taker and cannot mould the global energy environment in which it operates nor the energy prices that ensue," says the report. "Yet a thorough analysis of the dynamics within the global energy landscape is important for Russia to maximise benefits while this external context is favourable, and prepare for less auspicious times in the future," it adds. (Pic: WEF Scenarios for the Russian Federation report) In each of its Three Scenarios for Russia [Figure 3], WEF identifies potential hazards for the country and says they can "be used to form new policies, new strategies and forging new connections, by freeing thought from past constraints." In one of the scenarios, WEF warns that "a sudden and sustained drop in oil prices creates a crisis in Russia's economic foundations that threatens the country's social stability. Paralysed by the threat of popular resistance to cutbacks in entitlements and social spending, the government is compelled to strengthen its hold on the economy, using state companies as vectors of social spending. "While compromising its fiscal position, Russia preserves at least the illusion of economic stability for most of its population. Eventually the sustainability of these measures comes into question and opens a range of uncertainties about the country's long-term economic future," it adds. However, WEF adds that if Russia does not reform its institutions and finances in times of growth, doing so will be near impossible at a time of crisis.

#### Their internal link card – the newest card in the 1NC – is a massive non-unique card – it says Russian energy is over because of the massive shale gas revolution

Tucker, their newest 1NC author, Assistant Director of the Energy Institute at the University of Texas at Austin, 1/9/2013

(Aviezer, take a look at the full article title… “The New Power Map: World Politics After the Boom in Unconventional Energy,” http://www.foreignaffairs.com/articles/138597/aviezer-tucker/the-new-power-map?page=show)

[Start of article]

The energy map of the world is being redrawn -- and the global geopolitical order is adrift in consequence. **We are moving away from a world dominated by** a few **energy** mega-**supplier**s, such as **Russia**, Saudi Arabia, and Venezuela, and toward one in which **most countries have some domestic resources to meet their energy needs** and can import the balance from suppliers in their own neighborhood. This new world will feature considerably lower energy prices, and in turn, **geopolitics will hinge less on** oil and **gas**. Within the next five to ten years, regimes that are dependent on energy exports will see their power diminished. No longer able to raise massive sums from energy sales to distribute patronage and project power abroad, they will have to tax their citizens.

**The revolution in unconventional energy production results from technologies that make drilling and extraction from underground shale formations increasingly easy and cheap**. One cutting-edge procedure, hydraulic fracturing, involves injecting a mixture of sand, chemicals, and either water, gel, or liquefied greenhouse gases into shale rock formations to extract hydrocarbons. Although the technique was first conceptualized in 1948, only recently have other technologies arrived to make it commercially viable. (One such procedure, horizontal drilling, allows operators to tap into shallow but broad deposits with remarkable precision.)

Hydraulic fracturing has been used widely for only about the past five years. But the result -- **a staggering glut of natural gas in the** United **S**tates -- **is already clear**. The price of natural gas in the country has plunged to a quarter of what it was in 2008. The low price has prompted changes throughout the U.S. economy, including the projected retirement of one-sixth of U.S. coal power generation capacity by 2020, the conversion of hundreds of thousands of vehicles from gasoline to compressed gas, and the construction and repatriation from China of chemical, plastic, and fertilizer factories that use natural gas as both raw material and fuel. By 2025, the professional services firm PricewaterhouseCoopers predicts, energy-intensive industries will create a million new U.S. jobs.

Meanwhile, the United States is using innovative energy technologies ever more frequently to extract shale oil, tight oil, and methane from coal beds. Accordingly, the share of U.S. oil consumption that is imported from abroad has fallen sharply, from about 60 percent in 2005 to less than 45 percent this year. It will likely continue to decrease until the country, or at least North America, is energy self-sufficient.

**The economic and geopolitical shockwaves will be felt worldwide**. **Decreasing demand in the U**nited **S**tates for liquid natural gas, oil imports, and domestic coal **is already reducing global prices for these commodities**. As a result, European countries have a stronger position in negotiations over natural gas imports with Russia, from which they receive a quarter of their supply. The newfound leverage might have emboldened the European Union to open an investigation in September into a possible price-fixing scheme by Gazprom, the Russian energy giant. In addition, European countries have been negotiating fewer long-term gas contracts with Russia in which the agreed-upon price for the gas is pegged to that of oil -- the kind that Gazprom favors. Instead, they are opting for spot purchases -- short-term acquisitions based on market prices -- in the expectation of rising supplies and falling prices. Russia has already granted some countries roughly ten percent discounts on existing contracts.

[Their card starts]

Until recently, Gazprom was in denial about the shale gas revolution, claiming that unconventional gas technology was not commercially viable, and that it posed severe risks to the environment. Given that Russia raises most of its federal revenue from energy exports -- about 60 percent, according to most estimates -- a reduction in natural gas sales would be politically catastrophic. Both the collapse of the Soviet Union and the downfall of former Russian President Boris Yeltsin in the late 1990s coincided with periods of low energy prices; Vladimir Putin, the current president, knows this history all too well.

The problem is that all of his options in a world awash with cheap energy are bad. His regime could try to maintain Russia's market share in Europe by continuing to reduce prices, but that would mean accepting drastically smaller revenues. To make matters worse, Gazprom's profit margins are low. Given that it sells 60 percent of its gas domestically at a loss, Gazprom must obtain wide profit margins from its European exports to stay afloat. (Currently, it sells gas in Europe at about a 66 percent profit margin.)

[Their card ends]

On its exports to Europe, Gazprom needs to earn $12 per thousand cubic feet of natural gas just to break even. (**The price of natural gas in the U**nited **S**tates **today is below $3** per thousand cubic feet.) Part of the reason for this is that the state and the elite siphon billions from the politicized, inefficient, and opaque monopoly. Such plain corruption coincides with geopolitical maneuvering in large pipeline projects: just as neighboring Alaska has its infamous bridge, Russia has pipelines to nowhere.

Consider, for example, Nord Stream, the undersea natural gas pipeline that connects Russia directly to Germany, bypassing both Ukraine and Poland. The project had no economic rationale; it would have been far cheaper for Moscow to come to terms with Kiev over transit fees. But Russia was unwilling to do so. As usual, corruption played a role, too: Arkady Rotenberg, the owner of the company that laid the pipelines, is Putin's childhood friend, and the Russian government paid him an exorbitant fee -- amounting to a profit margin of 30 percent -- for his work. Now, Gazprom is planning another pipeline folly, South Stream, which will again bypass Ukraine by traveling under the Black Sea to southern Europe.

Such outrageous infrastructure projects might become even more routine if Gazprom attempts to recoup its falling revenues in Europe by upping its sales to China. To do that, it would have to build long pipelines across unforgiving Siberian terrain. That task would pale in comparison to the challenge of convincing China to pay anything close to what Russia currently charges European countries -- not only because the Chinese are tough negotiators but also because China possesses the largest deposits of shale gas of any country in the world (886 trillion cubic feet compared with the United States' 750 trillion, the world's second-largest deposits). Although China is just beginning to tap its gas deposits, by the time any Sino-Russian pipeline project could be completed, it might be churning out enough unconventional gas to be energy self-sufficient. According to Chinese government estimates, the country has enough natural gas to provide for its domestic needs for up to two centuries. The only hope for Gazprom is that Chinese shale rock formations will not respond well to the new technologies -- but there is no reason to believe that this will be the case.

For now, Russia has been attempting to protect its market share by simply preventing unconventional energy technologies from spreading. For its part, the United States, through its 2010 Unconventional Gas Technical Engagement Program, transfers technologies to nations that it would like to see become more energy independent, such as India, Jordan, Poland, and Ukraine. Countries that achieve greater energy independence, Washington assumes, will be less susceptible to bullying from unfriendly petro-states.

Russia, meanwhile, is attempting to block or at least slow the process. One of Moscow's favorite tactics involves pressuring companies that want to do business in Russia not to explore for shale gas elsewhere. For example, Moscow might have pressed ExxonMobil to pull out of Poland, which could have the largest shale gas deposits in all of Europe, in exchange for a cooperation agreement with Rosneft. As always in the free market, however, when one company exits, another rushes to fill the void. The U.S. company Chevron has commenced shale gas and oil exploration throughout the region between the Baltic and Black Seas. The financier George Soros, moreover, has already invested $500 million in unconventional energy projects in Poland.

A more effective Russian tactic involves financing environmentalist groups to lobby against shale gas. So far, there is no credible scientific evidence that hydraulic fracturing has adverse effects on either air or water. Several studies, including ones conducted by the Royal Society, the U.S. Secretary of Energy Advisory Board, and the International Energy Agency, have concluded that hydraulic fracturing is reasonably safe when properly regulated. Yet, following a swell of environmentalist protests, both Bulgaria and the Czech Republic recently imposed moratoria on the use of the technology. The mark of outside influence is clear: In Bulgaria, there are rarely demonstrations of any kind, and in the Czech Republic, environmentalist groups have remained mum on other major issues, namely, the planned expansions of the nuclear power station in Temelín.

The former members of the Soviet bloc -- such as Bulgaria, the Czech Republic, Poland, and Ukraine -- still purchase all or most of their natural gas from Gazprom. Poland and Ukraine have enough potential shale deposits to free themselves entirely from this dependency. Although Bulgaria and the Czech Republic are not so blessed, even modest domestic production can challenge Gazprom's monopoly power and reduce the price of imported natural gas.

Some analysts have predicted that Asian demand for energy is virtually endless, and thus that energy prices are unlikely to fall substantially. But as the Morgan Stanley analyst Ruchir Sharma has argued, **Asian economic growth is slowing and might soon flatten**. **Meanwhile**, **with ever-growing energy supplies from unconventional sources**, **newly discovered undersea gas fields off the coast of East Africa and Israel**, **and increased drilling in the Arctic**, **the world may soon enjoy an energy glut**. At the very least, **an era of lower global energy prices appears inevitable**.

For Russia, the best scenario is that the energy glut will force structural reforms akin to those that Estonia and Poland underwent in the 1990s and that Russia started but never completed. Such changes could eventually lead to the establishment of real democracy and the rule of law there. In the coming years, sheer economic necessity and looming bankruptcy will force Russia to reform. But throughout Russian history, modernization has not normally resulted in liberalization; and there is little evidence that this time will be any different.

Nevertheless, unconventional energy technology has not only arrived -- it is here to stay. As new lines are drawn on the energy map of the world, many of the oldest and most stable geopolitical truths will be turned on their heads. **It would be prudent for the tyrants who depend on revenues from energy exports to start planning for retirement**.

[End of article]

#### China fills in

Levine 9/24/12

Steve, Quartz’s Washington correspondent, writes about the intersection of energy, technology and geopolitics, a juncture of some of the most important and quickly developing events and trends on the planet. LeVine teaches the subject as an adjunct professor in Georgetown University’s Security Studies Program in the Graduate School of Foreign Service. He is a Schwartz Fellow at the New America Foundation. LeVine comes to the beat after 18 years as a foreign correspondent in the former Soviet Union, Afghanistan, Pakistan and the Philippines, where he wrote for The Wall Street Journal, The New York Times, the Financial Times, and Newsweek. Most recently, LeVine founded and ran The Oil and the Glory, a blog on energy and geopolitics at Foreign Policy magazine. He is the author of two books: The Oil and the Glory, a history of oil told through the 1990s-2000s oil rush on the Caspian Sea; and Putin’s Labyrinth, a profile of Russia through the lives and deaths of six Russians, “Five ways a new age of cheap energy could shift the power balance on the planet,” <http://qz.com/3416/five-ways-a-new-age-of-cheap-energy-could-shift-the-power-balance-on-the-planet-2/>, AM

On current industry forecasts, global energy consumption should rise by some 39% by 2030, and China alone will account for about 40% of the jump. But two things could change China’s energy consumption enough to alter the geopolitical status quo. One, according to Bernstein, is if the Chinese economy weakens so much that GDP growth drops below 4.5% (though it hasn’t been even close to that low in more than 20 years), and oil consumption drops with it. Second, China could simply change its fuels mix. Right now it burns a lot of coal, and will account for two thirds of the global growth in coal-burning through 2030, according to the BP Statistical Review. But the country is already shifting towards gas-burning power plants, and that could happen faster if gas gets cheaper, as it very well could. Asian liquefied natural gas (LNG) is the most expensive in the world by far—$17 and more per 1,000 cubic feet compared with about $3 in the US. A vast new natural gas supply will flow into Asia in the 2020s from east Africa, and possibly the United States, Cyprus and Israel. That could push down Asian gas prices, and be a tipping point for China to cut its use of coal much faster. Domestic politics could especially motivate China to embrace this cheaper gas. Public protests have been growing over air and water pollution, in part caused by the burning of coal and oil. On current trends, that pollution is going to get considerably worse, and so might the unrest. The Communist Party first decreed a reduction of emissions in 2005, partly because of the political fallout. Now, China’s rulers are doing “everything they can” to reduce CO2, among other pollution, says David Fridley, a scientist in the China Energy Group at Lawrence Berkeley National Laboratory. The impact of China’s reducing its oil consumption and CO2 emissions would be far reaching. The OPEC countries would weaken, as would their rulers’ grip on power. The global economy would surge, as energy-consuming countries right their balance of payments thanks to lower energy prices across the board. And slower-growing CO2 emissions are a geopolitical impact in themselves, since global warming affects the economics, the way of life and even the very survival of certain nations.

## canada

Existing carbon triggers the impact

Daniel **Rirdan 12**, founder of The Exploration Company, “The Right Carbon Concentration Target”, June 29, <http://theenergycollective.com/daniel-rirdan/89066/what-should-be-our-carbon-concentration-target-and-forget-politics?utm_source=feedburner&utm_medium=feed&utm_campaign=The+Energy+Collective+%28all+posts%29>

James Hansen and other promi­nent cli­ma­tol­o­gists are call­ing to bring the CO2 atmos­pheric level to 350 parts per million. In fact, an orga­ni­za­tion, 350.org, came around that ral­ly­ing cry. This is far more radical than most politicians are willing to entertain. And it is not likely to be enough. The 350ppm target will not reverse the clock as far back as one may assume. It was in 1988 that we have had these level of car­bon con­cen­tra­tion in the air. But wait, there is more to the story. 1988-levels of CO2 with 2012-levels of all other green­house gases bring us to a state of affairs equiv­a­lent to that around 1994 (2.28 w/m2). And then there are aerosols. There is good news and bad news about them. The good news is that as long as we keep spewing mas­sive amounts of particulate matter and soot into the air, more of the sun’s rays are scattered back to space, over­all the reflec­tiv­ity of clouds increases, and other effects on clouds whose over­all net effect is to cool­ing of the Earth sur­face. The bad news is that once we stop polluting, stop run­ning all the diesel engines and the coal plants of the world, and the soot finally settles down, the real state of affairs will be unveiled within weeks. Once we fur­ther get rid of the aerosols and black car­bon on snow, we may be very well be worse off than what we have had around 2011 (a pos­si­ble addi­tion of 1.2 w/m2). Thus, it is not good enough to stop all green­house gas emis­sions. In fact, it is not even close to being good enough. A carbon-neutral econ­omy at this late stage is an unmit­i­gated disaster. There is a need for a carbon-negative economy. Essentially, it means that we have not only to stop emitting, to the tech­no­log­i­cal extent pos­si­ble, all green­house gases, but also capture much of the crap we have already out­gassed and lock it down. And once we do the above, the ocean will burp its excess gas, which has come from fos­sil fuels in the first place. So we will have to draw down and lock up that carbon, too. We have taken fos­sil fuel and released its con­tent; now we have to do it in reverse—hundreds of bil­lions of tons of that stuff.

#### 6 degree warming inevitable

**AP 9** (Associated Press, Six Degree Temperature Rise by 2100 is Inevitable: UNEP, September 24, <http://www.speedy-fit.co.uk/index2.php?option=com_content&do_pdf=1&id=168>)

Earth's temperature is likely to jump six degrees between now and the end of the century even if every country cuts greenhouse gas emissions as proposed, according to a United Nations update. Scientists looked at emission plans from 192 nations and calculated what would happen to global warming. The projections take into account 80 percent emission cuts from the U.S. and Europe by 2050, which are not sure things. The U.S. figure is based on a bill that passed the House of Representatives but is running into resistance in the Senate, where debate has been delayed by health care reform efforts. Carbon dioxide, mostly from the burning of fossil fuels such as coal and oil, is the main cause of global warming, trapping the sun's energy in the atmosphere. The world's average temperature has already risen 1.4 degrees since the 19th century. Much of projected rise in temperature is because of developing nations, which aren't talking much about cutting their emissions, scientists said at a United Nations press conference Thursday. China alone adds nearly 2 degrees to the projections. "We are headed toward very serious changes in our planet," said Achim Steiner, head of the U.N.'s environment program, which issued the update on Thursday. The review looked at some 400 peer-reviewed papers on climate over the last three years. Even if the developed world cuts its emissions by 80 percent and the developing world cuts theirs in half by 2050, as some experts propose, the world is still facing a 3-degree increase by the end of the century, said Robert Corell, a prominent U.S. climate scientist who helped oversee the update. Corell said the most likely agreement out of the international climate negotiations in Copenhagen in December still translates into a nearly 5-degree increase in world temperature by the end of the century. European leaders and the Obama White House have set a goal to limit warming to just a couple degrees. The U.N.'s environment program unveiled the update on peer-reviewed climate change science to tell diplomats how hot the planet is getting. The last big report from the Nobel Prize-winning Intergovernmental Panel on Climate Change came out more than two years ago and is based on science that is at least three to four years old, Steiner said. Global warming is speeding up, especially in the Arctic, and that means that some top-level science projections from 2007 are already out of date and overly optimistic. Corell, who headed an assessment of warming in the Arctic, said global warming "is accelerating in ways that we are not anticipating." Because Greenland and West Antarctic ice sheets are melting far faster than thought, it looks like the seas will rise twice as fast as projected just three years ago, Corell said. He said seas should rise about a foot every 20 to 25 years.

#### Massive alt causes to the economy

Brady ‘12

Diane, award-winning writer, interviewer, and senior editor at Bloomberg Businessweek. “Is Canada Too Smug About Its Economic Future?,” <http://www.businessweek.com/articles/2012-06-25/is-canada-too-smug-about-its-economic-future#p1>, AM

Over the past four years, Canada has been feted as the country that does practically everything right. Its banks are beloved by everyone from economist Paul Krugman to Moody’s Investment Service (MCO), which rated them earlier this year as the safest in the world. While U.S. politicians bickered for years over free-trade deals with South Korea, Colombia, and Panama, Canadians signed several pacts and launched free-trade talks with 50 other nations. Its economy has grown faster—and its debt has stayed smaller—than its Group of Seven peers. (The International Monetary Fund expects Canada’s net debt-to-GDP ratio to be 33 percent by 2016, compared with 85.7 percent in the U.S.) Even the controversy over Canada’s Keystone XL pipeline underscored the fact that Alberta has the resources to ship more than 700,000 barrels of oil a day to U.S. refineries. What a problem to have. No wonder China Investment Corp., Beijing’s sovereign wealth fund, set up its first foreign office in Toronto last year instead of in New York. Yet there’s increased grumbling these days that not all is well north of the border—and not just because low interest rates and high housing prices have helped push household debt to the point where Canadians now owe an average of $1.52 for every dollar they earn. Economic growth has slowed, with annualized GDP growth up 1.5 percent in the first quarter, when the Bank of Canada had expected a 2.5 percent increase. Some of that is no doubt due to misery in other parts of the world, which has dampened demand and rattled investors. But it’s not the only factor that’s bothering Glen Hodgson, chief economist at the Conference Board of Canada, a prominent Ottawa-based think tank. Hodgson put out a commentary on June 25 entitled “Don’t Be Too Smug, Canada” that points to other challenges he feels are not being adequately addressed. While Hodgson praises his homeland for its sound fiscal and monetary policies and conservative banking regulation, he writes that there are “numerous cracks in the Canadian facade.” In particular, he argues that chronically weak productivity growth has put Canadian incomes at $8,500 per capita below where they would be if the country matched U.S. rates. Its innovation strategy is mixed, tax reform is overdue, and too little has been done to deal with what he calls the “approaching demographic tsunami” of an aging population. What’s more, he writes, “there continue to be important barriers to the movement of people, goods, services, and investment capital between provinces.” That, in turn, could exacerbate the risk of a two-track economy where the resource-risk Western provinces outperform places such as Ontario, which has seen its manufacturing sector slump amid a strong currency and growing competition from emerging markets.

#### No dutch disease – oil sands key to sustainable growth

Leong ‘12

Melissa, Melissa Leong is an award-winning reporter at the National Post and best-selling young adult novelist, “Oil sands will be Canada’s economic engine for next 25 to 30 years: Deloitte,” <http://business.financialpost.com/2012/11/15/oil-sands-will-be-canadas-economic-engine-for-next-25-to-30-years-deloitte/?__lsa=a9cc-6ef8>, AM

“Proponents of development argue in favour of the economic benefits while opponents argue those benefits aren’t worth the environmental risk,” said the report, entitled Gaining Ground in the Sands 2013. “From our perspective, growth of oil sands is key to continued growth in Canadian prosperity. “The constructive argument is really over how to develop the oil sands…not whether or not to develop them at all.” Over the next few decades, the Canadian Energy Research Institute estimates a boon of $2.1 trillion in economic benefits over the next 25 years and about 905,000 jobs by 2035. “The oil sands are going to be the economic engine for the country for the foreseeable future, for the next 25 to 30 years, and it is akin to the impact of building the national railway in the 1880s,” Marc Joiner, a partner at Deloitte in Toronto, told the Edmonton Journal. “There was dissent back then about spending all that money on the railway, but now we ask how could you not have done that. It is the same with the oilsands. Citing figures from the Energy Resources Conservation sands Board, the report estimates that by 2021, the oil will have ramped up production from 1.7 million barrels per day to 3.7 million. However, new oil may have no where to go: the industry will hit pipeline capacity by about 2017 if developing projects are not completed, the report said.

## immigration – ag

#### Visas aren’t key

Shannon O'Neil, Foreign Policy, 1/29/13, Think Again: Immigration, www.foreignpolicy.com/articles/2013/01/29/think\_again\_immigration\_reform\_united\_states

Not likely. Starting in 2005, the number of migrants coming from Mexico -- who comprise one-third of the U.S. foreign born population -- began declining. The deceleration then picked up pace with the 2008 world financial crisis, so much so that a 2012 Pew Hispanic report noted that for the first time in decades, the number of Mexicans entering the country was the same as those leaving -- leading to a "net zero" in terms of flows. Though the U.S. recession played a role, perhaps the most important -- and permanent -- factor behind this shift is demographic. In the 1970s, even as mortality rates declined, Mexican women on average had seven children. Today, that number is much closer to two -- much like the United States. This means that the "extra" Mexican youth who came of age in the 1990s and early 2000s have dissipated, and are unlikely to return again. These fewer siblings are staying in school longer -- most now through high school and many into college -- further reducing the pool of young men and women searching for opportunities to the north. Economic prospects at home have also improved. The booms and busts of the 1980s and 1990s, which pushed so many Mexicans across the border, seem to have ended. Instead, Mexico's new economic story is one of a growing middle class -- now some 60 million strong -- made up of lawyers, accountants, small and medium size business owners, higher-skilled factory workers, and taxi drivers, among many other professions. These economic shifts also have encouraged Mexicans to stay home. This is not to say that immigration from Mexico will dry up completely. The combination of better pay and rising U.S. demand for labor will continue to draw many from Mexico -- as well as from around the world -- to America's workplaces. For instance, immigration from Central America -- though much lower in terms of sheer numbers -- continues unabated. And immigration reform, which is now on the table after the Republican Party's record-low showing with Hispanic voters, could make it easier for many to stay, and for more to come. Still, even if new legislation opens the door to citizenship, history suggests that all of these immigrants wouldn't rush in. In the 26 years since Congress passed the Immigration Reform and Control Act, which created a pathway for legalization, fewer than a third of the 2.7 million Mexicans eligible under the law decided to naturalize.

## immigration

#### Passage inevitable—Obama’s irrelevant

Michael Hirsh, National Journal, 2/7/13, There’s No Such Thing as Political Capital, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207

Meanwhile, the Republican members of the Senate’s so-called Gang of Eight are pushing hard for a new spirit of compromise on immigration reform, a sharp change after an election year in which the GOP standard-bearer declared he would make life so miserable for the 11 million illegal immigrants in the U.S. that they would “self-deport.” But this turnaround has very little to do with Obama’s personal influence—his political mandate, as it were. It has almost entirely to do with just two numbers: 71 and 27. That’s 71 percent for Obama, 27 percent for Mitt Romney, the breakdown of the Hispanic vote in the 2012 presidential election. Obama drove home his advantage by giving a speech on immigration reform on Jan. 29 at a Hispanic-dominated high school in Nevada, a swing state he won by a surprising 8 percentage points in November. But the movement on immigration has mainly come out of the Republican Party’s recent introspection, and the realization by its more thoughtful members, such as Sen. Marco Rubio of Florida and Gov. Bobby Jindal of Louisiana, that without such a shift the party may be facing demographic death in a country where the 2010 census showed, for the first time, that white births have fallen into the minority. It’s got nothing to do with Obama’s political capital or, indeed, Obama at all. The point is not that “political capital” is a meaningless term. Often it is a synonym for “mandate” or “momentum” in the aftermath of a decisive election—and just about every politician ever elected has tried to claim more of a mandate than he actually has. Certainly, Obama can say that because he was elected and Romney wasn’t, he has a better claim on the country’s mood and direction. Many pundits still defend political capital as a useful metaphor at least. “It’s an unquantifiable but meaningful concept,” says Norman Ornstein of the American Enterprise Institute. “You can’t really look at a president and say he’s got 37 ounces of political capital. But the fact is, it’s a concept that matters, if you have popularity and some momentum on your side.” The real problem is that the idea of political capital—or mandates, or momentum—is so poorly defined that presidents and pundits often get it wrong. “Presidents usually over-estimate it,” says George Edwards, a presidential scholar at Texas A&M University. “The best kind of political capital—some sense of an electoral mandate to do something—is very rare. It almost never happens. In 1964, maybe. And to some degree in 1980.” For that reason, **political capital is a concept that misleads far more than it enlightens**. It is distortionary. It conveys the idea that we know more than we really do about the ever-elusive concept of political power, and it discounts the way unforeseen events can suddenly change everything. Instead, it suggests, erroneously, that a political figure has a concrete amount of political capital to invest, just as someone might have real investment capital—that a particular leader can bank his gains, and the size of his account determines what he can do at any given moment in history. Naturally, any president has practical and electoral limits. Does he have a majority in both chambers of Congress and a cohesive coalition behind him? Obama has neither at present. And unless a surge in the economy—at the moment, still stuck—or some other great victory gives him more momentum, it is inevitable that the closer Obama gets to the 2014 election, the less he will be able to get done. Going into the midterms, Republicans will increasingly avoid any concessions that make him (and the Democrats) stronger. But the abrupt emergence of the immigration and gun-control issues illustrates how suddenly shifts in mood can occur and how political interests can align in new ways just as suddenly. Indeed, the pseudo-concept of political capital masks a larger truth about Washington that is kindergarten simple: You just don’t know what you can do until you try. Or as Ornstein himself once wrote years ago, “Winning wins.” In theory, and in practice, depending on Obama’s handling of any particular issue, even in a polarized time, **he could still deliver** on a lot of his second-term goals, depending on his skill and the breaks. Unforeseen catalysts can appear, like Newtown. Epiphanies can dawn, such as when many Republican Party leaders suddenly woke up in panic to the huge disparity in the Hispanic vote.

#### Obama pushing poisons the well

Ezra Klein 1/28/13, Two numbers show why Republicans support immigration reform, [www.washingtonpost.com/blogs/wonkblog/wp/2013/01/28/two-numbers-show-why-republicans-support-immigration-reform/](http://www.washingtonpost.com/blogs/wonkblog/wp/2013/01/28/two-numbers-show-why-republicans-support-immigration-reform/)

So on this issue, Republicans have both strategic and substantive reasons for making a deal. The question for the Obama administration is how to keep them from developing reasons for opposing whatever particular deal the Obama administration proposes. And **the answer, in a way, is** obvious: The **Obama** administration shouldn’t **propose a deal**. In fact, **it should stay out of the dealmaking as much as possible.** The immigration-reform effort is being spearheaded by a bipartisan group of senators that includes Chuck Schumer (D-N.Y.), John McCain (R-Ariz.), Dick Durbin (D-Ill.), Marco Rubio (R-Fla.), Bob Menendez (D-N.J.), Lindsey Graham (R-S.C.), Michael Bennet (D-Colo.) and Jeff Flake (R-Ariz.). You can read their plan here. That’s no accident. Durbin, Schumer and Menendez are close allies of the White House. The fact that they moved first isn’t a quirk of scheduling. It’s an effort to keep the fever down. Republicans will fight most anything Obama proposes. This is, again, not because they’re sick, but because they run in primaries and represent districts and states where their constituents want them to fight anything overly associated with the Obama administration. This is a frustrating fact of life for the Obama administration — and perhaps even a sick commentary on how our political system works — but it is, nevertheless, a fact: Their involvement polarizes issues. And it’s not unique to them: Presidential involvement in general polarizes issues**. By staying out,** at least for now, the **Obama** administration **is making it easier for Republicans to stay in.** At some point, the Obama administration’s involvement will become necessary. Certainly, the administration will have to take a position on whatever is being worked on in the Senate. But they’re wise to hang back for as long as they can, routing their preferences through the Democrats on the Senate working group. Republicans have all the reason in the world to support immigration reform. The last thing the Obama administration wants to do is give them a reason to oppose it. The fever is low now, but that doesn’t mean it can’t spike.

#### Gay rights provisions trigger the link

Erin Kelly, USA Today, 2/8/13, Gay rights becoming controversy in immigration reform, www.usatoday.com/story/news/politics/2013/02/08/gay-rights-immigration-reform/1903119/

Gay rights has emerged as an unexpected point of controversy in the congressional debate over immigration reform, prompting key Republicans to warn that it could derail efforts to reach a bipartisan compromise. President Obama and some congressional Democrats are pushing for any immigration reform plan to include a provision to allow gay Americans to sponsor their immigrant partners for legal residency in the United States. That is a right currently enjoyed only by married heterosexual couples. But Republican leaders on immigration reform say it's already going to be an uphill battle to convince their GOP colleagues to support a pathway to citizenship for the 11 million illegal immigrants living in the United States. **Including a provision for gay partners will make reform legislation** an even tougher sell, key senators said. "I'm telling you now, if you load this (immigration reform legislation) up with social issues and things that are controversial, it will endanger the issue," Sen. John McCain, R-Ariz., said at a forum this week sponsored by Politico. Sen. Marco Rubio, R-Fla., expressed similar concerns during an interview with the BuzzFeed online news site this week. "I think if that issue (gay rights) becomes a central issue in the debate it's going to become harder to get it done because there will be strong feelings on both sides," Rubio said. McCain and Rubio are part of a group of eight senators -- four Republicans and four Democrats -- who recently unveiled a bipartisan blueprint for comprehensive immigration reform. Their efforts have sparked optimism among immigration rights' advocates that legislation might finally be passed to deal with the divisive issue. The senators' bipartisan blueprint does not include any provision for gay citizens to sponsor their immigrant partners for legal status. However, a plan announced by Obama late last month does include the language, which supporters estimate would affect 30,000 to 40,000 gay Americans and their partners. This week, a group of 16 House members -- 14 Democrats and two moderate Republicans from the Northeast -- introduced the "Uniting American Families Act" to allow gay Americans to sponsor their "permanent partners" to become legal U.S. residents -- and eventually citizens. "Permanent partners" are described as two adults who intend to make a lifelong commitment to one another. "Today, thousands of committed same-sex couples are needlessly suffering because of unequal treatment under our immigration laws, and this is an outrage," said Jerrold Nadler, D-N.Y., who led the effort to introduce the same-sex partners' bill in the House. "Any serious legislative proposal for comprehensive immigration reform absolutely must include gay and lesbian couples and their families." Sen. Patrick Leahy, D-Vt., the chairman of the Senate Judiciary Committee, said he intends to introduce identical legislation in that chamber soon with more than 25 Democratic co-sponsors and the support of Republican Sen. Susan Collins of Maine. "More than two dozen countries recognize same-sex couples for immigration purposes," Collins said. "This important civil rights legislation would help prevent committed, loving families from being forced to choose between leaving their family or leaving their country." But some of the religious **groups that strongly support immigration reform say they will oppose the inclusion of the same-sex provision in any comprehensive bill**. U.S. Catholic bishops, with the support of evangelicals, have written a letter to Obama urging him to remove the provision from his immigration reform plan. "Injecting a contentious social issue into the immigration debate calls into question the commitment to actually achieving immigration reform," said Galen Carey, vice president of the National Association of Evangelicals. "Too many politicians in both parties are using the immigration issue to score political points. We need a laser focus on building bipartisan consensus on fixing our broken immigration system. The future for millions of immigrant families hangs in the balance."

#### Overloading Congress causes agenda success—focusing his capital kills it

Chuck Todd, NBC, 2/5/13, First Thoughts: Flooding the zone, firstread.nbcnews.com/\_news/2013/02/05/16852487-first-thoughts-flooding-the-zone?lite

Flooding the zone: Exactly one week away from President Obama’s State of the Union address, the White House has spent the early days of the second term flooding the zone with its legislative agenda. Last week, the president delivered his big immigration speech in Las Vegas. Yesterday, he spoke about gun violence in Minnesota. Today, he’s meeting at the White House with progressive, labor, and business leaders to discuss immigration reform and the budget situation. What’s going on here: The Obama White House wants to overload Washington’s political circuits in an effort to see what it can get through Congress -- without letting Congress define what issues get addressed. After all, Republicans want to solely talk about the budget before the March budget showdown (see yesterday’s multiple coordinated responses by House Republicans on the White House’s announcement it would be late with its budget). Yet by flooding the zone, Team Obama -- with the bully pulpit and the State of the Union at its disposal -- wants to widen the political dialogue beyond that one issue. This “flooding the zone” concept is how the Obama White House operated in the first six months of the first term, and it’s where he got most of his legislative achievements. When the White House got bogged down on ONE issue (health care, debt ceiling, etc), officials determined they lost some of their political capital.

#### SMRs are popular

Nelson and Northey ‘12

Gabriel and Northey, energy and environment reports for Greenwire, “DOE funding for small reactors languishes as parties clash on debt,” <http://www.eenews.net/public/Greenwire/2012/09/24/3>, AM

It's not just wind and solar projects that are waiting for federal help as Congress duels over the importance of putting taxpayer dollars on the line for cutting-edge energy projects. Some of the nation's largest nuclear power companies are anxious to hear whether they will get a share of a $452 million pot from the Department of Energy for a new breed of reactors that the industry has labeled as a way to lessen the safety risks and construction costs of new nuclear power plants. The grant program for these "small modular reactors," which was announced in January, would mark the official start of a major U.S. foray into the technology even as rising construction costs -- especially when compared to natural-gas-burning plants -- cause many power companies to shy away from nuclear plants. DOE received four bids before the May 21 deadline from veteran reactor designers Westinghouse Electric Co. and Babcock & Wilcox Co., as well as relative newcomers Holtec International Inc. and NuScale Power LLC. Now the summer has ended with no announcement from DOE, even though the agency said it would name the winners two months ago. As the self-imposed deadline passed, companies started hearing murmurs that a decision could come in September, or perhaps at the end of the year. To observers within the industry, it seems that election-year calculations may have sidelined the contest. "The rumors are a'flying," said Paul Genoa, director of policy development at the Nuclear Energy Institute, in an interview last week. "All we can imagine is that this is now caught up in politics, and the campaign has to decide whether these things are good for them to announce, and how." Small modular reactors do not seem to be lacking in political support. The nuclear lobby has historically courted both Democrats and Republicans and still sees itself as being in a strong position with key appropriators on both sides of the aisle. Likewise, top energy officials in the Obama administration have hailed the promise of the new reactors, and they haven't shown any signs of a change of heart. DOE spokeswoman Jen Stutsman said last week that the department is still reviewing applications, but she did not say when a decision will be made.

#### Rubio key, not Obama—he causes passage

David Drucker, Roll Call, 1/30/13, Rubio Must Sell Immigration Changes to GOP, Grass Roots, www.rollcall.com/news/rubio\_must\_sell\_immigration\_changes\_to\_gop\_grass\_roots-222044-1.html?pos=hftxt

The fate of an immigration overhaul rests almost exclusively with Sen. Marco Rubio, the Florida Republican whose star power with conservatives is crucial to moving a bill through Congress. President Barack Obama retains veto power, and Democrats hold the Senate floor. But no comprehensive immigration changes are likely to pass Congress without the healthy support of House Republicans. And Florida’s junior senator, perhaps more than any other Republican serving in Washington today, has the political credibility and communication skills to sell such complicated, sensitive legislation to skeptical conservative members, grass-roots voters and influential media commentators. Rubio’s position is all the more unique because congressional Democrats and Obama need him, too, and appear to realize his importance to the legislative endgame.

#### Obama capital collapses Rubio’s strategy—injects controversial issues that kill the bill

David Drucker, Roll Call, 1/30/13, Rubio Must Sell Immigration Changes to GOP, Grass Roots, www.rollcall.com/news/rubio\_must\_sell\_immigration\_changes\_to\_gop\_grass\_roots-222044-1.html?pos=hftxt

President Barack Obama retains veto power, and Democrats hold the Senate floor. But no comprehensive immigration changes are likely to pass Congress without the healthy support of House Republicans. And Florida’s junior senator, perhaps more than any other Republican serving in Washington today, has the political credibility and communication skills to sell such complicated, sensitive legislation to skeptical conservative members, grass-roots voters and influential media commentators. Rubio’s position is all the more unique because congressional Democrats and Obama need him, too, and appear to realize his importance to the legislative endgame. Republicans warn that Obama and congressional Democrats could sink Washington’s immigration policy rewrite by attaching controversial social provisions or watering down the border enforcement and security measures included in the bipartisan Senate framework that Rubio helped negotiate. The Florida lawmaker has said he’ll pull his support from any bill if that occurs, and Republicans say comprehensive policy changes will fail to garner meaningful GOP support without Rubio’s backing. “If Rubio signals any mistrust or misgivings, the whole thing collapses,” GOP pollster Brock McCleary said.

#### Nuclear debate inevitable this month

Wald 12-18, writer – Green Blog @ NYT, 12/18/’12

(Matthew, “Come January, Another Try on Nuclear Waste,” <http://green.blogs.nytimes.com/2012/12/18/come-january-another-try-on-nuclear-waste/#more-152964>)

Come January, Another Try on Nuclear Waste

The incoming chairman of the Senate Energy Committee suggests that the Energy Department should stop billing utilities more in waste disposal fees than the department is actually spending on addressing nuclear wastes. And he wants the department to pay for moving some of the wastes out of spent fuel pools at the nation’s highest-risk reactors and into dry casks.

Ron Wyden, an Oregon Democrat, will take over as the committee’s chairman when Congress begins its new session next month. In an interview on Monday, he pointed out that the department collects about $750 million a year in waste disposal fees at the rate of one-tenth of a cent per kilowatt-hour generated by the reactors that feed those utilities. Yet the government is spending nearly nothing, he noted.

That’s partly **because** the **Obama** administration **pulled the plug on** a proposed repository at **Yucca** Mountain, about 100 miles from Las Vegas in the Nevada desert, in its 2009-10 budget request.

Mr. Wyden said the committee would have to take a broad look at the issue of the Energy Department’s nuclear waste fund. “The utilities are obviously unhappy they’re paying the money,’’ which is being “hijacked” for other purposes, he said — namely, deficit reduction. The fund now has a balance of $25 billion. “**There is a lot of frustration**” about the money and the lack of progress, he said.

The waste disposal fees were enshrined as law in the 1980s and are the last surviving element of a three-decade-old national consensus that the Energy Department should evaluate candidate sites, pick the best one and build a repository for nuclear wastes there. (Congress eventually told the department not to bother looking beyond Yucca Mountain — an idea that seemed to meet with the approval of everybody outside Nevada for a long while.)

A blue-ribbon commission that President Obama appointed after shelving the Yucca Mountain plan recommended starting over and searching for a new site in a process based on the host state’s consent, as opposed to forcing a repository on an unwilling Nevada.

That implies that a permanent repository is many years into the future, possibly beyond the lifetimes of many of the reactors now operating. Dominion said in October that it would close its Kewaunee nuclear plant in Wisconsin. And with the current glut of natural gas, more closings seem possible, which means leaving the wastes behind — “stranded,” as Mr. Wyden put it — at the sites of defunct reactors.

Meanwhile, as the second anniversary of the Fukushima Daiichi nuclear accident in Japan draws near, some members of Congress say it is time to reduce the risk posed by spent fuel by moving some of it to dry casks.

# 1AR

## A2 licensing

#### Licensing’s no big deal and DoD solves

William Madia 12, Stanford Energy Journal, serves as Chairman of the Board of Overseers and Vice President for the SLAC National Accelerator Laboratory at Stanford University. Previously, he was the Laboratory Director at the Oak Ridge National Laboratory from 2000-2004 and the Pacific Northwest National Laboratory from 1994-1999., “small modular reactors: a potential game-changing technology”, http://energyclub.stanford.edu/index.php/Journal/Small\_Modular\_Reactors\_by\_William\_Madia, Spring 2012)

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.

## A2 nrc

#### Most qualified ev

Hunt 11

(Gary, President, Tech&Creative Labs, a disruptive innovation business collaboration of software, data and advanced analytics technology companies working together to integrate their products to meet the changing needs of the energy vertical. Tech and Creative Labs is based in Boston with offices in the San Francisco Bay Area. Gary Hunt has more than 30 years experience in the energy, software and information technology industries. He served as VP-Global Analytics & Data at IHS/CERA; Division President, Ventyx/Global Energy Advisors; as CEO, MMWEC, a New England-based wholesale power producer, “Is there a Small Modular Nuke in our Distributed Energy Future?” May 31, 2011, http://www.tclabz.com/2011/05/31/is-there-a-small-modular-nuke-in-our-distributed-energy-future/)

The Colonel says the military does not believe the NRC will license such a modular design anytime soon enough to meet the military need so he is recommending that **the** Department of Defense **use its authority to license such technology for military purposes since doing so does not require NRC approval**. Once proven and deployed, these military applications should speed the path to small modular nuclear units in civilian applications.

## hydrogen key uuv

#### Fuel cell system critical to UUV effectiveness—stealth and endurance

J. B. Lakeman, Ph.D., University of Southampton Physical Sciences Department, 2004, The Role of Fuel Cells in the Supply of Silent Power for Operations in Littoral Waters, http://www.dtic.mil/dtic/tr/fulltext/u2/a428713.pdf

There is an ever increasing requirement for stealthy underwater platforms such as swimmer delivery vehicles, unmanned underwater vehicles, submarines, weapons and mobile countermeasures. Hence, there is a desire to reduce noise levels and indeed detectable emissions of all types.

In parallel, there is a move towards all-electric platform concepts and weaponry for naval platforms that will result in potentially stealthier platforms and pulse-power, lower signature weapons. Storing and generating electric power is therefore of major interest, both for propulsion over long distances and also for pulse-power weapons.

In this paper, we focus on fuel cells as a means of meeting stealth and performance targets for different underwater platforms.

## Hydrogen Feasible

#### New fuel cell tech makes it affordable—old evidence irrelevant

Commodity Online, 2011, US researchers claim breakthrough in Hydrogen Fuel Cell tech , www.commodityonline.com/news/us-researchers-claim-breakthrough-in-hydrogen-fuel-cell-tech-37501-3-37502.html

U.S. researchers say they've made a breakthrough in the development of low-cost hydrogen fuel cells that one day could power electric cars.

Researchers at Case Western Reserve University in Cleveland say catalysts made of carbon nanotubes dipped in a polymer solution can outperform traditional platinum catalysts in fuel cells at a fraction of the cost.

The scientists say the new technology can remove one of the biggest roadblocks to widespread cell use: the cost of the catalysts.

Platinum, which represents at least a quarter of the cost of fuel cells, currently sells for about $30,000 per pound, while the activated carbon nanotubes cost about $45 per pound, a Case release said Tuesday.

"This is a breakthrough," Liming Dai, a professor of chemical engineering and the research team leader, said.

#### Fuel cell technology makes it feasible

Antonia Herzog, Natural Resource Defense Council, 2005, A HYDROGEN FUTURE? An Economic and Environmental Assessment of Hydrogen Production Pathways, http://www.nrdc.org/air/transportation/hydrogen/hydrogen.pdf

Hydrogen has been considered as a fuel for many years, but over the past 10 to 15 years advances in fuel cell technology have spurred an enormous wave of interest in its potential energy applications, particularly for the transportation sector which—despite long-standing concerns about U.S. dependence on imported oil—remains nearly exclusively dependent on petroleum fuels. Fuel cells, which can theoretically be made in a wide range of sizes for any number of potential applications, have the ability to efficiently convert hydrogen to electricity using special membrane materials and an electrochemical rather than combustion process. Over the past decade or so, billions of dollars in private and public sector research and development funding have flowed to hydrogen technologies. Hydrogen fuel cell vehicles have also emerged as the centerpiece of the Bush administration’s strategy for addressing petroleum-related energy security and climate concerns. In 2003, the administration announced plans to spend $1.7 billion over five years on hydrogen fuel cell vehicles and supporting fuel infrastructure as part of its FreedomCAR and Fuel Partnership program.

## china impact

Econ ties don’t solve

Migranyan, director – Institute for Democracy and Cooperation, professor – Institute of International Relations, Moscow, 1/30/’13

(Andranik, “Russia and Obama's Second Term,” The National Interest)

A third illusion, seen among highly qualified American experts in international relations, is that Russian-U.S. conflicts arise because there are no solid economic ties between the two countries. There is some truth to this. Of course, it would be good for Russia to have more expansive trade and economic, as well as scientific and technical, relations with the United States. But it is clear that even strong economic ties do not prevent geopolitical conflicts from arising among large, sovereign, independent countries. Consider the deep economic ties between Germany and Great Britain at the beginning of the twentieth century, which didn’t foreclose the First World War. Or consider a more recent example: the nearly $500 billion trade volume between China and the United States, which **does not preclude** the two countries from having even more **conflict and tension** than the United States has with Russia. On the issues of Libya, Syria and Iran, China sides with Russia. Other points of contention include Taiwan, the South China Sea problems with Vietnam and the Philippines, and separate disputes with Japan. In all of these frictions, the United States supports China’s adversaries. Thus, it is clear that good trade and economic relations do not prevent large geopolitical frictions among countries.

## 1ar – winners

#### Capital isn’t capped which means there’s only a risk of the link turn

Michael Hirsh, National Journal, 2/7/13, There’s No Such Thing as Political Capital, www.nationaljournal.com/magazine/there-s-no-such-thing-as-political-capital-20130207

In terms of Obama’s second-term agenda, what all these shifting tides of momentum and political calculation mean is this: Anything goes. Obama has no more elections to win, and he needs to worry only about the support he will have in the House and Senate after 2014. But if he picks issues that the country’s mood will support—such as, perhaps, immigration reform and gun control—there is no reason to think he can’t win far more victories than any of the careful calculators of political capital now believe is possible, including battles over tax reform and deficit reduction. Amid today’s atmosphere of Republican self-doubt, a new, more mature Obama seems to be emerging, one who has his agenda clearly in mind and will ride the mood of the country more adroitly. **If he can get some early wins**—as he already has, apparently, on the fiscal cliff and the upper-income tax increase—**that will create momentum, and one win may well lead to others. “Winning wins.”**

#### Obama can muscle anything

John Dickerson, Slate, 1/18/13, Go for the Throat!, www.slate.com/articles/news\_and\_politics/politics/2013/01/barack\_obama\_s\_second\_inaugural\_address\_the\_president\_should\_declare\_war.single.html

On Monday, President Obama will preside over the grand reopening of his administration. It would be altogether fitting if he stepped to the microphone, looked down the mall, and let out a sigh: so many people expecting so much from a government that appears capable of so little. A second inaugural suggests new beginnings, but this one is being bookended by dead-end debates. Gridlock over the fiscal cliff preceded it and gridlock over the debt limit, sequester, and budget will follow. After the election, the same people are in power in all the branches of government and they don't get along. There's no indication that the president's clashes with House Republicans will end soon. Inaugural speeches are supposed to be huge and stirring. Presidents haul our heroes onstage, from George Washington to Martin Luther King Jr. George W. Bush brought the Liberty Bell. They use history to make greatness and achievements seem like something you can just take down from the shelf. Americans are not stuck in the rut of the day. But this might be too much for Obama’s second inaugural address: After the last four years, how do you call the nation and its elected representatives to common action while standing on the steps of a building where collective action goes to die? That bipartisan bag of tricks has been tried and it didn’t work. People don’t believe it. Congress' approval rating is 14 percent, the lowest in history. In a December Gallup poll, 77 percent of those asked said the way Washington works is doing “serious harm” to the country. The challenge for President Obama’s speech is the challenge of his second term: how to be great when the environment stinks. Enhancing the president’s legacy requires something more than simply the clever application of predictable stratagems. Washington’s partisan rancor, the size of the problems facing government, and the limited amount of time before Obama is a lame duck all point to a single conclusion: The president who came into office speaking in lofty terms about bipartisanship and cooperation can only cement his legacy if he destroys the GOP. If he wants to transform American politics, he must go for the throat. President Obama could, of course, resign himself to tending to the achievements of his first term. He'd make sure health care reform is implemented, nurse the economy back to health, and put the military on a new footing after two wars. But he's more ambitious than that. He ran for president as a one-term senator with no executive experience. In his first term, he pushed for the biggest overhaul of health care possible because, as he told his aides, he wanted to make history. He may already have made it. There's no question that he is already a president of consequence. But there's no sign he's content to ride out the second half of the game in the Barcalounger. He is approaching gun control, climate change, and immigration with wide and excited eyes. He's not going for caretaker. How should the president proceed then, if he wants to be bold? The Barack Obama of the first administration might have approached the task by finding some Republicans to deal with and then start agreeing to some of their demands in hope that he would win some of their votes. It's the traditional approach. Perhaps he could add a good deal more schmoozing with lawmakers, too. That's the old way. He has abandoned that. He doesn't think it will work and he doesn't have the time. As Obama explained in his last press conference, he thinks the Republicans are dead set on opposing him. They cannot be unchained by schmoozing. Even if Obama were wrong about Republican intransigence, other constraints will limit the chance for cooperation. Republican lawmakers worried about primary challenges in 2014 are not going to be willing partners. He probably has at most 18 months before people start dropping the lame-duck label in close proximity to his name. Obama’s only remaining option is to pulverize. Whether he succeeds in passing legislation or not, given his ambitions, his goal should be to delegitimize his opponents. Through a series of clarifying fights over controversial issues, he can force Republicans to either side with their coalition's most extreme elements or cause a rift in the party that will leave it, at least temporarily, in disarray.

## at: dem unity

#### Winners win for dem unity

Reuters, 2/7

(<http://www.reuters.com/article/2013/02/07/usa-congress-obama-idUSL1N0B7IQZ20130207>)

Va. Feb 7 (Reuters) - Democrats in Congress have always had some gripes with their president, Barack Obama. He doesn't call. He doesn't schmooze. He's **not tough enough** with Republicans.

But this year, the complaints, as well as the complainers, are fewer than ever, with some of his old critics confessing that they're starting to come around.

That's the message from the annual retreat in suburban Virginia of Democratic members of the House of Representatives.

"I really like this new man," said Democratic Representative Louise Slaughter of New York, one of those who during Obama's first term thought he was too compromising.

"I've been a little hard on him, but he finally understands that Republicans really don't like him and tried to destroy him," Slaughter said. "He wants to get things done. So do I."

Slaughter was referring to the aggressive agenda Obama has pursued since winning re-election in November, with immigration reform and gun violence, longtime favorites of the progressive base of the Democratic Party, at the top of the list.

Liberals were critical of Obama during his first term for lack of action on both these issues as well as **on climate change.** Fiscally conservative Democrats criticized his nearly $800 billion economic stimulus plan in 2009.

Moderates in the Senate - such as then Senators Evan Bayh of Indiana and Ben Nelson of Nebraska - thought him insufficiently attentive to the economy.

He faced the broadest barrage from his own party in December 2010, when he **compromised** with Republicans by agreeing to extend the so-called Bush tax cuts, instead of letting them expire.

That was the darkest moment for House Democrats, who had lost control of their majority in the mid-term election the month before, in part because of Obama's handling of the economy.

Fresh from what Democrats see as an Obama triumph in this January's "fiscal cliff" showdown with Republicans, members gave the president a sustained ovation here on Thursday.

#### Dem unity collapse inevitable

Doyle McManus, 1/19/13, For Democrats, unity and its pitfalls, articles.baltimoresun.com/2013-01-19/news/bal-for-democrats-unity-and-its-pitfalls-20130117\_1\_democrats-fiscal-cliff-national-debt

It's hard to recognize the Democratic Party these days. In recent decades, it's been a divided, brawling tribe. But this year, Democrats are one big, happy family. Sure, there was grumbling from the left over President Barack Obama's agreement to keep tax cuts in place for couples making between $250,000 and $450,000 a year. But that quickly gave way to satisfaction that Mr. Obama had won the "fiscal cliff" fight, and growing confidence that he can win the next round over the federal debt ceiling as well. Two factors have given Democrats this unusual sense of unity and well-being: the surprisingly big margin by which Mr. Obama won November's presidential election, and the obduracy of House Republicans in refusing to notice that their arguments lost. If the GOP wants to keep alienating voters by telling them they're wrong, the Democrats are happy to offer them more opportunities. Ads by Google 6 Week GRE Class – $499In-Person Classroom Course, On-Site The Nationwide Value Leader www.sherwoodtest.com In recent weeks, the president has dared Republicans to refuse to raise the federal government's debt ceiling. He has made clear that he will push for significant immigration reform and gun control measures, issues on which Democrats believe the GOP is out of step with mainstream opinion. "The dominant sense among Democrats is that the party is on a roll," said William A. Galston, a former Bill Clinton aide now at the Brookings Institution. "And why not? 2012 was a victory, after all." But there's a cloud on the Democrats' blue horizon: the unsolved problems of federal spending and the national debt. As Mr. Obama has acknowledged, if federal spending continues to grow unabated — especially on the big entitlement programs of Medicare, Medicaid and Social Security — there won't be enough money in the Treasury to pay for much else. The modest increases in tax revenue he just obtained won't be significant over the long run. Even if the president wins the coming fight over the debt ceiling, there's no escape from the spending problem. By the end of February, Congress must either undo the automatic sequester of federal funding that it ordained in earlier bouts of budget wrestling or see savage cuts to domestic and defense programs. And by the end of March, the government needs a new spending bill to allow agencies to keep operating. That's when the Republicans' best chance to press for spending cuts will come. And that's when Democrats could revert to their traditional feuding ways

 — because, as even Mr. Obama agrees, the biggest target for reductions is one of the Democrats' favorite programs: Medicare. "I agree with Democrats and Republicans that the aging population and the rising cost of health care [make] Medicare the biggest contributor to our deficit," Mr. Obama said during the fiscal cliff negotiations. "I believe we've got to find ways to reform that program without hurting seniors who count on it to survive." Medicare already accounts for about 15 percent of federal spending (not counting interest), and the Congressional Budget Office projects that the cost will nearly double in 10 years if no changes are made. **Bringing federal spending under control without touching Medicare simply isn't practical.** But it's a prospect that **chills many Democrats**, because defending Medicare and Social Security benefits is the clearest unifying doctrine their party has, just as resisting tax increases is for Republicans. So though Mr. Obama may agree in theory about the need for cuts, deciding what to cut is certain to be divisive. On the party's left, many progressives hate the idea of touching Medicare at all. In 2011, after Mr. Obama flirted with accepting an increase in the Medicare eligibility age from 65 to 67 in talks with House Speaker John A. Boehner, labor unions and other progressive groups quickly organized campaigns to denounce the idea. In the party's center, pro-business New Democrats worry that without major changes in Medicare, the federal deficit will balloon and the economy will suffer. But they didn't hear much encouragement from Mr. Obama this week.

## 1ar – uq outweighs

#### Both sides have no choice---Obama makes no difference

Allan Wernick, attorney and director of the City University of New York’s Citizenship Now!, 1/25/13, A look at where key Congressional players stand on immigration indicates reform could come soon, http://www.nydailynews.com/new-york/citizenship-now/immigration-chances-good-sweeping-immigration-reform-article-1.1245988

As expected, President Obama confirmed his support for immigration reform in his inaugural address. It was one of the few specific issues mentioned by the President in setting the program for his coming four years in office. In the last few weeks, some pundits have argued that the debate over debt and budget issues or gun control will sidetrack the President from his commitment to immigrants. That analysis ignores the expectations of Latino voters and their allies. Obama and both parties have no choice but to make immigration reform a priority in the coming year. The doubters are wrong. I am more optimistic than ever that we will see reform this year. To understand why, lets take a look at what some key players on the immigration reform debate have been saying and doing this year: l Charles Schumer — New York Democrat Chuck Schumer will pay a key role in shaping the debate. That’s good news for immigrant rights’ advocates. As chair of the Senate Subcommittee on Immigration, Border Security and Citizenship, Sen. Schumer is responsible for leading any reform bill through the Senate. Particularly experienced in dealing with immigration legislation, many credit then-Congressman Schumer with the deal-making that led to passage of the last legalization legislation, the Immigration Reform and Control Act of 1986. More than 3 million undocumented immigrants were legalized under that act. Schumer is already on the move, organizing his colleagues for the fight to come. l Marco Rubio — Florida Sen. Marco Rubio’s call last spring for a Dream Act for undocumented youth was an historic turning point in the immigration reform debate. A rising Conservative Republican star, Rubio’s proposal forced Obama’s hand. The President’s decision to grant Deferred Action for Childhood Arrivals helped him consolidate the Latino vote, a key factor in his victory. Recently, Rubio's position on legalization has moved from supporting just legal status to agreeing that legalization must include a path to citizenship for undocumented immigrants. Though many others in the Republican party have yet to adopt the “path to citizenship” position, it will hard for Republican leaders to buck one of their few Latino leaders. Rubio is a key player in the Republicans’ plan to reach out to Latinos. As a possible 2016 Presidential candidate, Rubio can’t afford to anger Latinos. l Luis Gutierrez — Chicago Congressman Luis Gutierrez is the Democratic Party’s conscience on immigration issues. Gutierrez is a tenacious advocate for immigrants’ rights. Though not a member of the party’s leadership, his impact on the debate will be greater than might be expected from his position alone. He has a long history of advocating for immigrants’ rights and he stood up to the Obama administration’s early resistance to the DACA program. Of Puerto Rican ancestry, Gutierrez recognized early in his career the importance of reaching out to his Mexican constituents. To help lead the immigration reform debate in the House of Representatives, Gutierrez is giving up his senior position on the prestigious House Financial Services Committee to join the Subcommittee on Immigration Policy and Enforcement. House Democratic leaders will look to Gutierrez to speak for immigrants about which compromises are acceptable to Latinos and which are not. He has closer ties to the immigrants’ rights movement than any other federal elected official. l Paul Ryan — Former Vice Presidential candidate Paul Ryan has no intention of letting Marco Rubio steal the show on immigration reform. A contender with Rubio for a possible 2016 run for the White House, Ryan reportedly reached out to House colleague Gutierrez regarding possible Tea Party support for a generous immigration bill. Ryan and any other Republicans seeking a national leadership role must be sensitive to the growing Latino vote. Unlike many of his Republican colleagues, Ryan is not a reformed immigrant-basher, reversing his position only after Romney and his defeat in November. Compared to other Republicans, he has been relatively immigrant-friendly much of his career. l John Boehner and Harry Reid — Boehner, as Speaker of the House, and Reid, as Senate Majority Leader, together need to make the system work for immigration reform to become law. Within days of President Obama’s reelection, Republican Boehner made clear his intention to seek common ground with Obama on the issue. As a leading Republican, Boehner knows that his party’s future is bleak if it maintains a restrictionist stance. Reid, as his party's Senate leader, will do what it takes to get Obama and Schumer’s program through the Senate. Reid must also keep his own constituents in mind. In his home state of Nevada, Latinos made up 18% of voters in 2012, up from 15% in 2008, a number that will surely grow going forward. Immigration reform will happen this year. Count on it.

#### Fights can’t stop passage

Ezra Klein, 1/28/13, Two numbers show why Republicans support immigration reform, www.washingtonpost.com/blogs/wonkblog/wp/2013/01/28/two-numbers-show-why-republicans-support-immigration-reform/

By and large, Washington isn’t gripped by fever. It’s gripped by actual disagreements and mismatched incentives. Republicans really do disagree with Obama on taxes. And most Republican senators and representatives really do come from increasingly conservative districts that didn’t vote for Obama. When you stack substantive disagreement atop a strategic incentive to disagree, you get Washington in 2012. But — and this is key — Republicans weren’t behaving irrationally. They were behaving rationally. And that’s exactly why they might cut a deal on immigration even as they fight Obama on taxes. Two numbers explain why a rational Republican Party needs to do something dramatic on immigration: 27 percent and 2 percent. Twenty-seven percent is the percentage of the Latino vote Mitt Romney received in 2012, according to the exit polls. Two percent is the projected increase in the non-white electorate come 2016. So Republicans are losing badly among Hispanic voters and Hispanic voters are becoming an increasingly important part of the electorate. Those numbers supply the raw political case for acting on immigration. But the other side is the substantive case: A lot of elected Republicans simply want to do something on immigration. This isn’t like taxes, where most every elected Republican has signed a pledge swearing to fight any and all tax increases. The last major effort at immigration reform came in 2007, under President George W. Bush. The key Republican legislator on that bill was Sen. John McCain (Ariz.), who would go on to be the GOP’s presidential nominee in 2008. Support for comprehensive immigration reform is by no means unanimous within the Republican Party. Bush’s immigration reforms, for instance, fell before a conservative backlash. But some of the key conservatives behind that backlash have since changed their minds. Sean Hannity, for instance, now says: We’ve got to get rid of the immigration issue altogether. It’s simple, to me, to fix it. I think you control the border first. You create a pathway for those people that are here. You don’t say, ‘You’ve got to go home.’ And that is a position that I’ve evolved on. Because, you know what, it’s got to be resolved. The majority of people here, if some people have criminal records you can send them home, but if people are here, law-abiding, participating for years, their kids are born here, you know, it’s first secure the border, pathway to citizenship, done, whatever little penalties you want to put in there, if you want, but then it’s done.

**Obama’s not spending PC**

Jay Cost, Weekly Standard, 2/11/13, Obama the Bargainer, www.weeklystandard.com/print/articles/obama-bargainer\_699205.html

What this means is that major breakthroughs on legislation in the next four years are likely to **depend on political actors outside the White House**. Pelosi’s power is only a fraction of what it was, but policy success will still depend on congressional entrepreneurs as long as the White House remains disengaged. Thus, a whole host of issues will likely go unaddressed, above all, the looming entitlement crisis. One issue that could see movement is immigration reform, a topic of discussion where there is overlap between the parties and there are potential leaders in Congress, like Marco Rubio, who could help in whipping his party and negotiating a compromise with the other side. But little such progress will be due to President Obama. It is highly unlikely that he will act as the collective bargainer Neustadt envisioned. He will not be the one to help hammer out policy differences between Senate Democrats and House Republicans, such as illegal immigrants’ status under Obamacare, or help the appropriators find the money needed for enforcement, or create a political space where both parties can declare victory. Sure enough, last week’s campaign-style speech in Las Vegas on immigration reform was classic Obama. Not only did it do nothing to advance the ball on the sensitive negotiations in Congress, but the president demanded immediate amnesty, something to which Republicans will never agree. He also said he would “insist” that Congress vote on his proposal if it did not act in a timely fashion. That captures Obama’s problem in a nutshell. “**Insisting” that Congress do something is a good way to make sure nothing happens**. § Marked 21:07 § Instead, as Harry Truman once said, the president must spend his time “flattering, kissing, and kicking people to get them to do what they are supposed to do anyway.” Barack Obama does not do this. He thinks it beneath him. After four years in office, he still fails to grasp the essence of modern presidential power.