### Off

Interpretation and Violation - The affirmative must specify the specific type of SMR reactor designs they employ.

This is best

1.) Lots of types of SMR designs - aff skirts over most important part of the nuclear-power debate.

Szondy 12 - Freelance writer, award-winning playwright (David, February 16th 2012, http://www.gizmag.com/small-modular-nuclear-reactors/20860/

Types of modular reactors Let's take a look now at some of the major types of modular reactors under development. There are, in fact, many more than are presented here, but this should give a good cross section of what is in the pipeline. Light-water reactors A modular light-water reactor is basically a scaled-down version of a conventional reactor. Like conventional reactors, it uses water as a coolant and a neutron moderator (that is, the water slows down the neutrons produced by the nuclear fuel so that the uranium atoms have a better chance of absorbing them and inducing nuclear fission. The trick of fission is simply to have enough nuclear fuel in one place with a moderator so that the reaction becomes self-sustaining). Engineers already have decades of experience with light-water SMRs because these are the type used on submarines and icebreakers, so the technology is already advanced and has had lots of field testing under very hard conditions. Imagine a nuclear power plant that has to be able to operate safely as it's being tossed about in the ocean while sealed inside a submarine hull and you can see the daunting challenges that have been overcome. Small light-water reactors aren't as efficient as their larger cousins, but they have a number of advantages. Steam is produced in a nuclear plant by passing a loop of cooling water from the reactor through the steam generator, which is a separate vessel filled with coiling pipes. The hot cooling water enters the generator and as it runs through the pipes a second coil filled with water is heated by the water from the reactor. This changes to steam, which turns the turbines that turns the dynamos. On a conventional reactor, most types have the steam generator outside the reactor vessel. With light-water SMRs, the steam generator can be placed inside the vessel. This not only makes the reactor more compact and self-contained, but it also makes it much safer. One common problem in reactors is radioactive water leaking as it travels from the reactor to the steam generator. With the steam generator inside the reactor vessel, it's the much safer situation of only non-radioactive water/steam going into and out of the reactor vessel. Westinghouse SMR The Westinghouse SMR is a miniature version of their AP1000 reactor. But where the AP1000 produces 1,154 megawatts and requires a plant covering 50 acres (20 ha), the Westinghouse SMR needs only 15 (6 ha), puts out 225 megawatts and can be built in 18 months as opposed to several years. The reactor and containment vessel stand 89 feet (27 m) high and 32 feet (9.8 m) in diameter, which makes it compact enough to be factory-built and shipped by rail to the site. Its fuel is standard enriched uranium that needs servicing every two years, but the reactor's passive cooling system relies on the natural circulation of water rather than pumps, which means that even in the event of a complete power loss, as Fukushima suffered, the Westinghouse SMR can go for up to a week without needing any operator intervention to prevent damage. mPower Backed by Babcock and Wilcox, mPower is based on US Navy reactor designs and produces 160 megawatts when the system's condensers are cooled by water, but it can be air-cooled as well, though with a lower power output. Seventy-five feet (23 m) high and 14 feet (4.3 m) in diameter, mPower is designed to be factory built, rail-shipped and installed below ground. Like the Westinghouse SMR, the mPower uses a passive cooling system and the steam generator is integral with the reactor. Unlike the Westinghouse SMR, the mPower needs refueling only every four years and the process involves simply replacing the entire core, which is inserted like a cartridge. The reactor has a 60-year service life and is designed to store its spent fuel on site for the duration. NuScale NuScale seems impractically small with its output of only 45 megawatts, but it's intended to be installed twelve at a time to provide up to 540 megawatts. These are each placed in an underground pool of water and each unit is cooled by natural circulation. Because of this, there are no pumps and the only moving parts in the reactor are those used to operate the control rods. When it is time for refueling, the reactor is removed from its pool by an overhead crane and taken to another section of the facility. High-temperature gas cooled reactors As the term implies, gas-cooled reactors use a gas instead of water as a reactor cooling medium. In modern reactors this gas is usually helium because it's an inert element that doesn't react with other materials, yet is an excellent coolant (just ask any mixed-gas deep sea diver and he'll tell you why they have a heating tube in their suit while breathing helium). This is important because, not using water, the moderator for the nuclear reaction is a graphite core, which is flammable. These operate at relatively low pressures and high gas temperatures of up to 1,800 degrees F (1,000 degrees C) and the gas either drives the turbines directly or via a steam generator. This reactor type has safety advantages because the way the design makes the nuclear reaction self-regulating. As the reactor gets hotter, the reaction slows down and the reactor cools. It also lends itself to smaller scales to allow for factory building and underground installation. GT-MHR Built by a partnership led by General Atomics, the GT-MHR reactor has a capacity of 285 megawatts and can also be used to produce 100,000 tons of hydrogen gas per year. It has the interesting distinction of being able to run on weapons-grade plutonium. The reason for this was that the GT-MHR was originally designed to help dispose of Soviet nuclear warheads after the end of the Cold War. It also serves to highlight the practical applications of the SMRs' ability to burn alternative nuclear fuels. Fast neutron reactors In conventional reactors, neutrons are slowed down by a moderator such as water, carbon or helium so that the uranium atoms have a better chance of absorbing them and initiating fission. A fast neutron reactor manages the same fission reaction except it does so by reflecting fast-moving neutrons back into the uranium in large quantities and thereby increasing the odds of fission. This has the advantage of allowing reactors to be very simple in design (and hence smaller) and to use enriched fuels, thorium or even nuclear waste as fuel. There are two types of fast neutron systems used in current SMR designs. The first are candle, breed-burn or traveling-wave reactors. The second, standing wave reactors. The "candle" name for the first variety stems from the fact that that's what the fuel resembles. Put simply, it's a big slab of depleted uranium with a plug of enriched uranium stuck in one end. When the nuclear reaction starts, the enriched uranium "ignites" the slab by initiating a reaction that turns the U-238 into Pu-239, an isotope of plutonium that can fission and generate power. This reaction burns along the slab at roughly one centimeter per year, creating and burning plutonium as it goes. It's a process that can take years, even decades, as the reactor burbles away at a temperature of about 1,000 degrees F (550 degrees C) while cooled by liquid sodium, lead or lead-bismuth alloy. The other version is called a "standing wave," and the principle is the same, except instead of a great slab, the reactor is made up of fuel rods of U-238 and the reaction is started in the center. As the reaction proceeds outwards, the spent rods are reshuffled by the operators until all the fuel is consumed. The upshot of this is that a traveling wave reactor uses it fuel more efficiently and can run for 60 years without refueling. Theoretically, it could go for 200 years. With either type, they are also unusual in that they have no moderator, rely on passive cooling, can be built in factories and have no moving parts. They are as close to plug-and-play as nuclear reactors can get. Hyperion Hyperion is another very small modular reactor that produces only 25 megawatts, but what it lacks in power it makes up for in portability. The reactor vessel is only 8 feet (2.5 m) tall and 5 feet (1.5 m) in diameter, has no moving parts and can go for ten years without refueling. When refueling is needed, the reactor is returned to the factory and replaced rather in the manner of a gas bottle. This configuration not only makes it possible to build multi-reactor power plants, but the individual reactors can also be used for applications like providing heat to extract oil from shale beds, steam for industrial uses and running desalination plants. PRISM Power Reactor Innovative Small Module (PRISM) is a GE-Hitachi design. It's sodium cooled, installed underground and generates 311 megawatts with refueling every six years. Its ability to burn plutonium and depleted uranium makes it of great interest to the UK, which is negotiating to have two installed at the Sellafield nuclear facility where they would be used to burn nuclear waste stockpiles. This is more than just a waste disposal solution. It's estimated that if this works, the waste could provide power to Britain for 500 years. Molten salt reactors In this type of SMR, the coolant and the fuel are one in the same. The coolant is a mixture of lithium and beryllium fluoride salts. In this is dissolved a fuel, which can be enriched uranium, thorium or U-233. This molten salt solution passes at relatively low pressure and a temperature of 1,300 degrees F (700 degrees C) through a graphite moderator core. As the fuel burns, the waste products are removed from the solution and fresh fuel is added. Flibe Flibe (Fluoride salt of Lithium and Beryllium) is a sort of reactor in a box. The US military wants to develop small reactors that can be easily set up at remote bases. Toward this end, the Flibe is designed around a power plant that packs into a set of cargo containers. The idea is to stick the reactor in the ground, set up the generating machinery and cover the lot with a building. The last doesn't need to be anything like the containment building of a conventional reactor because the reactor is not only passively heated, but also features a salt plug that needs to be actively cooled at all times. If the reactor suffers a breakdown and the reactor starts to overheat, the plug melts and the molten salt/fuel mixture pours out into a drain tank. Power output is rated at 20 to 50 megawatts and it uses U-233 and thorium for fuel. This not only eliminates proliferation issues (neither U-233 nor thorium is completely unsuitable for weapons), but it also opens up a cheap, easily obtained energy source.

Allowing them not to specify makes the debate generic, three impacts

1.) Education - Our knowledge of SMRs become sound-bytes divorced from the actual mechanics of the technology itself

2.) Unfair Aff Ground - they can cherry pick the benefits and advantages of mulitle reactor desgins.

3.) Neg Ground - We lose all specific SMR-based PICs and disads to particular disposal or refueling methods for SMRs.

### Off

The United States federal government should offer purchase power agreements to companies that generate electricity from high-temperature gas cooled reactors

Solves the aff.

Szondy 12 - Freelance writer, award-winning playwright (David, February 16th 2012, http://www.gizmag.com/small-modular-nuclear-reactors/20860/

. High-temperature gas cooled reactors As the term implies, gas-cooled reactors use a gas instead of water as a reactor cooling medium. In modern reactors this gas is usually helium because it's an inert element that doesn't react with other materials, yet is an excellent coolant (just ask any mixed-gas deep sea diver and he'll tell you why they have a heating tube in their suit while breathing helium). This is important because, not using water, the moderator for the nuclear reaction is a graphite core, which is flammable. These operate at relatively low pressures and high gas temperatures of up to 1,800 degrees F (1,000 degrees C) and the gas either drives the turbines directly or via a steam generator. This reactor type has safety advantages because the way the design makes the nuclear reaction self-regulating. As the reactor gets hotter, the reaction slows down and the reactor cools. It also lends itself to smaller scales to allow for factory building and underground installation

Not only is the tech prolif resistant, it is also energy efficient and flexible, means it solves every I/L to the aff.

NGNP 10 (http://www.ngnpalliance.org/index.php/htgr, 2010)

The NHSS design is modular with module ratings from 200 MWt to 625 MWt, reactor outlet temperatures from 700 ⁰C to 850 ⁰C and heat transport systems that provide steam and/or high temperature fluids. The range of power ratings, temperatures and heat transport system configurations provides flexibility in adapting the modules to the specific application. Safety at the highest levels is designed into the HTGR. No harmful release of radioactive material under any conditions is assured by design. Multiple assured barriers to the release of radioactive material are provided. These barriers include multiple layers of ceramic coatings on the nuclear fuel, the carbon encasement and the graphite core structure. Additional barriers include the reactor vessel and the reactor building. The high temperature and robust structural capabilities eliminate concerns of fuel damage that could lead to significant release of radioactive materials from the nuclear fuel. The ceramic coated nuclear fuel provides the primary containment for radioactive materials rather than depending on a containment building. Reactor power levels are limited and the nuclear reactor shuts down if reactor temperatures exceed intended operating conditions. Inherent to the nuclear reactor design is suppression of the nuclear reaction if the operating temperature increases. Complete shutdown is achieved through automatic insertion of control rods into the reactor core by gravity. No actions by plant personnel or backup systems are required to either ensure shutdown of the reactor or ensure cooling. Conversely, actions of plant personnel cannot achieve conditions that cause the reactor fuel to lose its ability to contain radioactive material. No power and no water or other cooling fluid is required. Heat removal from the reactor occurs naturally and directly to the earth if normal heat transport systems are not available.The low energy density of the reactor core combined with the large heat capacity of the graphite structure results in the reactor taking days to reach maximum temperatures (still well below temperatures that could cause fuel degradation), even if normal cooling systems are not functional. Reactor materials including the reactor fuel will not chemically react or burn to produce heat or explosive gases. Helium is inert and the fuel and materials of construction of the reactor core and the nuclear heat supply system are chosen to preclude such reactions. Intrusion of water or air into the reactor systems does not result in substantive degradation of the capability to contain radioactive materials and maintain a shutdown condition. The presence of water will enhance the heat removal path. Spent or used fuel is stored in casks or tanks in underground dry vaults that can be cooled by natural circulation of air and shielded by steel plugs and concrete structure. No water is required for either cooling or radiation shielding and no active cooling system is required.

Forward deployed reactors, inevitably, will be stolen.

Andres & Breetz, ‘11

[Richard B. Andres, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for

National Strategic Studies, at the National Defense University, Hanna L., doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, “Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications,” <http://www.ndu.edu/inss/docuploaded/SF%20262%20Andres.pdf>]

Using the emerging technology at expeditionary locations carries far greater risks. Besides the concerns outlined above, forward located reactors could be subject to attack. Today, forward operating bases in Iraq and Afghanistan are regularly subjected to mortar attacks, suggesting that reactors at such locations could make these bases prime targets for attack. Since forward bases are also subject to capture, any design proposal that envisions deployment at forward operating bases must incorporate contingency plans in the event that reactors fall into enemy hands.

Light water reactors are proliferation risks.

Gilinsky et al. 04 (Victor, Marvin Miller, Harmon Hubbard, The Nonproliferation Policy Education Center, A FRESH EXAMINATION OF THE PROLIFERATION DANGERS OF LIGHT WATER REACTORS, October 22, 2004, <http://www.npec-web.org/Frameset.asp?PageType=Single&PDFFile=Report041022%20LWR&PDFFolder=Reports>)

The report details how fresh and spent LWR fuel can be used to accelerate a nation’s illicit weapons program significantly. In the case of a state that can enrich uranium (either covertly or commercially), fresh lightly enriched reactor fuel rods could be seized and the uranium oxide pellets they contain quickly crushed and fluoridated. This lightly enriched uranium feed material, in turn, could enable a would-be bomb maker to produce a significant number of weapons with one-fifth the level of effort than what would otherwise be required to enrich the natural uranium to weapons grade. As for spent LWR fuel, the report details how about a year after an LWR of the size Iran has was brought on line, as much as 60 Nagasaki bombs’ worth of near-weapons grade material could be seized and the first bomb made in a matter of weeks. The report also details how the reliability of the bombs made of this material, moreover, is similar to that of devices made of pure weapons grade plutonium.

Extinction.

Victor A **Utgoff,** Deputy Director of Strategy, Forces, and Resources Division of Institute for Defense Analysis, Summer 20**02**, Survival, p.87-90

In sum, widespread proliferation is likely to lead to an occasional shoot-out with nuclear weapons, and that such shoot outs will have a substantial probability of escalating to the maximum destruction possible with the weapons at hand. Unless nuclear proliferation is stopped, we are headed towards a world that will mirror the American Wild West of the late 1800s. With most, if not all, nations wearing nuclear “six shooters” on their hips, the world may even be a more polite place than it is today, but every once in a while we will all gather together on a hill to bury the bodies of dead cities or even whole nations.

### Off

Fiscal Cliff averted for two months – Obama needs polcap to avert total meltdown

Mahn 1-3 (Kevin, Forbes, http://www.forbes.com/sites/advisor/2013/01/03/fiscal-cliff-deal-4-tax-provisions-handled-1-hiked-still-work-to-be-done/)

A last minute fiscal cliff deal/compromise was reached in Washington to avert the initial stages of a potential economic meltdown that was received warmly by the markets given the extent of the relief rally that we have experienced thus far on the first trading day of the New Year.¶ However, I don’t believe that we are anywhere close to signaling “all clear” on the Fiscal Cliff front and that the deal in question—while it averted some of the feared, short-term draconian tax increases associated with going over the cliff—did nothing to address the longer term, more encompassing budget issues as the compromise delayed any decisions on spending cuts for another two months.¶ The compromise also did not deal with the impending Debt Ceiling debate, which promises to have both political parties digging in on their ideological heels.¶ Removing some uncertainty from the markets, what has been addressed in the deal/compromise were changes to the revenue side of the fiscal budget equation primarily dealing with tax rates and income levels associated with these tax rates.¶ As I understand it at this point in time, based primarily upon a recent The Wall Street Journalarticle entitled, “Summary of Bill’s Tax Provisions,” here are some of the major provisions of the deal that were agreed to by the White House, Senate and House of Representatives—and one noteworthy tax that was not addressed in the deal.¶ 1. The personal income tax rate for families with incomes above $450,000 (individuals with incomes above $400,000 and heads-of-households with incomes above $425,000) will increase. Any excess income above these levels will now be taxed at 39.6%. This represents the largest income tax rate increase in nearly two decades. The tax rates for families, individuals and heads-of households with income below these thresholds will not change and will remain at their existing Bush-era tax bracket levels.¶ 2. The tax rate on capital gains and dividendswill rise to 20% from 15% for incomes above the levels described in (1) above. These tax rates will remain at 15% for all other applicable taxpayers below these thresholds. Avoiding the tax treatment of dividend income at ordinary income rates, as opposed to the agreed upon tax rates of 15% or 20%, is viewed as a major positive for investors–especially those with dividend oriented investment strategies in their portfolios.¶ 3. The estate tax will be increased from a top tax rate of 35% to 40% with a $5 million exemption level. This threshold will be indexed to inflation going forward.¶ 4. The Alternative Minimum Tax (AMT) was patched to avoid raising taxes, through the AMT, on more middle-class Americans by raising the income exemption from $33,750 (individuals) and $45,000 (married couples filing jointly), as it would have reverted to for the tax year 2012, to $50,600 (individuals) and $78,750 (married couples filing jointly) respectively. The exemption amounts will be indexed going forward as well.¶ 5. The deal did not address payroll taxes. As a result, the rate of payroll taxes for workers used to fund Social Security will increase from 4.2% (which was in place for the previous two tax years) to 6.2% as of January 1, 2013. According to The Tax Policy Center, approximately 77% of American households will face higher federal taxes in 2013—not just income tax increases on wealthier American households but payroll tax increases on middle and low income American households as well.¶ While the details of the “first Fiscal Cliff deal,” addressing revenue (i.e. taxes), show that the compromises reached helped to lessen the initial taxable impact that would have been experienced by many taxpayers and investors if no deal had been reached at all, I remain concerned with the lack of any type of deal on spending cuts at this time.¶ A “second Fiscal Cliff deal,” addressing spending cuts, would need to be reached within the next two months according to the outtakes of the first Fiscal Cliff deal. If an agreement between the two political parties on spending cuts cannot be reached in that timeframe, the Debt Ceiling debate would then return to the front burner as more debt would thus be needed (potentially involving another increase to the Debt Ceiling) to fund the existing Federal balance sheet imbalance.¶ Judging from past experience, I would anticipate that any agreement on a second Fiscal Cliff deal will probably come down to the wire, if not get postponed again, and that market volatility will likely continue to increase as we get closer to the new deadline.

Nuclear is so unpopular that is causes an immediate fight

Szondy, ’12 [David, freelance writer -- Gizmag, 2-16, “Feature: Small modular nuclear reactors - the future of energy?” http://www.gizmag.com/small-modular-nuclear-reactors/20860/]

The problem is that nuclear energy is the proverbial political hot potato - even in early days when the new energy source exploded onto the world scene. The tremendous amount of energy locked in the atom held the promise of a future like something out of a technological Arabian Nights. It would be a world where electricity was too cheap to meter, deserts would bloom, ships would circle the Earth on a lump of fuel the size of a baseball, planes would fly for months without landing, the sick would be healed and even cars would be atom powered. But though nuclear power did bring about incredible changes in our world, in its primary role, generating electricity for homes and industry, it ended up as less of a miracle and more of a very complicated way of boiling water.¶ Not only complicated, but expensive and potentially dangerous. Though hundreds of reactors were built all over the world and some countries, such as France, generate most of their electricity from it, nuclear power has faced continuing questions over cost, safety, waste disposal and proliferation. One hundred and four nuclear plants provide the United States with 20 percent of the nation's power, but a building permit hadn't been issued since 1978 with no new reactors coming on line since 1996 and after the uproar from the environmental movement after nuclear accidents at Three Mile Island, Chernobyl and Fukushima, it seemed unlikely that any more would ever be approved - until now. This fierce domestic opposition to nuclear power has caused many governments to take an almost schizophrenic stance regarding the atom.¶

Current deal isn’t enough – lack of a full deal will cause a full collapse

Delamaide 1-3 (Darrell, Marketwatch, “Tactical deal on “cliff” risks permanent damage,” http://www.marketwatch.com/story/tactical-deal-on-cliff-risks-permanent-damage-2013-01-03?link=MW\_latest\_news)

The bill passed with so much drama converted the temporary George W. Bush-era tax cuts into the permanent Obama tax cuts. As hard as it may be to not extend tax cuts that are due to expire, it’s much harder politically to actually raise tax rates.¶ The tax rates, originally adopted in response to a surging government surplus and then extended to avoid fiscal contraction during a recession, have now been set at a permanently low level, which could hinder the country from achieving its future economic and social goals.¶ This was the thrust of the argument made by one of the 16 Democratic congressmen who voted against the bill.¶ “We have concretized revenue at an extraordinarily low rate,” Rep. Jim Moran said Wednesday on MSNBC.¶ Moran, who represents some of the Washington suburbs in northern Virginia, said the tax rates enshrined in the legislation now signed into law by President Barack Obama meant “we will never bring in more than 15% of GDP.” But, he added, the U.S. has never enjoyed a robust economy without government spending of at least 20% of gross domestic product.¶ Moran, beginning his 12th term in Congress this week, noted the deal’s immediate consequences of leaving several ugly fiscal battles to fight in the coming weeks — raising the debt ceiling, disarming the “sequester” of automatic spending cuts, and passing a budget that enables the government to continue operating.¶ But the real issue is the long-term problem of starving the beast, with Obama at his moment of maximum leverage getting only $620 billion in added tax revenue over 10 years — instead of the $1.6 trillion he sought in earlier proposals.¶ “I wanted [Obama] to have a legacy he could be proud of,” Moran said, including investments in education and training to keep the country competitive economically. “I doubt that can be done with the limited resources we voted [Tuesday] night.”

Collapse destabilizes the entire international system – nuclear war

Burrows and Harris 9- Mathew J. Burrows is a counselor in the National Intelligence Council (NIC), the principal drafter of Global Trends 2025: A Transformed World, Jennifer Harris is a member of the NIC’s Long Range Analysis Unit, “Revisiting the Future: Geopolitical Effects of the Financial Crisis”, The Washington Quarterly, April, http://www.ciaonet.org/journals/twq/v32i2/f\_0016178\_13952.pdf

Increased Potential for Global Conflict Of course, the report encompasses more than economics and indeed believes the future is likely to be the result of a number of intersecting and interlocking forces. With so many possible permutations of outcomes, each with ample opportunity for unintended consequences, there is a growing sense of insecurity. Even so, history may be more instructive than ever. While we continue to believe that the Great Depression is not likely to be repeated, the lessons to bedrawn from that period include the harmful effects on fledgling democracies andmultiethnic societies (think Central Europe in 1920s and 1930s) and onthe sustainability ofmultilateral institutions (think League of Nationsin thesame period). There is no reason to think that this would not be true in the twenty-first as much as in the twentieth century. For that reason, the ways in which the potential for greater conflict could grow would seem to be even more apt in a constantly volatile economic environment as they would be if change would be steadier. In surveying those risks, the report stressed the likelihood that terrorism and nonproliferation will remain priorities even as resource issues move up on the international agenda. Terrorism’s appeal will decline if economic growth continues in the Middle East and youth unemployment is reduced. For those terrorist groups that remain active in 2025, however, the diffusion oftechnologies and scientific knowledge will place some of the world’s mostdangerous capabilities within their reach. Terrorist groups in 2025 will likely be a combination of descendants of long established groups inheriting organizational structures, command and control processes, and training procedures necessary to conduct sophisticated attack and newly emergentcollections of the angry and disenfranchised that become self-radicalized,particularly in the absence of economic outlets that would become narrowerin an economic downturn. The most dangerous casualty of any economically-induced drawdown of U.S. military presence would almost certainly be the Middle East. Although Iran’s acquisition of nuclear weapons is not inevitable, worries about a nuclear-armed Iran could lead states in the region to develop new security arrangements with external powers, acquire additional weapons, and consider pursuing their own nuclear ambitions. It is not clear that the type of stable deterrent relationshipthat existed between the great powers for most of the Cold War would emergenaturally in the Middle East with a nuclear Iran. Episodes of low intensity conflict and terrorism taking place under a nuclear umbrella could lead to an unintended escalation and broader conflict if clear red lines between those states involved are not well established. The close proximity of potential nuclear rivals combined with underdeveloped surveillance capabilities and mobile dual-capable Iranian missile systems also will produce inherent difficulties in achieving reliable indications and warning of an impending nuclear attack. Thelack of strategic depth in neighboring states like Israel, short warning and missileflight times, and uncertainty of Iranian intentions may place more focus onpreemption rather than defense, potentially leading to escalating crises. Types of conflict that the world continuesto experience, such as over resources, could reemerge, particularly if protectionism grows and there is a resort to neo-mercantilist practices. Perceptions of renewed energy scarcity will drive countries to take actions to assure their future access to energy supplies. In the worst case, this could result in interstate conflicts if governmentleaders deem assured access to energy resources,for example, to be essential for maintaining domestic stability and the survival oftheir regime. Even actions short of war, however, will have important geopoliticalimplications. Maritime security concerns are providing a rationale for navalbuildups and modernization efforts, such as China’s and India’s development of blue water naval capabilities. If the fiscal stimulus focus for these countries indeed turns inward, one of the most obvious funding targets may be military. Buildup ofregional naval capabilities could lead to increased tensions, rivalries, andcounterbalancing moves, but it also will create opportunities for multinational cooperation in protecting critical sea lanes. With water also becoming scarcer inAsia and the Middle East, cooperation to manage changing water resources is likely to be increasingly difficult both within and between states in amoredog-eat-dog world.What Kind of World will 2025 Be? Perhaps more than lessons, history loves patterns. Despite widespread changes in the world today, there is little to suggest that the future will not resemble the past in several respects. The report asserts that, under most scenarios, the trendtoward greater diffusion of authority and power that has been ongoing for acouple of decades is likely to accelerate because of the emergence of new globalplayers, the worsening institutional deficit, potential growth in regional blocs,and enhanced strength of non-state actors and networks. The multiplicity of actors on the international scene could either strengthen the international system, by filling gaps left by aging post-World War II institutions, or could further fragment it and incapacitate international cooperation. The diversity in both type and kind of actor raises the likelihood of fragmentation occurring over the next two decades, particularly given the wide array of transnational challenges facing the international community. Because of their growing geopolitical and economic clout, the rising powers will enjoy a high degree of freedom to customize their political and economic policies rather than fully adopting Western norms. They are also likely to cherish their policy freedom to maneuver, allowing others to carry the primary burden for dealing with terrorism, climate change, proliferation, energy security, and other system maintenance issues. Existing multilateral institutions, designed for a different geopolitical order, appear too rigid and cumbersome to undertake new missions, accommodate changing memberships, and augment their resources. Nongovernmental organizations and philanthropic foundations, concentrating on specific issues, increasingly will populate the landscape but are unlikely to affect change in the absence of concerted efforts by multilateral institutions or governments. Efforts at greater inclusiveness, to reflect the emergence of the newer powers, may make it harder for international organizations to tackle transnational challenges. Respect for the dissenting views of member nations will continue to shape the agenda of organizations and limit the kinds of solutions that can be attempted. An ongoing financial crisis and prolonged recession would tilt the scales even further in the direction of a fragmented and dysfunctional international system with a heightened risk of conflict. The report concluded that the rising BRIC powers (Brazil, Russia, India, and China) seem averse to challenging the international system, as Germany and Japan did in the nineteenth and twentiethcenturies, but this of course could change if their widespread hopes for greater prosperity become frustrated and the current benefits they derive from a globalizing world turn negative.

### Off

NRC has sufficient resources now to ensure safety – but overstretch causes a repeat of Fukushima

Kaufman 11, Daniel - Brookings Senior Fellow “Preventing Nuclear Meltdown,” 4-1-2011, http://www.brookings.edu/research/opinions/2011/04/01-nuclear-meltdown-kaufmann

Many wonder whether Japan’s nuclear disaster could have been averted. The embattled operator of the Fukushima nuclear plant, Tokyo Electric Power Company (TEPCO), has borne the brunt of criticism; its numerous failures over the years are certainly well known. However, Japan’s Nuclear and Industrial Safety Agency (NISA), responsible for regulating the nuclear industry, also ought to be subject to particular scrutiny for allowing TEPCO to operate despite its past safety and disclosure violations. We thus ask what types of regulatory failure may have contributed to Japan’s nuclear crisis and assess whether the U.S. Nuclear Regulatory Commission (NRC) is at risk of committing similar errors. Regulatory failure occurs when the regulatory system is deeply flawed – such as when it over- or under-regulates or when the regulatory design is based on “old science”. Regulatory failure also happens when agencies inadequately fulfill their oversight, supervisory and enforcement functions. Failures by regulatory agencies can go undetected for some time until they are exposed by a crisis, such as the BP oil spill in 2010 and the financial crisis that originated in Wall Street in 2008. When assessing regulatory failure, it is important to distinguish between at least three different types of failure: lack of resources, mismanagement and poor technical expertise, and capture of the regulator by the regulated. Episodes of regulatory failure result from different combinations of subpar performance in some or all of these components. Which dimensions were associated with the failures at Japan’s regulatory agency? Does the U.S. nuclear energy regulator face similar challenges? Let us review each of the three types of failures in the context of Japan’s NISA and the U.S.’s NRC. Lack of Resources: When regulators lack the resources to hire staff, provide adequate training and expend the money necessary to monitor industries, regulatory concerns may go undetected and failure may result. The evidence does not suggest that Japan’s NISA or the U.S.’s NRC lacked sufficient resources to effectively implement regulations.

Flood of new reactors overstretches NRC funds and manpower

Weaver 7 Lynn, President Emirtus of Florida Institute of Technology, “Fund NRC Nuclear Power Licensing” <http://www.theledger.com/article/20070207/COLUMNISTS03/702070394?p=3&tc=pg>

The Nuclear Regulatory Commission has alerted several utilities that license reviews would be delayed at least a year.¶ With all the concern in Congress over global warming, one might think that an increase in the number of nuclear power plants in the United States is inevitable, both to satisfy energy demands and to counter greenhouse-gas emissions. But that, of course, would be wrong.¶ There are about 100 nuclear plants in the United States and they account for about 75 percent of our country's emission-free electricity.¶ Utilities are preparing to build another 33 plants, including two in Florida.¶ These would be the first reactors to be built in this country in many years, and federal and state energy officials agree that it won't be possible to reduce U.S. greenhouse emissions without them. But it now appears that electric utilities might not be able to obtain licenses anytime soon to build new nuclear plants.¶ The reason for the licensing delay is simple-and-straightforward: a critical shortage of manpower at the Nuclear Regulatory Commission - which is expected to become acute within a year. The NRC knows that it needs to expand its workforce, because it's facing a flood of regulatory reviews for new nuclear plants and existing plants that are seeking a renewal of their operating licenses. But it doesn't have the money.¶ Congress is bogged down in a dispute over federal spending. It has passed just two of the 11 spending bills for the fiscal year that began last October, those covering defense and homeland security. The rest of the government is operating under a continuing resolution that holds spending to last year's levels.¶ As a result, the NRC's budget is lower by $95 million (12 percent), compared with the level approved by both the House and Senate appropriations committees, but not the full House.¶ This has meant that the NRC doesn't have enough funds to handle the resurgence in nuclear power. In fact, it recently alerted several utilities that reviews of their applications for license renewal would be delayed at least a year, because it does not have the capability to deal with more than a few applications at a time.¶ So far, the NRC has done a commendable job of coping with the situation, even though its budget in recent years has been slighted. Since 2000, the licenses of 48 nuclear plants - including all of the units at the Turkey Point plant and the St. Lucie plant in Florida - have been extended for another 20 years, but the owners of many other plants now face some uncertainty in getting the license of their plants renewed. And the start of construction of new nuclear plants could be set back.

Meltdowns cause extinction

Wasserman 4 Harvery - Sen. Advisor Nuclear Info and Res. Service, MA History U. Chicago, 2004, “Nuclear Power and Terrorism,” Spring, v. 17, no. 1, www.earthisland.org/eijournal/new\_articles.cfm?articleID=457&journalID=63

Infants and small children would quickly die en masse. Pregnant women would spontaneously abort or give birth to horribly deformed offspring. Ghastly sores, rashes, ulcerations and burns would afflict the skin of millions. Heart attacks, stroke and multiple organ failure would kill thousands on the spot. Emphysema, hair loss, nausea, inability to eat or drink or swallow, diarrhea and incontinence, sterility and impotence, asthma and blindness would afflict hundreds of thousands, if not millions. Then comes the wave of cancers, leukemias, lymphomas, tumors and hellish diseases for which new names will have to be invented. Evacuation would be impossible, but thousands would die trying. Attempts to quench the fires would be futile. More than 800,000 Soviet draftees forced through Chernobyl's seething remains in a futile attempt to clean it up are still dying from their exposure. At Indian Point, the molten cores would burn uncontrolled for days, weeks and years. Who would volunteer for such an American task force? The immediate damage from an Indian Point attack (or a domestic accident) would render all five boroughs of New York City an apocalyptic wasteland. As at Three Mile Island, where thousands of farm and wild animals died in heaps, natural ecosystems would be permanently and irrevocably destroyed. Spiritually, psychologically, financially and ecologically, our nation would never recover. This is what we missed by a mere 40 miles on September 11. Now that we are at war, this is what could be happening as you read this. There are 103 of these potential Bombs of the Apocalypse operating in the US. They generate a mere 8 percent of our total energy. Since its deregulation crisis, California cut its electric consumption by some 15 percent. Within a year, the US could cheaply replace virtually all the reactors with increased efficiency. Yet, as the terror escalates, Congress is fast-tracking the extension of the Price-Anderson Act, a form of legal immunity that protects reactor operators from liability in case of a meltdown or terrorist attack. Do we take this war seriously? Are we committed to the survival of our nation? If so, the ticking reactor bombs that could obliterate the very core of our life and of all future generations must be shut down.

Turns the case---NRC credibility and safety are essential to nuclear

Fertel 12 Marvin - Nuclear Energy Institute’s president and chief executive officer, “NRC Leadership Must Reinstate Environment That Promotes Collegial Engagement,” 6/26/2012

<http://www.nei.org/newsandevents/newsreleases/nrc-leadership-must-reinstate-environment-that-promotes-collegial-engagement>

“Safe performance of nuclear energy facilities and the Nuclear Regulatory Commission’s credibility are the two most important factors for policymaker and public confidence in nuclear energy. As such, the industry is concerned with anything that threatens the credibility of either. It is critical that the NRC leadership, including Allison Macfarlane if confirmed by the Senate, take the steps necessary to ensure that the agency is an efficient, effective regulator.

“The industry is always concerned about the possibility of a chilled working environment at our facilities or at the NRC, including the possibility of staff intimidation, at a time when the senior management and staff are working on crucial licensing activities and post-Fukushima safety recommendations. The industry takes safety culture issues seriously, and we expect the same priority treatment of these issues by our regulator.

“Safety is maximized when NRC and industry resources are focused on those matters that are most important to safety. It is important that the NRC commission and staff have a professional, collegial environment that allows the important work of the agency to continue without interruption or distraction.”

### Off

The 1ac leaves unchallenged the referent object of security - not only is the impact extinction, but this makes warfare, threat construction and human insecurity inevitable, turning the aff. Be suspect of their specific scenarios - national security is a ploy used by security elites to leave citizens in a constant state of fear.

Lal 7 - Master of Arts in International Relations (Preerna, 2007, http://gwu.academia.edu/PrernaLal/Papers/646118/Critical\_Security\_Studies\_Deconstructing\_the\_National\_Security\_State)

Under the lens of critical theory, there are many problems with the current framework of national security. First, security is a paradox for the more we add to the national security agenda, the more we have to fear. As Barry Buzan (1991, 37) points out in People, States and Fear, the security paradox presents us with a cruel irony in that to be secure ultimately, would mean “being unable to escape.” Thus, to secure oneself, one would need to be trapped in a timeless state, for leaving this state would incur risks. The current neo-realist realization of national security is quite narrow and does not take into account threats to human welfare, health, social problems, and domestic sources of insecurity. However, in Security: A New Framework of Analysis, several CSS theorists put forward the case for widening the field of security studies and separating these into five different sectors under state control: military, politics, environment, society and economy (Buzan, De Wilde and Waever 1998, 21-23). But, since these wideners leave the referent object of security as the state, widening the field of security studies becomes even more troubling because it risks more state control over our lives, the militarization of social issues such as drugs and crime, which would further legitimize and justify state violence, leaving us all the more insecure. Accordingly, it becomes clear that a mere re-definition of “security” away from its current neo-realist framework does not solve the security dilemma if the referent object of security is left unchanged. This goes to prove that it is the state as the referent object that requires questioning in terms of its supposed provision of security rather than the problems with widening the field of security. Without a state-centric concept of security, there would be no national security agenda left to widen, as our security concerns would be human-centered, hence, the paradox of security would dissipate. A second part of the security paradox is that security and insecurity are not binary opposites. On a micro-level, if security is the state of being secure, than insecurity should be the state of not being secure. However, what we do feel secure about is neither part of the national security agenda nor a conscious thought or feeling. The state of being secure is thus, not conceptualized as an absence of insecurity. On a policymaking level, Robert Lipschutz (1995, 27), Associate Professor of Politics at University of California, Santa Cruz, notes in On Security that our desire to achieve security through the acquisition of arms and a national missile “defense” system, serves to insecure those whom we label and treat as threats. This encourages the proliferation of weapons of mass destruction and offensive posturing by those we wish to secure ourselves against, causing us to feel more insecure as the end result of our search for security. More recently, when George W. Bush included North Korea in his illogical “Axis of Evil” and named it as a threat to the United States, the peripheral state had no nuclear capability and would never have thought to use the threat of weapons of mass destruction to blackmail Western powers into giving aid. However, alarmed at the thought of being the next Afghanistan or Iraq, North Korea retaliated within a year by revealing its nuclear arsenal. The United States watched helplessly as one more previously benign nation became a real security problem. As a consequence, imagined enemies become real threats due to the ongoing threat construction by the state, and this poses the security dilemma of creating self-fulfilling prophecies in the current framework of security. Our notion of security is what the state says it is, rather than what we feel it is. Yet, this entrenched view of security is epistemologically flawed, which is our second dilemma; meaning that our knowledge of security as it is defined is based in certain realist assumptions that do not hold up under scrutiny. Our perception of what and from whom we need to be secured is not based on the actual threats that exist, but on the threats that we are told to perceive by the state. Thus, terrorists, drugs, illegal immigrants, “Third World” dictators, rogue states, blacks, non-Christians, and the Other, are considered as threats to the national security apparatus, and consequently, as threats to the individual American. This state construction of threats pervades our minds, causing a trickle-down effect that encourages a culture of fear, where the only limit to the coming danger is our imagination. Lipschutz (2000, 44-45) concludes in After Authority: War, Peace, and Global Politics in the 21st Century, “the national security state is brought down to the level of the household, and each one arms itself against the security dilemma posed by its neighbor across the hedge of fence.” Lipschutz seems to be saying that it is national security that eventually encourages the creation of a dichotomy between the self and the Other in our everyday lives. Indeed, it is the discourse of security by the rulers and elites, which creates and sustains our bipolar mindset of the world. A final dilemma presented by the current security framework is that security is ontologically unstable, unable to exist on its own, requiring the creation of certain conditions and categories, specifically, the creation of the Other. James Der Derian (1995, 25), Associate Professor of Political Science at U Mass (Amherst), notes in On Security that we are taught to consider security as “an a priori argument that proves the existence and necessity of only one form of security because there currently happens to be a widespread belief in it.” Yet, national security is a highly unstable concept and changes over time, with the construction of new threats and enemies. Due to its unstable nature, security can then, be considered as a constant fluid that is constructed and re-defined by the discourse of the state and security elites. Ole Waever, a senior researcher at the Center for Peace and Conflict Research, contends that the very act of uttering “security” places it on the security agenda, thereby giving the state and its elite, power over the issue. In On Security, he notes that “in naming a certain development a security problem, the state can claim a special right, one that in the final instance, always be defined by the state and its elites” (1995, 55). This process is termed as “securitization,” which simply means treating an event or issue as a problem of national security rather than first questioning whether it should even be treated as a security issue. Such an act serves the interests of the state and its elites, starting with security discourse by the state, which constructs and perpetuates state identity and existence.

The plan’s Nuclear tech optimism is epistemologically suspect – their scholarship is co-opted by the nuclear industry for economic gain – Accelerates the erasure of structural violence and nuclear racism

Byrne and Toley 6 (John – Head of the Center for Energy and Environmental Policy – It’s a leading institution for interdisciplinary graduate education, research, and advocacy in energy and environmental policy – John is also a Distinguished Professor of Energy & Climate Policy at the University of Delaware – 2007 Nobel Peace Prize for his work on the Intergovernmental Panel on Climate Change (IPCC), Toley – Directs the Urban Studies and Wheaton in Chicago programs - Selected to the Chicago Council on Global Affairs Emerging Leaders Program for 2011-2013 - expertise includes issues related to urban and environmental politics, global cities, and public policy, “Energy as a Social Project: Recovering a Discourse,” p. 1-32)

A second mega-energy idea has been advanced since the 1950s—the nuclear energy project. Born at a time in U.S. history when there were no pressing supply problems, nuclear power’s advocates promised an **inexhaustible source** of Giant Power. Along with hydropower, nuclear energy has been conceived as a non-fossil technical fix for the conventional energy regime. But nuclear energy has proven to be among the most potent examples of **technological authoritarianism** (Byrne and Hoffman, 1988, 1992, 1996) **inherent in the techno-fixes** of the conventional energy regime. On April 26, 1986, nuclear dreams were interrupted by a hard dose of reality—the accident at Chernobyl’s No. 4 Reactor, with a radioactive release more than ten times that of the atomic bomb dropped on Hiroshima (Medvedev, 1992). Both human and non-human impacts of this greatest of technological disasters have been well-documented (Medvedev, 1992). The Chernobyl explosion and numerous near-accidents, other technical failures, and extraordinary costoverruns caused interest in nuclear energy to wane during the 1980s and 1990s. Notwithstanding a crippling past, the nuclear lobby has engineered a resurgence of interest through a raft of technological fixes that purport to pre- vent future calamitous failures while capitalizing on the supposed environmentally sound qualities of nuclear power. Huber and Mills, for example, title one of their chapters “Saving the Planet with Coal and Uranium” (2005: 156 - 171). A spokesperson for the Electric Power Research Institute has recently suggested that new pebble-bed modular reactors are “walk-away safe—if something goes wrong, the operators can go out for coffee while they figure out what to do” (quoted in Silberman, 2001). Such claims are eerily reminiscent of pre-Chernobyl comparisons between the safety of nuclear power plants and that of chocolate factories (The Economist, 1986). Huber and Mills go even further, claiming nuclear power will exceed the original source of solar power—the sun (2005: 180): “Our two-century march from coal to steam engine to electricity to laser will…culminate in a nuclear furnace that burns the same fuel, and shines as bright as the sun itself. And then we will invent something else that burns even brighter.” Critics, however, note that even if such technical advances can provide for accident-free generation of electricity, there are significant remaining **social implications** of nuclear power, including its potential for terrorist exploitation and the **troubling history** of connections between military and civilian uses of the technology (Bergeron, 2002; Bergeron and Zimmerman, 2006). As well, the life-cycle of nuclear energy development produces risks that continuously challenge its social viability. To realize a nuclear energy-based future, **massive amounts** of uranium must be extracted. This effort would ineluctably **jeopardize vulnerable communities** since a considerable amount of uranium is found on indigenous lands. For example, Australia has large seams of uranium, producing nearly one-quarter of the world’s supply, with many mines located on Aboriginal lands (Uranium Information Center, 2005).12 Even after the uranium is secured and electricity is generated, the project’s **adverse social impacts** continue. Wastes with half-lives of lethal threat to any form of life in the range of 100,000 to 200,000 years have to be buried and **completely mistake-free management regimes** need to be operated for this length of time—**longer than human existence**, itself. Epochal imagination of this kind may be regarded by technologists as **reasonable**, but the sanity of such a proposal on social grounds is surely suspect (Byrne and Hoffman, 1996).

The 'threats' are not 'out there' as the 1AC wants you to believe - they are right here. Our alternative is grass-roots citizen activism - we must make the people, not the state, the referent object of security.

Lal 7 - Master of Arts in International Relations (Preerna, 2007, http://gwu.academia.edu/PrernaLal/Papers/646118/Critical\_Security\_Studies\_Deconstructing\_the\_National\_Security\_State)

Throughout this paper, we have seen cases of how national security is an antonym for human security. With this essential realization, Booth (2005, 33) gives three reasons for why the state should not be the referent object of security: “states are unreliable as primary referents because while some are in the business of security some are not; even those which are producers of security represent the mans and not the ends; and states are too diverse in their character to serve as the basis for a comprehensive theory of security.” Additionally, the cases of South Africa and Afghanistan prove how the national security state is merely an elite tool, which causes human insecurity at home and abroad. The state treats security as a problem that comes from the outside, rather than as a problem that can arise from domestic issues. The end result of state-centric security is that humans are alienated from discussions about their own security and welfare. The most compelling reason is provided by Hayward Akler (2005, 191) in Critical Security Studies and World Politics, in which he states that “economic collapse, political oppression, scarcity, overpopulation, ethnic rivalry, the destruction of nature, terrorism, crime and disease provide more serious threats to the well-being of individuals and the interest of nations.” Thus, to millions of people, it is not the existence of the Other across the border that poses a security problem, but their own state that is a threat to security. The question that arises next is how to put critical theory into practice and deconstruct the national security state. Critical theory does not offer simple one-shot solutions to the problems created by the neo-realist state and elitist conception of security. To give simple answers would be a performative contradiction, especially after criticizing realism for being intellectually rigid for believing in objective truth. In other words, there are no alternatives; just alternative modes of understanding. However, using the poststructuralist Foucaultian analysis that discourse is power, we can move towards deconstructing the power of the state and elites to securitize using their own tool: discourse. The elites who control the meaning of security and define it in terms that are appropriate to their interests hold tremendous power in the national security state. As Foucault astutely observed, “the exercise of power is always deeply entwined with the production of knowledge and discourse” (Dalby 1998, 4). For too long, language has been used against us to create our reality, thereby obfuscating our lens of the world, depriving us from an objective search for truth and knowledge. The history of colonized people shows how the construction of language defined and justified their oppressed status. In a way, we are colonized through discursive practices and subjected to the reality that the state wants us to see. However, definitions belong to the definer, and it is high time that we questioned and defined our own reality. Thus, citizen action is critical to questioning and deconstructing the national security state and taking away its power to define our security. In On Security, Pearl Alice Marsh (1995, 126) advances the idea of a grassroots statecraft that is defined as “challenging foreign policy of government through contending discursive and speech acts.” This calls for pitting the values of civil society against the state establishment and challenging the American statecraft’s freedom to cast issues and events in a security or militarized framework. The United States has not always been a national security state and neither does it have to maintain that hegemonic and oppressive status in order to exist. It is critical to remember that fundamental changes in our institutions and structures of power do not occur from the top; they originate from the bottom. History is case in point. Citizen action was critical to ending the Red Scare and the Vietnam War, as the American people realized the ludicrousness of framing Vietnam as a security issue, which led to the fall of the Second New Deal, the deaths of thousands of American soldiers and a financial cost that we are still shouldering. In the end, what they need to be secured from and how, is a question best left up to individual Americans and subsequently, civil society. Thus, grassroots citizen action performatively makes individuals the referent subject of security as people would call for the demilitarization and desecuritization of issues that are contrary and irrelevant to human security. There is hope for the future and practical application of critical theory in international relations. As Robert Lipschutz (2000, 61) concludes in After Authority: War, Peace, and Global Politics in the 21st Century, “it was the existence of the Other across the border that gave national security its power and authority; it is the disappearance of the border that has vanquished that power.” Britain, France and Germany set aside their historical enmities and became part of a European community, which has formed a new collective identity and security across borders. Cold War rivals that almost annihilated the world are now friends in the “war against terror.” The apartheid regime in South Africa did collapse eventually. In the past two years, India and Pakistan have been moving towards a more peaceful future that also includes fighting the “war against terror” together. While nation-states that were previously hostile to each other have united to be hostile towards other states, it is not overly idealist to suggest that with each new friendship and alliance, there is one less foe and one less Other. The world is not stable and stagnant, existing in an anarchic, nasty and brutish framework in which states have to endlessly bargain for their self-interest, as realists would like us to believe. On the contrary, international relations and the boundaries constructed by the state are subject to change and ever-transitioning, which presents a compelling case for critical theory as a more realistic framework through which we can view international relations. Therefore, our ultimate search for security does not lie in securing the state from the threat of the enemy across the border, but in removing the state as the referent object of security and moving towards human emancipation.

As an intellectual, you must reject the specific policies which embody the security paradigm.

Burke 02 (Anthony, Senior Lecturer in International Relations at the University of New South Wales, Sydney, Alternatives 27)

It is perhaps easy to become despondent, but as countless struggles for freedom, justice, and social transformation have proved, a sense of seriousness can be tempered with the knowledge that many tools are already available - and where they are not, the effort to create a productive new critical sensibility is well advanced. There is also a crucial political opening within the liberal problematic itself, in the sense that it assumes that power is most effective when it is absorbed as truth, consented to and desired - which creates an important space for refusal. As Colin Gordon argues, Foucault thought that the very possibility of governing was conditional on it being credible to the governed as well as the governing. This throws weight onto the question of how security works as a technology of subjectivity. It is to take up Foucault's challenge, framed as a reversal of the liberal progressive movement of being we have seen in Hegel, not to discover who or what we are so much as to refuse who we are . Just as security rules subjectivity as both a totalizing and individualizing blackmail and promise, it is at these levels that we can intervene. We can critique the machinic frameworks of possibility represented by law, policy, economic regulation, and diplomacy, while challenging the way these institutions deploy language to draw individual subjects into their consensual web. This suggests, at least provisionally, a dual strategy. The first asserts the space for agency, both in challenging available possibilities for being and their larger socioeconomic implications. Roland Bleiker formulates an idea of agency that shifts away from the lone (male) hero overthrowing the social order in a decisive act of rebellion to one that understands both the thickness of social power and its "fissures," "fragmentation," and "thinness." We must, he says, "observe how an individual may be able to escape the discursive order and influence its shifting boundaries ... by doing so, discursive terrains of dissent all of a sudden appear where forces of domination previously seemed invincible." Pushing beyond security requires tactics that can work at many levels - that empower individuals to recognize the larger social, cultural, and economic implications of the everyday forms of desire, subjection, and discipline they encounter, to challenge and rewrite them, and that in turn contribute to collective efforts to transform the larger structures of being, exchange, and power that sustain (and have been sustained by) these forms. As Derrida suggests, this is to open up aporetic possibilities that transgress and call into question the boundaries of the self, society, and the international that security seeks to imagine and police. The second seeks new ethical principles based on a critique of the rigid and repressive forms of identity that security has heretofore offered. Thus writers such as Rosalyn Diprose, William Connolly, and Moria Gatens have sought to imagine a new ethical relationship that thinks difference not on the basis of the same but on the basis of a dialogue with the other that might allow space for the unknown and unfamiliar, for a "debate and engagement with the other's law and the other's ethics" - an encounter that involves a transformation of the self rather than the other. Thus while the sweep and **power** of security must be acknowledged, it must also be refused: at the simultaneous levels of individual identity, social order, and macroeconomic possibility, it would entail another kind of work on "ourselves" - a political refusal of the One, the imagination of an other that never returns to the same. It would be to ask if there is a world after security, and what its shimmering possibilities might be.

### Water

#### Desalination doesn’t solve – boosts consumption

#### IAEA 10

[ENVIRONMENTAL IMPACT ASSESSMENT OF NUCLEAR DESALINATION. International Atomic Energy Agency. 2010.]

However, desalination should not conform to a tendency to exceed the natural limitations with water-dependant development. Often, based on the idea that water is available and cannot be exhausted, gaps between supply and demand are addressed with more supply, which in turn encourages higher water consumption. Essentially, water supply and consumption will augment each other if uncontrolled. Therefore, supply-based practices like desalination, while providing water availability, may lead to unsustainable pattern of development or, may initiate an increase in water consumption beyond sustainable levels.

#### Tech is obsolete and nuclear power consumes more water – turns the impact

#### Smith 11

[Gar Smith. Editor Emeritus of Earth Island Journal, a former editor of Common Ground magazine, a Project Censored Award-winning journalist, and co-founder of Environmentalists Against War. NUCLEAR ROULETTE THE CASE AGAINST A “NUCLEAR RENAISSANCE.” June 2011. http://ifg.org/pdf/Nuclear\_Roulette\_book.pdf]

By 2025, 3.5 billion people will face severe fresh-water shortages. Nuclear proponents groping for justifications to expand nuclear power have argued that the waste heat from power plants can provide a “cheap and clean” solution to the inherently costly process of removing salt from seawater. Desalination plants (there are 13,080 worldwide, mostly oil- and gas-fired and mostly in wealthy desert nations) already produce more than 12 billion gallons of drinkable water a day. 153 The first nuclear desalinator was installed in Japan in the late 1970s and scores of reactor-heated desalination plants are operating around the world today. But nuclear desalination is another False Solution. The problem with atomic water-purifiers is that using heat to treat seawater is an obsolete 20 th -century technology. Thermal desalination has given way to new reverse osmosis systems that are less energy intensive and 33 times cheaper to operate. 154 Nuclear desalination advocates claim that wind, solar, and wave power aren’t up to the task while new low-temperature evaporation technology may be able to produce highpurity water at temperatures as low as 122° Fahrenheit. 155 Promoting reactors as a solution to the world’s water shortage is especially ludicrous since nuclear power plants consume more water than any other energy source. 156

#### Renewables are solving now and sufficient – nuclear cannot solve

#### Cooley et al 6

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The barriers to greater use of alternative energy are rarely technical. Solar energy has been used directly for over a century to distill brackish water and seawater. The simplest example of this type of process is the greenhouse solar still, in which saline water is heated and evaporated by incoming solar radiation in a basin on the floor and the water vapor condenses on a sloping glass roof that covers the basin. When commercial plate glass began to be produced toward the end of the 19th century, solar stills were developed. One of the first successful solar systems was built in 1872 in Las Salinas, Chile, an area with very limited fresh water. This still covered 4,500 square meters, operated for 40 years, and produced over 5,000 gallons/d (about 20 m3/d) of fresh water (Delyannis and Delyannis 1984). Variations of this type of solar still have been tested in an effort to increase efficiency, but they all share some major difficulties, including solar collection area requirements, high capital costs, and vulnerability to weather-related damage. There are examples of desalting units that use more-advanced renewable systems to provide heat or electrical energy. Some modern desalination facilities are now run with electricity produced by wind turbines or photovoltaics. An inventory of known wind- and solar-powered desalting plants (Wangnick/GWI 2005) listed around 100 units as of the end of 2004. Most of these are demonstration facilities with capacities smaller than 0.013 MGD (50 m3/d), though a 0.08 MGD (300 m3/d) plant using wind energy was recently built in Cape Verde. The largest renewable energy desalination plant listed by the end of 2005 was a 0.5 MGD (2,000-m3/d) plant in Libya, which was built to use wind energy systems for power. A 0.3 MGD (1,000-m3/d) plant in Libya in the same location was designed to use photovoltaics for energy. Both of these plants went into operation in 1992 and desalted brackish water using RO. No plants run solely with nuclear power have been built, although a few desalination plants supply high-quality water for nuclear facilities (Wangnick/GWI 2005).

#### Desalination can’t solve water shortages – comparative costs

#### Cooley et al 6

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Perhaps the greatest barrier to desalination remains its high economic cost compared to alternatives, including other sources of supply, improved wastewater reuse, and especially more efficient use and demand management. We do not believe that the economic evaluations of desalination commonly presented to regulators and the public adequately account for the complicated benefits and costs associated with issues of reliability, quality, local control, environmental effects, and impacts on development. In general, significant benefits and costs are often excluded from the costs presented publicly. California should pursue less costly, less environmentally damaging water-supply alternatives first. Is desalination the ultimate solution to our water problems? No. Is it likely to be a piece of our water management puzzle? Yes. In the end, decisions about desalination developments will revolve around complex evaluations of local circumstances and needs, economics, financing, environmental and social impacts, and available alternatives. We urge that such decisions be transparent, honest, public, and systematic.

No water wars.

Barnaby 9 – Editor of People & Science, Wendy, “Do nations go to war over water?”, Nature 458, 282-283 (19 March 2009) | doi:10.1038/458282a; Published online 18 March 2009

The United Nations warned as recently as last week that climate change harbours the potential for serious conflicts over water. In its World Water Development Report1 of March 2009, it quotes UN Secretary-General Ban Ki-moon noting the risk of water scarcity "transforming peaceful competition into violence". It is statements such as this that gave birth to popular notions of 'water wars'. It is time we dispelled this myth. Countries do not go to war over water, they solve their water shortages through tradeand international agreements. Cooperation, in fact, is the dominant response to shared water resources. There are 263 cross-boundary waterways in the world. Between 1948 and 1999, cooperation over water, including the signing of treaties, far outweighed conflict over water and violent conflict in particular. Of 1,831 instances of interactions over international freshwater resources tallied over that time period (including everything from unofficial verbal exchanges to economic agreements or military action), 67% were cooperative, only 28% were conflictive, and the remaining 5% were neutral or insignificant. In those five decades, there were no formal declarations of war over water**2**.

**Nuclear deterrence is stable between India and Pakistan – guarantees no full scale war**

**Pant**, 200**5** (Harsh V., University of Notre Dame, “India’s nuclear doctrine and command structure,” Comparative Strategy, 24:277-293)

For the international community, the impact of this doctrine on the rivalry between India and Pakistan is perhaps the most significant of issues. Indian decision makers seem to realize that despite Pakistan’s behavior, especially with respect to Jammu and Kashmir, being a constant irritant, they no longer enjoy the luxury of pushing Pakistan into such a corner that use of nuclear weapons would become its only resort. While the India-Pakistan security dilemma remains as potent as ever, the presence of nuclear weapons have transformed the strategic environment of South Asia for ever. **Nuclear weapons seem to have effectively contained the prospect of full-scale war between the two nuclear South Asian states.** The two major confrontations in the post-nuclear phase, of Kargil in 1999 and the military standoff of 2002, **point towards the significant role that nuclear weapons have played in inhibiting India from engaging in a full-scale war**. While there were many other factors, especially the pro-active role of the United States, that prevented these crises from escalating into full-fledged wars, India seemed to have taken a conscious decision of employing its armed forces to military operations within Indian territory alone, lest it might provoke Pakistan into using nuclear weapons. Moreover, Pakistan’s geographical vulnerability vis-à-vis India also assures a certain caution on the part of Pakistan in using its nuclear arsenal. While Pakistan does claim to have a first-strike nuclear policy, India’s retaliatory second strike in response to Pakistan’s first would effectively mean the end of Pakistan as a functioning entity. **As a consequence, both India and Pakistan are working towards a peace process that is more tangible in nature than their earlier efforts under the stabilizing effect of nuclear weapons**.

### Natural Gas

Natural gas wins out—

McMahon 12—Jeff, Small Modular Nuclear Reactors By 2022 -- But No Market For Them, Forbes, 5-23, http://www.forbes.com/sites/jeffmcmahon/2012/05/23/small-modular-reactors-by-2022-but-no-market-for-them/

The Department of Energy will spend $452 million—with a match from industry—over the next five years to guide two small modular reactor designs through the nuclear regulatory process by 2022. But cheap natural gas could freeze even small nuclear plants out of the energy market well beyond that date. DOE accepted bids through Monday for companies to participate in the Small Modular Reactor program. A number of reactor manufacturers submitted bids, including NuScale Power and a collaboration that includes Westinghouse and General Dynamic. “This would allow SMR technology to overcome the hurdle of NRC certification – the ‘gold standard’ of the international nuclear industry, and would help in the proper development of the NRC’s regulatory framework to deal with SMRs,” according to Paul Genoa, Senior Director of Policy Development at the Nuclear Energy Institute. Genoa’s comments are recorded in a summary released today of a briefing given to Senate staff earlier this month on prospects for small modular reactors, which have been championed by the Obama Administration. DOE defines reactors as SMRs if they generate less than 300 megawatts of power, sometimes as little as 25 MW, compared to conventional reactors which may produce more than 1,000 MW. Small modular reactors can be constructed in factories and installed underground, which improves containment and security but may hinder emergency access. The same summary records doubt that SMRs can compete in a market increasingly dominated by cheap natural gas. Nuclear Consultant Philip Moor told Senate staff that SMRs can compete if natural gas costs $7 to $8 per million BTU—gas currently costs only $2 per MBTU—or if carbon taxes are implemented, a scenario political experts deem unlikely. “Like Mr. Moor, Mr. Genoa also sees the economic feasibility of SMRs as the final challenge. With inexpensive natural gas prices and no carbon tax, the economics don’t work in the favor of SMRs,” according to the summary.

Methane effect is small-The net effect of natural gas still decreases warming

NCAR ‘11. The University Corporation for Atmospheric Research serves as a hub for research, education, and public outreach for the atmospheric and related Earth sciences community. The National Center for Atmospheric Research provides research, observing and computing facilities, and a variety of services for the atmospheric and related Earth sciences community. “SWITCHING FROM COAL TO NATURAL GAS WOULD DO LITTLE FOR GLOBAL CLIMATE, STUDY INDICATES” [https://www2.ucar.edu/atmosnews/news/5292/switching-coal-natural-gas-would-do-little-global-climate-study-indicates] [MG]

But the effects of natural gas on climate change have been difficult to calculate. Recent studies have come to conflicting conclusions about whether a shift to natural gas would significantly slow the rate of climate change, in part because of uncertainty about the extent of methane leaks. Wigley’s new study attempts to take a more comprehensive look at the issue by incorporating the cooling effects of sulfur particles associated with coal burning and by analyzing the complex climatic influences of methane, which affects other atmospheric gases such as ozone and water vapor. By running a series of computer simulations, Wigley found that a 50 percent reduction in coal and a corresponding increase in natural gas use would lead to a slight increase in worldwide warming for the next 40 years of about 0.1 degree Fahrenheit (less than 0.1 degree Celsius). The reliance on natural gas could then gradually reduce the rate of global warming, but temperatures would drop by only a small amount compared to the 5.4 degrees F (3 degrees C) of warming projected by 2100 under current energy trends.

No extinction for climate change—

Stampf 7—Olaf Stampf, Not the End of the World as We Know It, Der Spiegel, 5-7, http://www.spiegel.de/international/germany/0,1518,481684,00.html

The truth is probably somewhere between these two extremes. Climate change will undoubtedly have losers -- but it will also have winners. There will be a reshuffling of climate zones on earth. And there is something else that we can already say with certainty: The end of the world isn't coming any time soon.

Largely unnoticed by the public, climate researchers are currently embroiled in their own struggle over who owns the truth. While some have always seen themselves as environmental activists aiming to shake humanity out of its complacency, others argue for a calmer and more rational approach to the unavoidable.

One member of the levelheaded camp is Hans von Storch, 57, a prominent climate researcher who is director of the Institute for Coastal Research at the GKSS Research Center in Geesthacht in northern Germany. "We have to take away people's fear of climate change," Storch told DER SPIEGEL in a recent interview. "Unfortunately many scientists see themselves too much as priests whose job it is to preach moralistic sermons to people."

Keeping a cool head is a good idea because, for one thing, we can no longer completely prevent climate change. No matter how much governments try to reduce carbon dioxide emissions, it will only be possible to limit the rise in global temperatures to about 2 degrees Celsius (3.6 degrees Fahrenheit) by the end of the century. But even this moderate warming would likely have far fewer apocalyptic consequences than many a prophet of doom would have us believe.

For one thing, the more paleontologists and geologists study the history of the earth's climate, the more clearly do they recognize just how much temperatures have fluctuated in both directions in the past. Even major fluctuations appear to be completely natural phenomena.

Additionally, some environmentalists doubt that the large-scale extinction of animals and plants some have predicted will in fact come about. "A warmer climate helps promote species diversity," says Munich zoologist Josef Reichholf.

Also, more detailed simulations have allowed climate researchers to paint a considerably less dire picture than in the past -- gone is the talk of giant storms, the melting of the Antarctic ice shield and flooding of major cities.

Improved regionalized models also show that climate change can bring not only drawbacks, but also significant benefits, especially in northern regions of the world where it has been too cold and uncomfortable for human activity to flourish in the past. However it is still a taboo to express this idea in public.

For example, countries like Canada and Russia can look forward to better harvests and a blossoming tourism industry, and the only distress the Scandinavians will face is the guilty conscience that could come with benefiting from global warming.

Palm Trees in Germany

There is no doubt that there will be droughts in other parts of the world, especially in subtropical regions. But the widespread assumption that it is developing countries -- that is, the world's poor -- who will, as always, be the ones to suffer is incorrect. According to current predictions, precipitation in large parts of Africa will hardly decrease at all, except in the southern part of the continent. In fact, these same forecasts show the Sahel, traditionally a region beset by drought and famine, actually becoming wetter.

By contrast, some wealthy industrialized nations -- in fact, those principally responsible for climate change -- will likely face growing problems related to drought. The world's new drought zones lie in the southern United States and Australia, but also in Mediterranean countries like Spain, Italy and Greece.

All of this will lead to a major shift within Europe, potentially leading to tough times for southern Spain's mega-resorts and boom times for hotels along the North Sea and Baltic Sea coasts. While the bulk of summer vacationers will eventually lose interest in roasting on Spain's Costa del Sol, Mediterranean conditions could prevail between the German North Sea island of Sylt and Bavaria's Lake Starnberg. The last few weeks of spring in Germany offered a taste of what's to come, as sun-loving crowds packed Berlin's urban beach bars and Munich's beer gardens.

The predicted temperature increase of 3 degrees Celsius would mean that summers in Hamburg, not far from the North Sea coast, would be as warm as they are today in the southwestern city of Freiburg, while conditions in Freiburg would be more like those in Marseille today. Germany will undoubtedly be one of the beneficiaries of climate change. Perhaps palm trees will be growing on the island of Helgoland in the North Sea soon, and German citizens will be saving billions in heating costs -- which in turn would lead to a reduction in CO2 emissions.

But climate change will also have its drawbacks. While German summers will be less rainy, fall and winter rainfall in the country's north will increase by up to 30 percent -- and snow will be a thing of the past. Heavy downpours will also become more common. To avoid flooding, steps will have to be taken to provide better drainage for fields and farmlands, as well as to restore natural flood plains.

Meanwhile, the Kiel Institute for World Economics warns that higher temperatures could mean thousands of heat-related deaths every year. But the extrapolations that lead to this dire prediction are based on the mortality rate in the unusually hot summer of 2003, for which Germans were wholly unprepared. But if hot summer days do become the norm, people will simply adjust by taking siestas and installing air-conditioning.

The medical benefits of higher average temperatures have also been ignored. According to Richard Tol, an environmental economist, "warming temperatures will mean that in 2050 there will be about 40,000 fewer deaths in Germany attributable to cold-related illnesses like the flu.”

Another widespread fear about global warming -- that it will cause super-storms that could devastate towns and villages with unprecedented fury -- also appears to be unfounded. Current long-term simulations, at any rate, do not suggest that such a trend will in fact materialize.

"According to our computer model, neither the number nor intensity of storms is increasing," says Jochem Marotzke, director of the Hamburg-based Max Planck Institute for Meteorology, one of the world's leading climate research centers. "Only the boundaries of low-pressure zones are changing slightly, meaning that weather is becoming more severe in Scandinavia and less so in the Mediterranean."

According to another persistent greenhouse legend, massive flooding will strike major coastal cities, raising horrific scenarios of New York, London and Shanghai sinking into the tide. However this horror story is a relic of the late 1980s, when climate simulations were far less precise than they are today. At the time, some experts believed that the Antarctic ice shield could melt, which would in fact lead to a dramatic 60-meter (197-foot) rise in sea levels. The nuclear industry quickly seized upon and publicized the scenario, which it recognized as an argument in favor of its emissions-free power plants.

But it quickly became apparent that the horrific tale of a melting South Pole was nothing but fiction. The average temperature in the Antarctic is -30 degrees Celsius. Humanity cannot possibly burn enough oil and coal to melt this giant block of ice. On the contrary, current climate models suggest that the Antarctic will even increase in mass: Global warming will cause more water to evaporate, and part of that moisture will fall as snow over Antarctica, causing the ice shield to grow. As a result, the total rise in sea levels would in fact be reduced by about 5 cm (2 inches).

It's a different story in the warmer regions surrounding the North Pole. According to an American study published last week, the Arctic could be melting even faster than previously assumed. But because the Arctic sea ice already floats in the water, its melting will have virtually no effect on sea levels.

'We Still Have Enough Time to React'

Nevertheless, sea levels will rise worldwide as higher temperatures cause the water in the oceans to expand. In addition, more water will flow into the ocean with the gradual thawing of the Greenland ice sheet. All things considered, however, in the current IPCC report climatologists are predicting a rise in sea levels of only about 40 centimeters (16 inches) -- compared with the previous estimate of about one meter (more than three feet). A 40-centimeter rise in sea levels will hardly result in more catastrophic flooding. "We have more computer models and better ones today, and the prognoses have become more precise as a result," explains Peter Lemke of the Alfred Wegener Institute for Polar and Marine Research in the northern German port city of Bremerhaven.

Some researchers do, however, estimate that regional effects could produce an 80-centimeter (31-inch) rise in the sea level along Germany's North Sea coast. This will lead to higher storm surges -- a problem the local population, already accustomed to severe weather, could easily address by building taller dikes.

Another comforting factor -- especially for poorer countries like Bangladesh -- is that none of these changes will happen overnight, but gradually over several decades. "We still have enough time to react," says Storch.

In short, the longer researchers allow their supercomputers to crunch the numbers, the more does the expected deluge dissipate. A rise in sea levels of several meters could only occur if Greenland were largely ice-free, but this is something scientists don't expect to happen for at least a few more centuries or even millennia. This lengthy timeframe raises the question of whether the current prognoses are even reliable.

The status quo solves – substantial new upgrades, backup generators and microgrid adoption

**Aimone, 9/12**/12 - Director Business Enterprise Integration Office of the Deputy Under Secretary of Defense (Installations and Environment) (Michael, Congressional Testimony, <http://homeland.house.gov/sites/homeland.house.gov/files/Testimony%20-%20Aimone.pdf>)

DoD’s facility energy strategy is also focused heavily on grid security in the name of mission assurance. Although the Department’s fixed installations traditionally served largely as a platform for training and deployment of forces, in recent years they have begun to provide direct support for combat operations, such as unmanned aerial vehicles (UAVs) flown in Afghanistan from fixed installations here in the United States. Our fixed installations also serve as staging platforms for humanitarian and homeland defense missions. These installations are largely dependent on a commercial power grid that is vulnerable to disruption due to aging infrastructure, weather-related events, and potential kinetic, cyber attack. In 2008, the Defense 2 Science Board warned that DoD’s reliance on a fragile power grid to deliver electricity to its bases places critical missions at risk. 1 Standby Power Generation Currently, DoD ensures that it can continue mission critical activities on base largely through its fleet of on-site power generation equipment. This equipment is connected to essential mission systems and automatically operates in the event of a commercial grid outage. In addition, each installation has standby generators in storage for repositioning as required. Facility power production specialists ensure that the generators are primed and ready to work, and that they are maintained and fueled during an emergency. With careful maintenance these generators can bridge the gap for even a lengthy outage. As further back up to this installed equipment, DoD maintains a strategic stockpile of electrical power generators and support equipment that is kept in operational readiness. For example, during Hurricane Katrina, the Air Force transported more than 2 megawatts of specialized diesel generators from Florida, where they were stored, to Keesler Air Force Base in Mississippi, to support base recovery. Next Generation Microgrids Although the Department will continue to maintain its fleet of on-site and mobile backup generators, we are moving aggressively to adopt next generation microgrids. Advanced microgrids, combined with on-site energy generation (e.g., solar or geothermal) and energy storage, offer a more robust and cost effective approach to ensuring installation energy security than the current solution (backup generators). Although microgrid systems are in use today, they are relatively unsophisticated, with limited ability to integrate renewable and other distributed energy sources, little or no energy storage capability, uncontrolled load demands, and “dumb” distribution that is subject to excessive energy losses. By contrast, we envision advanced (or “smart”) microgrids as local power networks that can utilize distributed energy, manage local energy supply and demand, and operate seamlessly both in parallel to the grid and in “island” mode. Advanced microgrids are a “triple play” for DoD’s installations: First, they will facilitate the incorporation of renewable and other on-site energy generation. Second, they will reduce installation energy costs on a day-to-day basis by allowing for load balancing and demand response—i.e., the ability to curtail load or increase on-site generation in response to a request from the grid operator. Third, and most importantly, the combination of on-site energy and storage, together with the microgrid’s ability to manage local energy supply and demand, will allow an installation to shed non-essential loads and maintain mission-critical loads if and when the grid goes down. DoD’s Installation Energy Test Bed, run out of the Department’s Installations and Environment office, is funding ten demonstrations of microgrid and storage technologies to evaluate the benefits and risks of alternative approaches and configurations. The Test Bed is working with multiple vendors so as to allow DoD to capture the benefits of competition. Demonstrations are underway at Twentynine Palms, CA (General Electric’s advanced microgrid system); Fort Bliss, TX (Lockheed Martin); Joint Base McGuire-Dix-Lakehurst, NJ (United Technologies); Fort Sill, OK (Eaton); and several other installations.

SMRs increase the risk of blackout - LOOP events cascade.

Perkowski 12 - Manger of Energy Initiatives at the Idaho National Laboratory Ph.D. from MIT in Civil Engineering/ Environmental Systems Management. (Joseph C. Perkowski, June 2012, Small Modular Reactors: Institutional Assessment, http://www.inl.gov/technicalpublications/Documents/5516350.pdf)

The electrical transmission network depends on generators to provide power to customer loads, voltage support, and system stability. Most bulk power system problems are not seen by customers due to built-in resilience and redundancy that seek to prevent cascading electrical blackouts. However, when severe a problem on the bulk system does occur, it can cascade through the grid in minutes. Electrical blackouts can be triggered by extreme weather, equipment failure, human error, or some combination that leads to a loss of electricity supply to customers. The FERC/NERC transmission reliability mission intertwines with the NRC mission for public safety at nuclear power generation stations. One well-established risk to reliable operation of a bulk power system is the sudden shutdown of a large nuclear power plant. Conversely, the loss of offsite power caused by grid failure is a major concern to the safe operation of a nuclear plant. The current fleet of LWRs depends on the transmission network to provide a source of “preferred power” to station emergency equipment, to support plant operation, and to comply with NRC regulatory requirements. Due to their specification concerning offsite power, large LWR plants are susceptible to voltage variations and frequency swings that may occur in the transmission network. Ensuring safe operations at a large nuclear power station requires the nuclear plant operator to know the status of and the contingencies which can affect the reliability of their offsite power supply. Conversely, the loss of a large capacity power plant can be the largest single contingency faced by the transmission operator. Transmission system operators must be similarly aware of nuclear power plant requirements and employ procedures and standards which meet the nuclear plants’ safety requirements. When a large generator trips, there is an impact to the transmission grid — a loss of real and reactive power support. The transmission grid must react quickly to this loss because if multiple contingencies have already occurred, the grid may not be able to respond in a satisfactory manner. Nuclear plant risk and grid instability are interrelated — the tripping of a plant can cause grid instability and grid instability can result in tripping a plant. When evaluating how the grid affects nuclear power plants, most studies focus on lossof-offsite-power (LOOP) events where all offsite power lines into the plant are temporarily de-energized. A LOOP event typically results in an automatic scram of the plant and actuation of several safety systems. LOOP events represent a measurable fraction of risk based on plant-specific probabilistic risk assessment. Increasing the number of LOOP events directly increases the risk of damaging the plant. Reducing the number of LOOP events reduces the number of challenges to plant safety systems and reduces risk to the plant. Plant trips are also a concern from a nuclear safety perspective because transients are a large contributor to the risk of core melt; increasing the number of plant trips directly increases an LWR plant risk of core melt. When multiple nuclear power plants are allowed to support the voltage in a given area, the post-trip voltage situation could be made much worse if the trip of one nuclear generating unit causes voltage to drop into the trip range of a second unit, then the second would trip; a cascading trip sequence could result. It is critically important for operators to know when they are on the threshold of such a scenario so that provisions can be implemented to ensure this consequence is avoided. FERC has issued standards for offsite power coordination which cover coordination between the nuclear plant and transmission system so that all involved entities are made aware of, plan to, and operate to the needs of the nuclear station as well as distribution customers. Interface agreements must be developed between the nuclear generating plant and the transmission operator to ensure that post-trip voltage is adequate to maintain nuclear licensing requirements. Evolving new reactor designs can incorporate advanced features that reduce or even eliminate the offsite power requirements for accident mitigation and the required bulk power system support. However, a stable bulk power grid is still required to prevent nuclear plant trips. Transmission facilities and system improvements may be necessary to ensure new generators are interconnected with the bulk power system in a reliable manner and that their offsite power requirements are met. In addition to new transmission lines, the reliable integration of these units may require new switching stations, new transformers, and upgrade or replacement of existing circuit breakers to handle the higher short-circuit currents imposed on the system by large nuclear power units.

Grid is safe- checks in place

[Mark Clayton](http://www.csmonitor.com/About/Staff/Mark-Clayton), Staff writer / July 17, 2012¶ Senators spar with power industry: Is it safe from cyberattack? ¶ http://www.csmonitor.com/USA/2012/0717/Senators-spar-with-power-industry-Is-it-safe-from-cyberattack

¶ At the Senate hearing, industry and government officials recounted steps taken so far to protect the power grid from cyberattacks, such as establishing the definition of what constitutes a "critical cyber asset" and the revision of preliminary cybersecurity standards currently in place.

### Solvency

1.) Still tons of variables to be resolved -- SMRs can’t be operational for at least a decade.

King et al., ‘11

[Marcus, Research Analyst and Project Director at CNA Corporation's Center for Naval Analyses, LaVar Huntzinger, Thoi Nguyen, March, “Feasibility of Nuclear Power on U.S. Military Installations,” http://www.cna.org/sites/default/files/research/Nuclear%20Power%20on%20Military%20Installations%20D0023932%20A5.pdf]

Designs for small reactors are at various levels of technological readiness and some are about to begin the NRC licensing process, but none have been licensed or constructed yet. Consequently, there are a number of unresolved certification, licensing, and regulatory issues. The size of the emergency planning zone that should surround the reactor is an example of such an issue. Resolving these issues will take time and resources. NRC representatives have indicated that they expect these issues could be resolved by the middle of the decade and that a plant could be built and operating by about 2020

2.) The more of a departure from the status quo SMR reactors are, the longer licensing takes. Licensing takes DECADES.

O’ Connor ’11 (Dan O’Connor is a Policy Fellow in AEL’s New Energy Leaders Project and will be a regular contributor to the website, American Energy League, “Small Modular Reactors: Miracle, Mirage, or Between?”, <http://leadenergy.org/2011/01/small-modular-reactors-miracle-mirage-or-medium/>, January 4, 2011, LEQ)

Judging only by this promising activity, it is tempting to dub the SMR a miracle. But the majority of these diverse designs have yet to be demonstrated. In fact, the demonstration stage of the South African project, Pebble Bed Modular Reactor (a HTR), stalled and faded in 2010 after losing government funding due to lack of customer interest. The importance of demonstration, especially in the highly-regulated US industry, cannot be overstated. But even in the stages before the crucial demonstration step, skepticism over the SMR’s promises abounds. The ASME EnComm noted regulatory, financial, operational, and logistical challenges. Treading the uncharted waters of Lego-like power plant construction will not be easy. In a traditional plant, one reactor provides heat for one or a few steam turbines. In an SMR-based plant, each module drives one turbine with its own controls and operators. As such, few of the costs associated with these systems scale down with reactor capacity. The turbines do not come in a complimentary plug-and-play form either – they would have to be built on site. And while decentralization enables partial operation and online refueling, it also introduces the challenge of module co-operation, the need for numerous highly-trained operator personnel, and brand new reviews by the Nuclear Regulatory Commission (NRC). This goes without mentioning the urgent and increased need for a more dynamic national approach to waste storage. Licensing questions remain too. The one-time approval of a module before its mass production, bypassing a regulatory damper for each unit, is a highly-desirable advantage of SMR design. But if a utility would like to increase its capacity over two decades by incrementally adding more modules, will it face the choice between building licensed, though dated, technology or waiting again for a license to build with state of the art modules? Furthermore, as addressed in my past article, “Putting the Cart Before the Horse with Nuclear R&D” and its comments, the waiting time even for a traditional design license is considerable. With each new SMR innovation, from an individualized control room to coolant choice, the licensing duration increases by as much as a decade, pushing the vital demonstration step further away. Additional costs associated with these regulatory complications and non-scalable systems could combine to nullify the SMR’s affordability argument.

3.) No one takes the contract - can't compete with natural gas.

Biello 12—David, Small Reactors Make a Bid to Revive Nuclear Power, Scientific American, 4-19, http://www.scientificamerican.com/article.cfm?id=small-reactors-bid-to-revive-nuclear-power

Regardless of how cheap such small modular reactors may allow nuclear to be in future, it is unlikely to be as cheap as natural-gas-fired turbines in the present. In fact, low natural gas prices stalled the U.S. nuclear renaissance outside Georgia and South Carolina, long before the reactor meltdowns at Fukushima Daiichi in Japan. "Because of an unanticipated abundance of natural gas in the United States, nuclear energy, in general, is facing tough competition," noted an analysis of the prospects for small modular reactors from the University of Chicago published last November. The analysis also suggested that small reactors would be more expensive than large reactors on a per-megawatt basis until manufacturing in significant quantities has happened. "It [is] unlikely that SMRs will be commercialized without some form of government incentive."