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# 1

#### TEXT: The United States Department of Defense should establish a power purchase agreement for the expansion of small modular reactors in the United States.

#### DOD is crucial – plan doesn’t spur investment because tech is still not ready

Andres et al 11

[Richard Andres, Professor of National Security Strategy at the National War College and, Hanna L. Breetz, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications,”http://www.ndu.edu/inss/docuploaded/SF%20262%20Andres.pdf, \\wyo-bb]

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 if DOD does not support the U.S. small reactor industry, the industry could be dominated by foreign companies10 SF No. 262 www.ndu.edu/inss 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.

# 2

#### Compromise bill gave Obama power to take hard stand on upcoming debt ceiling and spending cuts – that’s key

WSJ, Authors Janet Hook, Corey Boles, and Siobhan Hughes, “Congress Passes Cliff Deal,” Wall Street Journal, 1/1/2013

Congress broke a rancorous stalemate Tuesday to pass legislation designed to avert the so-called fiscal cliff. But the compromise bill, which blocked most impending tax increases and postponed spending cuts largely by raising taxes on upper-income Americans, left a host of issues unresolved and guaranteed continued budget clashes between the parties.¶ The bill represented the largest tax increase in the past two decades and was passed over opposition from conservative Republicans in the House who objected to the fact that it contained no long-term spending cuts of any significance.¶ The House voted 257-167, with 172 Democrats joining 85 Republicans in supporting the measure. Voting against the bill were 151 Republicans, and the GOP leadership split over the issue: House Majority Leader Eric Cantor (R., Va.) voted against it, while House Speaker John Boehner (R., Ohio) voted for it. Also supporting the bill was Rep. Paul Ryan (R., Wis.) the GOP vice presidential nominee who has been an ardent opponent of increasing taxes.¶ The bill now goes to President Barack Obama for his signature, ending a tortured drive by Congress to avert the fiscal cliff, a journey that ended up technically breaching the Jan. 1 deadline.¶ The far-reaching agreement will have lasting implications for the tax code, future budget battles and the balance of power in Washington. It raises income-tax rates for the first time in almost two decades and fulfills Mr. Obama's signature campaign promise to prevent rates from rising on the middle class. Not since 1991 has a Republican in Congress supported such a move—a challenge to its brand as the antitax party.¶ In policy terms, it permanently codifies most of the tax rates that were set only temporarily in the Bush era. After years of failed efforts, the bill permanently keeps the middle class from being hit by the alternative minimum tax, a 1960s edifice intended only for America's wealthiest.¶ At the same time, the bill defers some of America's toughest spending problems—in particular the ballooning cost of health care—and it doesn't come close to the kind of $4 trillion deficit-reduction deal the country's leaders had hoped to negotiate. By some estimates, it would cut the deficit by $600 billion over 10 years.¶ "The bill before us is not the Grand Bargain," said Rep. David Dreier (R., Calif.) as the House opened debate. "But we are working hard to pull ourselves back from the cliff."¶ The compromise dodges one cliff, but it sends Congress barreling toward another. In two months, the delayed $110 billion in spending cuts will again kick in. At the same time, the U.S. will face the need to increase its borrowing limit, a change that can only be made by Congress. That sets up another rancorous fight, one with potentially more damaging consequences. Republicans want to use the debt ceiling to extract spending cuts. Mr. Obama has said he won't negotiate.¶ The failure to grapple with the biggest budget questions disappointed business leaders who had hoped for a comprehensive budget agreement that could tackle the deficit and diminish what for some has been a debilitating policy uncertainty.

#### Obama’s leverage is key to new fights over debt ceiling and sequestration

-Political capital high: economy on cusp of revival

-AT: Compromise Bill Disproves: Compromised and merely delayed the big battles

Star Ledger, “Obama's legacy trap”, 1/1/2013. http://www.nj.com/us-politics/index.ssf/2013/01/obamas\_legacy\_trap.html

President Barack Obama hopes -- expects, really -- that '13 will be his lucky number, a year to cement his historical legacy and reap the benefits of an economy on the cusp of real revival.¶ That expectation, as much as anything, explains how Obama approached the fiscal cliff and why he opted for compromise over confrontation. The president, eyes fixed on history, always viewed the fight as an obstacle, not a destination, a thing to be gotten past on his way to breaking the historical pattern of weak, scandal-scarred and anticlimactic second-term presidencies.¶ But the endless battle over the budget -- new fights over the debt ceiling and automatic spending cuts loom in a matter of weeks -- could become a legacy trap for Obama, robbing him of precious leverage to redefine his relationship with Republicans on terms more favorable to an ambitious second-term agenda, scholars of the presidency say.¶ "People don't queue up in lines to see the pens for a budget deal under glass, or 'Hey, I just cut this deal with Boehner,'" says presidential historian Douglas Brinkley.¶ "Presidents are remembered for the big things. FDR did Social Security. Truman created the CIA. There's Eisenhower and the highway system. Kennedy and the moon," Brinkley added. "So, it's going to be Obama and what? Obamacare, that's the big one, and killing Bin Laden. There's room for one more big item. What will it be? Immigration? Climate change? It won't be deficits or the fiscal cliff."¶ The White House is casting the potential fiscal deal as a major victory because it forces Republicans to turn their backs on a two-decade policy of opposing all tax increases, even those on the wealthiest Americans, which is a "big win," in the words of one West Wing adviser.¶ For his part, Obama said Monday, "If we're going to be serious about deficit reduction and debt reduction, then it's going to have to be a matter of shared sacrifice -- at least as long as I'm president. And I'm going to be president for the next four years, I think..." he said with a widening smile on Monday.¶ The challenge for a president unusually attuned to his place in history is how to manage fights like the cliff without being diverted by them, and how to suppress the GOP challenge without it becoming a major drain of his time, popular good will and power.¶ "The question is whether he's willing to use the leverage he has to get a better deal. He has a chance to make history here," said Jared Bernstein, a former adviser to Vice President Joe Biden, reflecting the mixed emotions of many nervous progressives watching the cliff talks from the sidelines. "Standing up to them would not only be a gift to the country, but a big part of his legacy."¶ One staffer for a senior Senate Democrat, summing up the view of several other aides interviewed by POLITICO, called the potential deal a "cave," and warned that Obama's Monday afternoon campaign-style event ahead of the final deal was a "Leon Lett moment" -- a reference to the Dallas Cowboys lineman who fumbled the ball while celebrating a touchdown short of the goal line.¶ But Obama and his staff believe Americans would have blamed him for taking the country over the cliff, and they emphasize his refusal to negotiate over the looming debt ceiling in a couple of months. Nonetheless, even the president concedes that the smaller cliff deal, while possibly postponing bigger battles, prolongs a fight Obama had hoped to move quickly past.¶ Even if he were to become bogged down, Obama's place in history is already assured. He is the nation's first black president, a controversial Beltway neophyte who managed to ram through landmark health reform (the future of which future remains opaque), an incumbent who won a fresh term despite a sour economy, a commander in chief who ended two unwanted wars -- all the while tallying unprecedented national debt and deficits.

#### SMR debates are polarizing

Carper and Schmid 11

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Historically, nuclear energy has been entangled in one of the most polarizing debates in this country. Promoters and adversaries of nuclear power alike have accused the other side of oversimplification and exaggeration. For today’s industry, reassuring a wary public and nervous government regulators that small reactors are completely safe might not be the most promising strategy. People may not remember much history, but they usually do remember who let them down before. It would make more sense to admit that nuclear power is an inherently risky technology, with enormous benefits that might justify taking these risks. So instead of framing small reactors as qualitatively different and “passively safe,” why not address the risks involved head-on? This would require that the industry not only invite the public to ask questions, but also that they respond, even—or perhaps especially—when these questions cross preestablished boundaries. Relevant historical experience with small compact reactors in military submarines, for example, should not be off limits, just because information about them has traditionally been classified.

#### Lack of debt ceiling raise triggers default and collapses the world economy- bonds are a juggernaut in the world economy

Goldfarb Jan. 1st

[Zachary Goldfarb, January 1st, The Washington Post, ‘Fiscal cliff’ deal does little to tame threats from debt ceiling, high unemployment rates, <http://www.washingtonpost.com/business/fiscal-cliff/fiscal-cliff-deal-does-little-to-tame-threats-from-debt-ceiling-high-unemployment-rates/2013/01/01/8e4c14aa-5393-11e2-bf3e-76c0a789346f_story_1.html>, uwyo//amp]

The deal fell somewhere in between. But by gaining the support of both sides, it did not achieve what many economists believe is necessary for the short- and long-term success of the U.S. economy. Leaving the fate of the debt ceiling up in the air will cause anxiety among businesses and individuals, potentially crimping hiring, investing and consumer spending. In many ways, the threat of default in two months is a more serious risk than the Jan. 1 fiscal cliff deadline. If Congress does not increase the debt ceiling, the government will quickly run out of ways to pay the nation’s bills and make interest payments on the nation’s outstanding debt. Any failure by the government to meet its financial obligations could be seen as a default, shaking world financial markets, given the special role that U.S. government bonds play in the global economy. And while a default would be all but certain to push the economy into recession, growth is likely to be slow — and job-market improvement slight — even without such a cataclysmic event. The unemployment rate, which stands at 7.7 percent, is not expected to fall below 7.4 percent by the end of this year, and not below 6 percent until at least 2016 or later. In the midst of the recession, the government stepped in with spending programs and deep tax cuts to lift growth and reduce unemployment. A majority of economists say those efforts worked. But federal stimulus has been winding down. And the spending cuts and tax hikes set for 2013 are expected to be a drag on the economy — with government policy offsetting much of the robust recovery being experienced in the private sector. Nor does the agreement do what many analysts say is necessary to achieve long-term budget savings and tame the federal debt, which is projected to grow rapidly as a percentage of the economy in the coming decades.

#### Economic decline causes protectionism and war – their defense doesn’t assume accompanying shifts in global power.

Royal 10 – Jedediah Royal, Director of Cooperative Threat Reduction at the U.S. Department of Defense, 2010, “Economic Integration, Economic Signaling and the Problem of Economic Crises,” in Economics of War and Peace: Economic, Legal and Political Perspectives, ed. Goldsmith and Brauer, p. 213-215

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defense behavior of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, on the systemic level, Pollins (2008) advances Modelski and Thompson’s (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crisis could usher in a redistribution of relative power (see also Gilpin, 1981) that leads to uncertainty about power balances, increasing the risk of miscalculation (Fearon, 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflict as a rising power may seek to challenge a declining power (Werner, 1999). Seperately, Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remain unknown. Second, on a dyadic level, Copeland’s (1996, 2000) theory of trade expectations suggests that ‘future expectation of trade’ is a significant variable in understanding economic conditions and security behavious of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations, However, if the expectations of future trade decline, particularly for difficult to replace items such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crisis could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states. Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write, The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict tends to spawn internal conflict, which in turn returns the favor. Moreover, the presence of a recession tends to amplify the extent to which international and external conflict self-reinforce each other. (Blomberg & Hess, 2002. P. 89) Economic decline has been linked with an increase in the likelihood of terrorism (Blomberg, Hess, & Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. ‘**D**iversionary theory’ suggests that, when facing unpopularity arising from economic decline, sitting governments have increase incentives to fabricate external military conflicts to create a ‘rally around the flag’ effect. Wang (1996), DeRouen (1995), and Blomberg, Hess, and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states, due to the fact that democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States, and thus weak Presidential popularity, are statistically linked to an increase in the use of force. In summary, recent economic scholarship positively correlated economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels. This implied connection between integration, crisis and armed conflict has not featured prominently in the economic-security debate and deserves more attention.

# Adv 1

## Meltdowns

#### Plan takes 10 years to solve

King 11

[Marcus King, Project Director and Research Analyst for the Environment and Energy Team at Center for Naval Analyses, LaVar Huntzinger, Thoi Nguyen, "Feasibility of Nuclear Power on U.S. Military Installations", March 11, <http://www.cna.org/sites/default/files/research/Nuclear%20Power%20on%20Military%20Installations%20D0023932%20A5.pdf>, \\wyo-bb]

The time required to obtain design certification, license, and build the next generation of nuclear plants is about 9 to 10 years. After the first plants are built it may be possible to reduce the time required for licensing and construction to approximately 6 years [45].

#### SMRs have the same issues with meltdowns as normal reactors

Singer 2012 (writer for the St. Louis Beacon, “Big or small, questions about nuclear reactors remain” <https://www.stlbeacon.org/#!/content/24610/pros_cons_of_small_modular_reactors> ) JA

But Ed Smith of the [Missouri Coalition for the Environment](http://www.moenviron.org/) said that even though the reactors that could be placed at the site are smaller, the risks they bring, in terms of possible meltdowns and storage of waste, remain the same. “The environmental impact of a small modular reactor melting down would not be as great as the Callaway reactor melting down,” Smith said, “because it operates at a lower temperature and contains less radioactive material in the fuel rods. But if you have a multiple meltdown of five reactors, you are going to see the same kind of problems in theory as you would have from a large reactor.”

#### Underground reactors are more vulnerable to flooding and make emergency response more difficult

UCS, 2011

[Union of concerned scientists, “Nuclear Expert Dispels Myths about Small Modular Nuclear Reactors in Senate Testimony.” 7-14-2011, Online, http://www.ucsusa.org/news/press\_release/nuclear-expert-dispels-myths.html] /Wyo-MB

Lyman argued that siting them underground would not make them safer. “While underground siting could enhance protection against certain events, such as aircraft attacks and earthquakes, it could also have disadvantages…,” he said. He reminded the subcommittee that the Fukushima Daiichi reactors’ diesel generators and electrical switchgear were underground, increasing their vulnerability to flooding. Likewise, he said, emergency crews would have a more difficult time accessing an underground reactor in the event of a serious accident.

#### Passively safe small reactors are a myth—still many situations that could cause failure

UCS, 2011

[Union of concerned scientists, “Nuclear Expert Dispels Myths about Small Modular Nuclear Reactors in Senate Testimony.” 7-14-2011, Online, http://www.ucsusa.org/news/press\_release/nuclear-expert-dispels-myths.html] /Wyo-MB

Lyman also dispelled the industry myth that small modular reactors are “passively safe.” “[N]o credible reactor design is completely passive and can shut itself down and cool itself in every circumstance without the need for intervention,” he said. “…Small reactors may have an advantage because the lower the power of a reactor, the easier it is to cool through passive means such as natural convection cooling with water or even with air. However, accidents affecting multiple small units may cause complications that could outweigh the advantages of having lower heat removal requirements per unit. Moreover, ‘passively safe’ reactors require some equipment, such as valves, that are designed to operate automatically but are not 100 percent reliable.”¶ Passive systems may not work in the event of a serious accident that the reactor was not designed to withstand, he added, so they “should also be equipped with highly reliable, active backup systems and associated instrumentation and control systems.”

## Warming

#### 1st, Nuke Power doesn’t solve warming: Nuke power doesn’t meaningfully solve emissions—way too long timeframe, and high carbon abatement costs make it a bad option

Sokolski, 2010

[Henry, executive director of the Nonproliferation Policy Education Center, "The high and hidden costs of nuclear power." Policy Review 162 (2010): 53+. Academic OneFile. Web. 5 June 2012] /Wyo-MB

Another assertion nuclear power supporters frequently make is that once carbon is no longer free, their zero carbon emission power plants will be the clear, clean-energy victor. Yet nuclear power may already have priced itself out of the running in any carbon abatement competition. Factoring in industry construction, operation, and decommissioning costs, the total cost of abating one ton of carbon by substituting a new nuclear power plant for a modern coal-fired generator has been pegged by nuclear power critics at $120 or more. (3) This figure, which includes the costs of public subsidies, assumes fairly low capital construction costs (roughly one half of the industry's latest high-end cost projections). If one uses high-end projections, the cost for each ton of carbon abated approaches $200. Certainly there are much cheaper and quicker ways to reduce carbon emissions (see Figure 2). Just how rapidly nuclear power can abate carbon emissions is also a significant issue. Certainly, if one is interested in abating carbon in the quickest, least expensive fashion, building expensive nuclear plants that take up to a decade to bring on line will not be an appealing option. That's why in North and South America and the Middle East, the building of natural gas burning generators is currently an attractive, near-term option. Advanced gas-fired power plants can halve carbon emissions as compared to coal-fired plants, can serve as base or peak power generators, and can be brought on line in 18 to 30 months rather than the years upon years needed to build large reactors. Advanced gas-fired generator construction costs, moreover, are a fraction of those projected for nuclear power. (5)

#### B. Can’t solve emissions that cause warming—multiple reasons

Totty, 2008

[Michael, WSJ, “The case for and against nuclear power.” 6-30-2008, Online, http://online.wsj.com/article/SB121432182593500119.html] /Wyo-MB

Nuclear power isn't a solution to global warming. Rather, global warming is just a convenient rationale for an obsolete energy source that makes no sense when compared to the alternatives.¶ Sure, nuclear power generates lots of electricity while producing virtually no carbon dioxide. But it still faces the same problems that have stymied the development of new nuclear plants for the past 20 years -- exorbitant costs, the risks of an accident or terrorist attack, the threat of proliferation and the challenge of disposing of nuclear waste.¶ The cost issue alone will mean that few if any new nuclear power stations will get built in the next few years, at least in the U.S., and any that do will require expensive taxpayer subsidies. Instead of subsidizing the development of new plants that have all these other problems, the U.S. would be better off investing in other ways to meet growing energy demands and reduce carbon-dioxide emissions.¶ In fact, the sheer number of nuclear plants needed to make a major dent in greenhouse emissions means the industry hasn't a prayer of turning nuclear power into the solution to global warming. One study from last year determined that to make a significant contribution toward stabilizing atmospheric carbon dioxide, about 21 new 1,000-megawatt plants would have to be built each year for the next 50 years, including those needed to replace existing reactors, all of which are expected to be retired by 2050. That's considerably more than the most ambitious industry growth projections.

#### Nuke Power causes warming: Nuke power contributes to warming from the release of energy

Skorodin, 2010

[Morton, Contributor to global research, “Nuclear Energy Causes Global Warming.” 7-23-10, Online, http://www.globalresearch.ca/index.php?context=va&aid=20231] /Wyo-MB

Once you release all that energy from Uranium, as in a nuclear reactor, it is here forever, except for some fraction that radiates out into outer space as “long-wave radiation.” The rest goes into the air, waterways, glaciers, dirt and rocks as waste heat, also called thermal [heat] pollution, increasing the temperature, thereby bringing about global warming.¶ ¶ Is nuclear the only the only source of energy that releases waste heat?¶ ¶ No. Coal, oil and natural gas [hydrocarbons, so-called “fossil fuels”] also release waste heat when burned.¶ ¶ Why is this fact not included in the title of this article?¶ ¶ Because many people already know that use of hydrocarbons causes global warming. Also, many believe that nuclear power does not cause global warming and that it may actually solve the global warming problem. Nothing could be further from the truth, because it produces heat and, therefore, thermal pollution.

#### C. Nuclear power production speeds up warming

Caldicott 6 (Helen, “Nuclear power is not the answer to global warming or anything else”, p.4)

What exactly is nuclear power? It is a very expensive, sophisticated, and dangerous way to boil water. Uranium fuel rods are placed in water in a reactor core, they reach critical mass, and they produce vast quantities of heat, which boils the water. Steam is directed through pipes to turn a turbine, which generates electricity. The scientists who were involved in the Manhattan Project creating nuclear weapons developed a way to harness nuclear energy to generate electricity. Because their guilt was so great, they were determined to use their ghastly new invention to help the human race. Nuclear fission harnessed “atoms for peace,” and the nuclear PR industry proclaimed that nuclear power would provide an endless supply of electcitiy – referred to as “sunshine units” – that would be good for the environment and “too cheap to meter.” They were wrong. Although a nuclear power plant itself releases no carbon dioxide, the production of nuclear electricity depends upon a vast, complex, and hidden industrial infrastructure that is never featured by the nuclear industry in its propaganda, but that actually releases a large amount of carbon dioxide as well as other global warming gases. One is led to believe that the nuclear reactor stands alone, an autonomous creator of energy. In fact, the vast infrastrcutre necessary to create nuclear energy, called the nuclear fuel cycle, is a prodigious user of fossil fuel and coal. The production of carbon dioxide (CO2) is one measurement that indicates the amount of energy used in the production of the nuclear fuel cycle. Most of the energy used to create nuclear energy – to mine uranium ore for fuel, to crush and mill the ore, to enrich the uranium, to create the concrete and steel for the reacotr, and to store the thermally and radioactively hot nuclear waste – comes from the consumption of fossil fuels, that is coal or oil. When these materials are burned to produce energy, they form CO2 (reflecting coal and oil’s origins in ancient trees and other organic carboniferous material laid down under the earth’s crust millions of years ago). For each ton of carbon burned, 3.7 tons of CO2 gas added to the atmosphere, and thisis the source of today’s global warming.

# Adv 2

## Terror

#### They don’t decrease the number of old reactors—this means that they aren’t going to be able to solve their scenarios—x-app to meltdowns and warming

**Even if they wanted to – chances of success are about 1 in 3 billion**

**Mueller 2008**

[John Woody Hayes Chair of National Security Studies, Mershon Center Professor of Political Science Department of Political Science, Ohio State University. THE ATOMIC TERRORIST: ASSESSING THE LIKELIHOOD Prepared for presentation at the Program on International Security Policy, University of Chicago, January 15, 2008 ]

Evaluating the likelihood **Even if there is some desire** for the bomb by terrorists (something assessed more fully below), **fulfillment** of that desire is obviously **another matter**. Even alarmists Bunn and Wier contend that the **atomic terrorists' task "would clearly be among the most difficult types of attack to carry out**" or "one of the most difficult missions a terrorist group could hope to try" (2006, 133-34, 147). But, stresses George Tenet, a terrorist atomic bomb is "possible" or "not beyond the realm of possibility" (Tenet and Harlow 2007, 266, 279). **It might be useful to take a stab at estimating just how "difficult" or "not impossible" their task is, or how distant the "realm of possibility" might be**. After all, lots of things are "not impossible." As I recall, there is a James Bond movie out there someplace in which Our Hero leaps from a low-flying plane or helicopter and lands unruffled in the back seat of a speeding convertible next to a bemused blonde. Although this impressive feat is "not impossible," it may not have ever been accomplished--or perhaps more importantly, ever attempted--in real life. **Or it is entirely "not impossible"** that **a** colliding meteor or **comet could destroy the earth**, that Vladimir Putin or **the British could** decide one morning to **launch a few nuclear weapons at Massachusetts**, George Bush could decide to bomb Hollywood, that an underwater volcano could erupt to cause a civilization-ending tidal wave, **or that Osama bin Laden could convert to Judaism**, declare himself to be the Messiah, and fly in a gaggle of mafioso hit men from Rome to have himself publicly crucified.20 In all this, Brodie's cautionary comment in the 1970s about the imaginative alarmists in the defense community holds as well for those in today's terrorism community, both of which are inhabited by people of a wide range of skills and sometimes of considerable imagination. All sorts of notions and propositions are churned out, and often presented for consideration with the prefatory works: "It is conceivable that..." Such words establish their own truth, for the fact that someone has conceived of whatever proposition follows is enough to establish that it is conceivable. Whether it is worth a second thought, however, is another matter (1978, 83). At any rate, **experience thus far cannot be too encouraging** to the would-be atomic terrorist. One group that tried, in the early 1990s, to pull off the deed was **the** Japanese **apocalyptic group, Aum Shinrikyo**. Unlike al-Qaeda, it was **not under siege,** and it **had money, expertise, a remote and secluded haven** in which **to set up shop, even a private uranium mine.** But it **made dozens of mistakes** in judgment, planning, and execution (Linzer 2004). **Chagrined, it turned to biological weapons which,** as it happened**, didn't work** either, and **finally to chemical ones, resulting** eventually **in a** somewhat **botched release of** sarin **gas** in a Tokyo subway **that managed to kill** a total of 12 people. Appraising the barriers. As noted earlier, **most discussions** of atomic terrorism **deal** rather **piecemeal** with the subject--focusing separately on individual tasks such as procuring HEU or assembling a device or transporting it. But, as the Gilmore Commission, a special advisory panel to the President and Congress, stresses, building a nuclear device capable of producing mass destruction presents "Herculean challenges" and requires that a whole series of steps be accomplished. The process requires obtaining enough fissile material, designing a weapon"that will bring that mass together in a tiny fraction of a second, before the heat from early fission blows the material apart," and **f**iguring out some way to deliver the thing. And it emphasizes that these merely constitute "the minimum requirements." If each is not fully met, the result is not simply a less powerful weapon, but one that can't produce any significant nuclear yield at all or can't be delivered (Gilmore 1999, 31, emphasis in the original). Following this perspective, an approach that seems appropriate is to catalogue **the barriers that must be overcome** by a terrorist group in order to carry out the task of producing, transporting, and then successfully detonating Allison's "large, cumbersome, unsafe, unreliable, unpredictable, and inefficient" improvised nuclear device. Table 1 attempts to do this, and it **arrays some 20** of these--all of which must be surmounted by the atomic aspirant. Actually, it would be quite possible to come up with a longer list: in the interests of keeping the catalogue of hurdles down to a reasonable number, some of the entries are actually collections of tasks and could be divided into two or three or more. For example, number 5 on the list requires that heisted highly-enriched uranium be neither a scam nor part of a sting nor of inadequate quality due to insider incompetence; but this hurdle could as readily be rendered as three separate ones. In assembling the list, I sought to make the various barriers independent, or effectively independent, from each other, although they are, of course, related in the sense that they are sequential. However, while the terrorists must locate an inadequately-secured supply of HEU to even begin the project, this discovery will have little bearing on whether they will be successful at securing an adequate quantity of the material, even though, obviously, they can't do the second task before accomplishing the first. Similarly, assembling and supplying an adequately equipped machine shop is effectively an independent task from the job of recruiting a team of scientists and technicians to work within it. Moreover, members of this group must display two qualities that, although combined in hurdle 9, are essentially independent of each other: they must be both technically skilled and absolutely loyal to the project. Assessing the probabilities. In seeking to carry out their task, would-be atomic terrorists effectively must go though an exercise that looks much like this. If and when they do so, they are likely to find their prospects daunting and accordingly uninspiring or even dispiriting. **To bias the case in their favor**, one might begin by assuming that they have a fighting chance of 50 percent of overcoming each of these obstacles even though for many barriers, probably almost all, the odds against them are much worse than that. Even with that generous bias, the chances they could successfully pull off the mission come out to be worse than one in a million, specifically they are one in 1,048,567. Indeed, the odds of surmounting even seven of the twenty hurdles at that unrealistically, even absurdly, high presumptive success rate is considerably less than one in a hundred. **If one assumes**, somewhat **more realistically**, that their chances at each barrier are one in three**,** the cumulative oddsthey will be able to pull off the deed drop to one in well over three billion--specifically 3,486,784,401. What they would be at the (entirely realistic) level one in ten boggles the mind. One could also make specific estimates for each of the hurdles, but the cumulative probability statistics are likely to come out pretty much the same--or even smaller. For example there may be a few barriers, such as number 13, where one might plausibly conclude the terrorists' chances are better than 50/50. However, there are many in which the likelihood of success is almost certainly going to be exceedingly small--for example, numbers 4, 5, 9, and 12, and, increasingly, the (obviously) crucial number 1. Those would be the odds for a single attempt by a single group, and there could be multiple attempts by multiple groups, of course. Although Allison considers al-Qaeda to be "the most probable perpetrator" on the nuclear front (2004, 29), he is also concerned about the potential atomic exploits of other organizations such as Indonesia's Jemaah Islamiyah, Chechen gangsters, Lebanon's Hezbollah, and various doomsday cults (2004, 29-42).21 Putting aside the observation that few, if any, of these appear to have interest in hitting the United States except for al-Qaeda (to be discussed more fully below), the odds would remain long even with multiple attempts. If there were a hundred determined efforts over a period of time, the chance at least one of these would be successful comes in at less than one one-hundredth of one percent at the one chance in two level. At the far more realistic level of one chance in three it would be about one in 50 million. If there were 1000 dedicated attempts, presumably over several decades, the chance of success would be less than one percent at the 50/50 level and about one in 50,000 at the one in three level.22

#### SMRs are a new way for terrorist to obtain nuclear material

MacPerson 2012 (writer for nuclear news online, “Small Modular Reactors – the way to making South Carolina the nation’s nuclear waste dump?” <http://nuclear-news.info/2012/07/21/small-modular-reactors-the-way-to-making-south-carolina-the-nations-nuclear-waste-dump/>) JA

The technology for the mini-reactors still is in its infancy. If South Carolina gets the green light to develop them, the state would be the testing ground for the rest of the nation. the project is not without substantial risk. Before South Carolina fully embraces this untested technology, we need answers to questions about possible accidents and their consequences, the potential for a terrorist strike or theft of nuclear material – but mostly about the waste.

**There’d Be No Retaliation To Terrorism – Lack Of Targets.**

**Biddle 05**

[Stephen, Assoc Professor of National Security Studies at US Army War College, April, http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB603.pdf]

For some of the threat categories in Figure 1, this imprecision is nettlesome but tolerable―the enemy actors are reasonably clear, if implicit. “Rogue states” for example, presumably include the standard list of aggressive regional powers (e.g. Baathist Iraq, North Korea, Iran, Libya, and so on). But for others, this lack of specificity is more problematic. This is especially true for terrorism and great power competition. Terrorism, after all, is a tactic, not an enemy. Taken literally, a “war on terrorism” is closer to a “war on strategic bombing” or a “war on amphibious assault” than it is to orthodox war aims or wartime grand strategies; one normally makes war on an enemy, not a method. Nor can one simply assume that anyone who uses terrorist tactics is to be the target of American war making. “Terrorism” is a diverse tactic, used by many groups in many ways to serve many different political agendas. Many of these groups and agendas pose no immediate threat to Americans. In fact, prior to 2001, it was rare for Americans to be killed by international terrorists. The most lethal terrorist groups of 1960-97, for example, were Aum Shinrikyo, the Tamil Tigers, the Irish Republican Army (IRA), the Algerian Armed Islamic Group (GIA) and Islamic Jihad―none of which deliberately targeted Americans. 10 A war that encompassed literally any group using terrorist tactics would be impossibly broad, engulfing a wide range of groups posing no meaningful threat to America. Terrorism per se thus cannot be the enemy. But it is far from clear exactly who the enemy is. The administration has made some effort to delimit the problem by adding the phrase “of global reach.” This is little help, however. In a globalized world, any terrorist with an airline ticket or an internet service provider has “global reach.” Official statements do little to narrow the focus. Many suppose that the real enemy is al Qaeda, and that “terrorism” is little more than a rhetorical synonym for Osama bin Laden’s organization. Yet the administration has explicitly, and repeatedly, made clear that this is not their view. Though the details revealed to date are ambiguous, it is clear that the declaratory policy of the U.S. Government defines the enemy more broadly than just al Qaeda.

**The Probability of Nuclear Terrorism Is Low And It Won’t Cause Extinction**

**Bulletin of Atomic Scientists 04**

[November 1, Vol. 60, #6, Lexis]

There are too many different ways in which terrorists could perpetrate some kind of nuclear attack to mention in this limited space. But keep this in mind: There have been zero cases of nuclear terrorism --neither nuclear nor radiological. There are no known cases of theft or purchase of an intact nuclear weapon, so a terrorist attack with one is more than unlikely. There has not been any documented theft of enough fissile material for a crude nuke--although there have been attempts. There has never been a dirty bomb attack. There has never been a case of nuclear plant sabotage. If there were, it would be awful--but not the end of humanity.

## Heg

#### 1st, the Squo solves: Leadership Now- Generation III+

Bipartisan Policy Center 12

[Co-chaired by Senator Pete Domenici and Dr. Warren F. “Pete” Miller, Maintaining U.S. Leadership in Global Nuclear Energy Markets A Report of the Bipartisan Policy Center’s Nuclear Initiative, July 2012, pg 6, <http://bipartisanpolicy.org/sites/default/files/Leadership%20in%20Nuclear%20Energy%20Markets.pdf>, \\wyo-bb]

Given this near-term expansion, the United States will continue to be a world leader in the development of advanced reactor technologies, including Generation III+ advanced passive reactors and SMRs. International interest in developing new nuclear-generating capacity, on the other hand, presents potentially substantial business opportunities for the domestic nuclear industry. Commercial nuclear exports generate obvious economic benefits for U.S. firms and for the nation’s overall balance of trade. Importantly, they also help the United States retain a major role in the evolution and maintenance of international nuclear safety and nonproliferation regimes. Other nations not only look to the U.S. industry for operational expertise, they see the NRC as setting the international gold standard for safety and physical security regulation. DOE’s National Nuclear Security Administration, meanwhile, has a great deal of influence over the nonproliferation aspects of international fuel-cycle issues.

# 2nc

## Cp

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

DOE 11

[Department of Energy, "Funding Federal Energy and Water Projects", July, 2011, <http://www.nrel.gov/docs/fy11osti/52085.pdf>, \\wyo-bb]

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

#### DOD spending is insulated from politics

Appelbaum 12

[Binyamin Appelbaum 12, Defense cuts would hurt scientific R%26D, experts say, The New York Times, 1-8-12,http://hamptonroads.com/2012/01/defense-cuts-would-hurt-scientific-rd-experts-say, \\wyo-bb]

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

## Ptx

#### Obama’s pc key to debt ceiling- as long as he doesn’t fold he’ll maintain leverage and get it done

Hennesey & Lauter Dec. 31st

[Kathleen Hennessey and David Lauter, Washington Bureau, December 31st, 2012, Obama wins 'fiscal cliff' victory, but at high cost, Obama wins 'fiscal cliff' victory, but at high cost http://www.latimes.com/news/nationworld/nation/la-na-fiscal-cliff-analysis-20130101,0,6417926.story, uwyo//amp]

"While the White House had the leverage, it would have been very good for them to deal with the debt ceiling," Bernstein said. "The Republicans are absolutely sharpening their knives for that next fight, which is horrific, by comparison — a much worse self-inflicted wound on the economy." "To be fair," he said, "there are good things in this deal and if the president truly refuses to negotiate on the debt ceiling, it may turn out to be a pretty good deal. But if he folds, then he will have squandered his leverage.

#### Nuclear power has significant opposition – public and congressional

Andrew Freedman, Editor and Senior Science writer for Climate Central, “Feds Approve First Nuclear Reactors Since 1970s”, Climatecentral.org, February 9th, 2012.

By a v ote of 4 to 1 , the Nuclear Regulatory Commission approv ed the construction of the first new nuclear reactors to be built in the United States since 1 97 8. The reactors would be built at the Vogtle power plant near Way nesboro, Ga., which is a nuclear power plant operated by the Southern Company . As The Hill's E-2 Wire blog noted, the lone dissenting v ote was cast by NRC Chairman Gregory Jaczko. The nuclear industry has faced numerous obstacles, most recently the backlash following the Fukushima nuclear disaster in Japan, in its efforts to build new nuclear plants in the U.S., and the Commission has issued recommendations on how to better protect U.S. reactors from earthquakes and floods. The country currently operates 1 04 nuclear reactors, but all were approv ed at least three decades ago. “This is a historic day ,” said Marv in Fertel, president of the Nuclear Energy Institute, the industry ’s trade group in a statement. “Today ’s licensing action sounds a clarion call to the world that the United States recognizes the importance of expanding nuclear energy as a key component of a low-carbon energy future that is central to job creation, div ersity of electricity supply and energy security .” Andrew Restuccia, writing for The Hill, noted the project still needs to ov ercome public opposition to nuclear power that may result in a lawsuit against the project, and congressional opposition to a hefty $8.3 billion federal conditional loan guarantee for reactor construction. "Some Democrats in Congress — noting that the loan guarantee is more than 1 5 times the size of the one granted to the failed solar firm Soly ndra — hav e called on Obama not to finalize the loan." “Ithink we are putting our taxpay er money at unnecessary risk giv en the unresolv ed safety issues and the lessons that hav e been learned from Fukushima,” Rep. Edward Markey (D-Mass.), a senior Democrat on the House Energy and Commerce Committee and a v ocal critic of nuclear power, told The Hill Wednesday . The Obama administration has supported the dev elopment of new nuclear power plants as a way to reduce greenhouse gas emissons and cut the use of fossil fuels.

#### Sequestration collapses Asia-Pacific pivot, power projection, ability to solve escalation, and air, sea, and land capabilities

Horowitz 12

[Michael Horowitz, NDT Champion, associate professor of political science at the University of Pennsylvania, 8/9/12, How Defense Austerity Will Test U.S. Strategy in Asia, thediplomat.com/flashpoints-blog/2012/08/09/how-defense-austerity-will-test-u-s-strategy-in-asia/]

Decisions about defense spending are integrally linked to the United States’ overall strategy in the Asia-Pacific. Given ongoing uncertainty surrounding North Korea, China’s continuing development of anti-access/area-denial (A2/AD) capabilities, and disputes over the East and South China seas, maintaining a robust presence in the region will be a high priority for any future administration. However, sequestration or other major defense cuts could undermine perceptions of U.S. resolve in the Asia-Pacific and make core U.S. allies such as Japan and South Korea doubt Washington’s willingness to invest appropriately in relevant capabilities. Concretely, such cuts could make it more difficult for the United States to maintain its current presence. The United States’ predominant military strategy for ensuring continued superiority in the Asia-Pacific is AirSea battle (ASB)—an operational concept designed to help the U.S. Air Force and Navy jointly respond to A2/AD challenges, enhance deterrence, and ensure freedom of action around the world over the next generation. Implementing ASB will require significant investments in advanced technologies, including long-range precision-strike capabilities and submarine modernization. Furthermore, ASB primarily involves investments in the air force and navy, raising questions about how best to rebuild the readiness of the army and marines. There is a trade-off between providing relatively equal budget shares to the services—potentially reducing inter-service rivalries—and rebalancing toward the Asia-Pacific. Even within the air force and navy, there are disagreements about which programs represent the highest priority for the U.S. military. One concern is the potential for large decreases in the procurement of F-35s—the multirole replacement fighter for the air force and navy. Unless the military can find substitutes, further cuts beyond those already planned could potentially make it more difficult for the U.S. military to control the skies in a future confrontation in the Asia-Pacific. Decreases in F-35 procurement could also make U.S. allies less likely to purchase the F-35, thereby reducing interoperability with allied Asian militaries and further raising F-35 unit costs. Budget cuts may also lead to the scaling back of plans to purchase the full slate of Virginia-class attack submarines that the navy has requested. Given China’s continuing investments in submarines and anti-ship missiles, the modernization of the U.S. fleet is critical to maintaining U.S. naval capabilities in the Asia-Pacific, particularly for antisubmarine warfare and strike operations. Major cuts could affect the size of the navy, in terms of ships afloat, and compromise the United States’ ability to project power in crisis situations. At even greater risk of funding cuts is research and development. R&D into next-generation robotics, a new long-range bomber, and C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) is essential to guaranteeing U.S. military power over the long term. R&D for basic programs is also likely to be on the chopping block during periods of defense austerity. One example is the X-47B drone designed to launch from and recover to aircraft carriers. Decreases in funding for such cutting-edge programs could undermine the United States’ long-term capacity to control the commons in the Asia-Pacific. The unparalleled access the United States enjoys to air, sea, and space could decline if other nations develop new technologies capable of placing legacy platforms such as large carriers or manned fighters at risk. Rising powers in the region are not standing still. The United States will only maintain its conventional superiority if it continues investing in R&D that will pay off with new weapon systems down the road.

#### Lack of asia pivot collapses heg and causes miscalc/WWIII

Macgregor Oct. 26th

[Douglas A. Mcgregor, contributor and is executive vice president of Burke-Macgregor Group, LLC. He is also a retired Army colonel, decorated combat veteran and the author of four books on military affairs.

Read more: <http://nation.time.com/2012/10/26/affording-the-pacific-pivot/#ixzz2AqlmAi5s>, , October 26th, 2012, Affording the “Pacific Pivot”, <http://nation.time.com/2012/10/26/affording-the-pacific-pivot/>, uwyo//amp]

In the turbulent decade leading up to the outbreak of World War I, Winston Churchill, Britain’s First Lord of the Admiralty, urged Britain’s national leadership to concentrate British naval power in the Atlantic and the North Sea where Germany’s rapidly expanding high seas fleet seemed determined to challenge British naval supremacy. Churchill reasoned, “It would be very foolish to lose England in safeguarding Egypt. If we win the big battle in the decisive theater, we can put everything else straight afterwards. If we lose it, there will not be any afterwards.” On the precipice of sequestration and with the survival of Social Security, Medicare and Medicaid at stake, Churchill’s strategic rationale is instructive, particularly for leaders in Washington, D.C., who advocate a U.S. military buildup in the Pacific. When Churchill made the case for concentrating the British fleet in the Atlantic, he was practicing economy of force, a time honored principle in British military affairs. In 1902, in the midst of a financial crisis brought on, in part, by the Boer War, London had already turned to Japan for military assistance in blocking Russian expansion in the Far East. By 1911, the Russian threat had disappeared beneath the waters of the Tsushima Strait, but the Anglo-Japanese Treaty still allowed the withdrawal of British naval and ground forces from Asia, facilitating the concentration of British military power in the Atlantic. The result was a debilitating blockade Germany could not overcome throughout the First World War.Like the British at the beginning of the 20th Century, Washington suffers from a case of “Imperial Overstretch.” Washington needs a new national security strategy, one designed to halt the dissipation of American military resources around the world and to concentrate it wherever it is needed. For the moment, the point of concentration is Asia, where China’s assertiveness opens the door to the kind of instability and potential for strategic miscalculation that is eerily similar to the crises and conflicts that preceded the outbreak of World War I in Europe.

## lead

#### 2nd, Nuke power hurts leadership: Expanding nuclear power hurts credibility – safety issues

Walsh 11 (Wednesday, Mar 16, 2011 05:17 PM MST The nuclear credibility gap As Japan and U.S. officials differ on risks, the Obama administration pushes ahead with nuclear power expansion By Joan Walsh, http://www.salon.com/2011/03/17/nuclear\_credibility\_gap/)

I’m inclined to believe Jaczko, as well as warnings from U.S. Energy Secretary Steven Chu and other U.S. officials. Japanese leaders have been slow to admit the extent of the Fukushima damage at every step of the way. But American leaders are putting their own credibility at risk by being so quick to reiterate the Obama administration’s commitment to expanding nuclear power in the U.S. On Wednesday Chu told Congress that officials planned to look at the “lessons” of the Japan disaster — but he also told Rep. Joe Barton (R-Energy Industry) that the president continues to support expanding nuclear power in the U.S. at a cost to taxpayers of $36 billion, mainly in loan guarantees for new reactors, and to fund new small, modular reactors. To meet the president’s clean energy goals, Chu said, “We believe we will have to have some fraction coming from nuclear.” Without knowing the “lessons” of the unforeseen Japanese disaster, I’m not sure why any administration leader is making a full steam ahead commitment to nuclear expansion.

# 1nr

#### - Democrat opposition to nuclear power and tea party opposition to government incentives

Brent Franzel, Principal, Cardinal Point Partners LLC, “Debate Focuses on ‘Clean’ Rather than ‘Renewable’ Energy”, Solutions.bv.com, Issue No. 1, 2011

On one side, this debate has environmental groups and most Democrats, who are supporting a renewable energy standard that would require a percentage of the nation’s electricity to be generated from wind and solar and other renewable sources. Those on the other side of the debate want a clean energy standard, which would include nuclear and clean coal technologies. Significantly, a few days after Obama’s speech, Senate Energy & Natural Resources Committee Chairman Jeff Bingaman (D-NM) said he would be working to draft an energy bill that includes a clean energy standard. In the past, Bingaman has positioned himself on the other side of the debate – opposing the inclusion of nuclear and clean coal in the approved technologies. Of course, many Republicans – including many in key leadership positions – believe no national standard should be set and that decisions should be left to individual states to determine. Sen. Jim DeMint (R-SC), a key player in the Tea Party for example, criticized Obama for trying to pick winners and losers. Despite these positive developments, gaining approval of an energy bill this year will still be an uphill climb for congressional leaders. There is only a short window of time before the 2012 presidential and congressional elections overwhelm the congressional agenda. In addition, the primary focus in Congress will be on cutting spending in existing programs – not on enacting new ones. Whether a bill makes it to the president’s desk could be affected more by outside factors than by what happens in Congress. Developments in the Middle East and the resulting impact on oil prices will be the main factors determining whether Congress decides to act. The debate will be complicated by the huge number of Tea Party-affiliated members of Congress now in office. Despite their likely support for nuclear power, many are going to be hesitant to support new government incentives, such as loans and loan guarantees, to build new plants.

#### SMRs are more expensive than large reactors – no adoption.

Baker 2012 (writer for the American Security Project(ASP) “Do Small Modular Reactors Present a Serious Option for the Military’s Energy Needs?” http://americansecurityproject.org/blog/2012/do-small-modular-reactors-present-a-serious-option-for-the-militarys-energy-needs/ ) JA

Secondly, SMRs pose many of the same problems that regular nuclear facilities face, sometimes to a larger degree. Because SMRs are smaller than conventional reactors and can be installed underground, they can be [more difficult](http://www.forbes.com/sites/jeffmcmahon/2012/05/23/small-modular-reactors-by-2022-but-no-market-for-them/) to access should an emergency occur. There are also reports that because the upfront costs of nuclear reactors go up as surface area per kilowatt of capacity decreases, SMRs will in fact be [more expensive](http://ieer.org/wp/wp-content/uploads/2010/09/small-modular-reactors2010.pdf) than conventional reactors.