# Elections

## 1NC

#### Obama’s ahead but it’s close

Cooper 10/25 Michael is a writer at the New York Times’ Caucus blog. “Has Romney’s Rise in Polls Stopped?” 2012, http://thecaucus.blogs.nytimes.com/2012/10/25/has-romneys-rise-in-polls-stopped/?gwh=20374120E0C2B79985262EFF8E8CD19D

A debate has been raging among polling analysts and commentators about whether Mitt Romney is still gaining ground, as he did after the first debate, or if his bounce has slowed or stalled. But while some Republicans say that they still have the wind at their backs, several polling analysts weighed in recently to argue that the data suggests there is no longer a Romney surge.¶ Mark Blumenthal, the senior polling editor of the Huffington Post and the founding editor of Pollster.com, wrote a piece this morning with the headline: “Presidential Polls Counter Romney Surge Myth.”¶ “While Romney gained significantly in the wake of the first presidential debate in early October,’’ he wrote, “the lack of a continuing trend over the past two weeks helps counter a theme in some campaign coverage that Romney’s support continues to ‘surge’ nationwide.”¶ Sam Wang, who analyzes state polls at the Princeton Election Consortium, wrote this week that the Mr. Obama’s plunge after the first debate had stopped with him still ahead, and delivered the following verdict: “Indeed the race is close, but it seems stable. For the last week, there is no evidence that conditions have been moving toward Romney. There is always the chance that I may have to eat my words — but that will require movement that is not yet apparent in polls.”¶ Nate Silver, who writes the FiveThirtyEight blog in The New York Times, wrote Thursday: “Mr. Romney clearly gained ground in the polls in the week or two after the Denver debate, putting himself in a much stronger overall position in the race. However, it seems that he is no longer doing so.”¶ With the race so close in so many places, it can be difficult to assess the true state of play. ¶ Most major national polls, with the exception of a few tracking polls, have shown the race to be essentially tied for months. Some polls in crucial swing states where Mr. Obama has been leading have tightened between the two candidates since the first debate, including Ohio, which is closer than it was a month ago. And now is the point where many voters pay more attention to the election, which can move the polls. But even with the proliferation of polls and the increased reliance on aggregated polls — lumping or averaging many polls together — it can be difficult to get a realistic picture on any given day in the closing weeks, given that some polls do not reach voters who use only cellphones, and many polls have struggled in an environment where fewer people want to respond to questions.

#### Public hates nuclear fusion – perception carries nuclear stigma

Gibson 7 Lauren Kate Gibson, George Washington University Center for International Science and Technology Policy, “Developing Fusion as an Energy Source”, 2007 (date from latest citation), http://www.cspo.org/igscdocs/Lauren%20Kate%20Gibson.pdf

Of course, whether the United States is in a leadership position will be purely academic unless technology transfer occurs. The obstacles are both economic and social. Energy consumption is predicted to double by 2050, which is also when fusion electricity is predicted to be commercially available. 35 Industry, however, is not yet ready to discuss the possibility. It is simply too far into the future. 36 Industry would perhaps be more interested in the future if the stigma of nuclear energy is removed. The Chernobyl disaster and the issue of nuclear waste taint the public opinion even though neither would be issues with a nuclear fusion plant. It simply cannot melt down because there is not enough fuel present at any given time and the reaction requires constant tending, not to control, but to sustain. Several studies have concluded that fusion plants would be inherently safe. 37 The public needs to be educated about the differences between fission and fusion power before they would be comfortable with a plant being operated near them. For the most effectiveness, this campaign should be begun immediately. Contrary to public opinion, environmentalism would, in fact, support fusion if traditional means of producing electricity continue to pollute and policies are created to combat that. The spectacle of cold fusion taught us that despite seeming unpopularity the public would be behind fusion if researchers can ever get it to work and industry ever adapts it. While the future of technology transfer is generally positive, it is by no means assured. Policy makers can improve this outlook through certain steps.

#### That swings the election

Seattle Times 12"Not just the economy: Secondary issues may play role in election," 7/14, http://seattletimes.nwsource.com/html/nationworld/2018688463\_electionissues15.html

WASHINGTON — As the economy colors and polarizes voters' attitudes, the Election Day outcome for President Obama and Republican challenger Mitt Romney may be decided on the margins by narrower issues that energize small but crucial slivers of the population.¶ For three months, the economy by most measures has faltered. Yet the White House contest has remained locked in place, with the incumbent holding on to a slight national lead or in a virtual tie with his rival. Analysts from both parties have no doubt that absent a defining, unpredictable moment, the race will remain neck and neck until November.

#### Romney causes massive foreign backlash and nuclear wars globally

Bandow 12 Doug is a senior fellow at the Cato Institute. “Mitt Romney: The Foreign Policy of Know-Nothingism,” 5/15, <http://www.cato.org/publications/commentary/mitt-romney-foreign-policy-knownothingism>

Republican politicians continue to beat the war drums. All of this cycle’s GOP presidential contenders, save Rep. Ron Paul, charged President Barack Obama with weakness, indeed, almost treason. But the public isn’t convinced. The president who increased military spending, twice upped troop levels in Afghanistan, started his own war with Libya, talked tough to North Korea, loudly threatened Iran and Syria, and oversaw the hit on Osama bin Laden just doesn’t look like a wimp.¶ In fact, a recent Washington Post-ABC poll found that Americans prefer Barack Obama to Mitt Romney on international issues by 53 percent to 36 percent. Republican apparatchiks Karl Rove and Ed Gillespie nevertheless claim, “the president is strikingly vulnerable in this area,” but so far Romney is convincing only as a blowhard with a know-nothing foreign policy. Noted Jacob Heilbrunn of the National Interest, the GOP is “returning to a prescription that led to trillion-dollar wars in the Middle East that the public loathes.”¶ Romney’s overall theme is American exceptionalism and greatness, slogans that win public applause but offer no guidance for a bankrupt superpower that has squandered its international credibility. “This century must be an American century,” Romney proclaimed. “In an American century, America leads the free world and the free world leads the entire world.” He has chosen a mix of advisers, including the usual neocons and uber-hawks — Robert Kagan, Eliot Cohen, Jim Talent, Walid Phares, Kim Holmes, and Daniel Senor, for instance — that gives little reason for comfort. Their involvement suggests Romney’s general commitment to an imperial foreign policy and force structure. ¶ Romney is no fool, but he has never demonstrated much interest in international affairs. He brings to mind George W. Bush, who appeared to be largely ignorant of the nations he was invading. Romney may be temperamentally less likely to combine recklessness with hubris, but he would have just as strong an incentive to use foreign aggression to win conservative acquiescence to domestic compromise. This tactic worked well for Bush, whose spendthrift policies received surprisingly little criticism on the right from activists busy defending his war-happy foreign policy. ¶ The former Massachusetts governor has criticized President Obama for “a naked political calculation or simply sheer ineptitude” in following George W. Bush’s withdrawal timetable in Iraq and for not overriding the decision of a government whose independence Washington claims to respect. But why would any American policymaker want to keep troops in a nation that is becoming ever more authoritarian, corrupt, and sectarian? It is precisely the sort of place U.S. forces should not be tied down. ¶ In contrast, Romney has effectively taken no position on Afghanistan. At times he appears to support the Obama timetable for reducing troop levels, but he has also proclaimed that “Withdrawal of U.S. forces from Afghanistan under a Romney administration will be based on conditions on the ground as assessed by our military commanders.” Indeed, he insisted: “To defeat the insurgency in Afghanistan, the United States will need the cooperation of both the Afghan and Pakistani governments — we will only persuade Afghanistan and Pakistan to be resolute if they are convinced that the United States will itself be resolute,” and added, “We should not negotiate with the Taliban. We should defeat the Taliban.” ¶ Yet it’s the job of the president, not the military, to decide the basic policy question: why is the U.S. spending blood and treasure trying to create a Western-style nation state in Central Asia a decade after 9/11? And how long is he prepared to stay — forever? On my two trips to Afghanistan I found little support among Afghans for their own government, which is characterized by gross incompetence and corruption. Even if the Western allies succeed in creating a large local security force, will it fight for the thieves in Kabul? ¶ Pakistan is already resolute — in opposing U.S. policy on the ground. Afghans forthrightly view Islamabad as an enemy. Unfortunately, continuing the war probably is the most effective way to destabilize nuclear-armed Pakistan. What will Romney do if the U.S. military tells him that American combat forces must remain in Afghanistan for another decade or two in order to “win”? ¶ The ongoing AfPak conflict is not enough; Romney appears to desire war with Iran as well. No one wants a nuclear Iran, but Persian nuclear ambitiions began under America’s ally the Shah, and there is no reason to believe that the U.S. (and Israel) cannot deter Tehran. True, Richard Grenell, who briefly served as Romney’s foreign-policy spokesman, once made the astonishing claim that the Iranians “will surely use” nuclear weapons. Alas, he never shared his apparently secret intelligence about the leadership in Tehran’s suicidal tendencies. The Iranian government’s behavior has been rational even if brutal, and officials busy maneuvering for power and wealth do not seem eager to enter the great beyond. Washington uneasily but effectively deterred Joseph Stalin and Mao Zedong, the two most prolific mass murderers in history. Iran is no substitute for them. ¶ Romney has engaged in almost infantile ridicule of the Obama administration’s attempt to engage Tehran. Yet the U.S. had diplomatic relations with Hitler’s Germany and Stalin’s Russia. Washington came to regret not having similar contact with Mao’s China. Even the Bush administration eventually decided that ignoring Kim Jong-Il’s North Korea only encouraged it to build more nuclear weapons faster. ¶ Regarding Iran, Romney asserted, “a military option to deal with their nuclear program remains on the table.” Building up U.S. military forces “will send an unequivocal signal to Iran that the United States, acting in concert with allies, will never permit Iran to obtain nuclear weapons... Only when the ayatollahs no longer have doubts about America’s resolve will they abandon their nuclear ambitions.” Indeed, “if all else fails... then of course you take military action,” even though, American and Iranian military analysts warn, such strikes might only delay development of nuclear weapons. “Elect me as the next president,” he declared, and Iran “will not have a nuclear weapon.” ¶ Actually, if Tehran becomes convinced that an attack and attempted regime change are likely, it will have no choice but to develop nuclear weapons. How else to defend itself? The misguided war in Libya, which Romney supported, sent a clear signal to both North Korea and Iran never to trust the West. ¶ Iran’s fears likely are exacerbated by Romney’s promise to subcontract Middle East policy to Israel. The ties between the U.S. and Israel are many, but their interests often diverge. The current Israeli government wants Washington to attack Iran irrespective of the cost to America. Moreover, successive Israeli governments have decided to effectively colonize the West Bank, turning injustice into state policy and making a separate Palestinian state practically impossible. Perceived American support for this creates enormous hostility toward the U.S. across the Arab and Muslim worlds. ¶ Yet Romney promises that his first foreign trip would be to Israel “to show the world that we care about that country and that region” — as if anyone anywhere, least of all Israel’s neighbors, doesn’t realize that. He asserted that “you don’t allow an inch of space to exist between you and your friends and allies,” notably Israel. The U.S. should “let the entire world know that we will stay with them and that we will support them and defend them.” Indeed, Romney has known Israeli Prime Minister Benjamin Netanyahu for nearly four decades and has said that he would request Netanyahu’s approval for U.S. policies: “I’d get on the phone to my friend Bibi Netanyahu and say, ‘Would it help if I say this? What would you like me to do?’” Americans would be better served by a president committed to making policy in the interests of the U.S. instead. ¶ Romney’s myopic vision is just as evident when he looks elsewhere. For instance, he offered the singular judgment that Russia is “our number one geopolitical foe.” Romney complained that “across the board, it has been a thorn in our side on questions vital to America’s national security.” ¶ The Cold War ended more than two decades ago. Apparently Romney is locked in a time warp. Moscow manifestly does not threaten vital U.S. interests. Romney claimed that Vladimir “Putin dreams of ‘rebuilding the Russian empire’.” Even if Putin has such dreams, they don’t animate Russian foreign policy. No longer an ideologically aggressive power active around the world, Moscow has retreated to the status of a pre-1914 great power, concerned about border security and international respect. Russia has no interest in conflict with America and is not even much involved in most regions where the U.S. is active: Asia, the Middle East, and Latin America. ¶ Moscow has been helpful in Afghanistan, refused to provide advanced air defense weapons to Iran, supported some sanctions against Tehran, used its limited influence in North Korea to encourage nuclear disarmament, and opposes jihadist terrorism. This is curious behavior for America’s “number one geopolitical foe.” ¶ Romney’s website explains that he will “implement a strategy that will seek to discourage aggressive or expansionist behavior on the part of Russia,” but other than Georgia where is it so acting? And even if Georgia fell into a Russian trap, Tbilisi started the shooting in 2008. In any event, absent an American security guarantee, which would be madness, the U.S. cannot stop Moscow from acting to protect what it sees as vital interests in a region of historic influence. ¶ Where else is Russia threatening America? Moscow does oppose NATO expansion, which actually is foolish from a U.S. standpoint as well, adding strategic liabilities rather than military strengths. Russia strongly opposes missile defense bases in Central and Eastern Europe, but why should Washington subsidize the security of others? Moscow opposes an attack on Iran, and so should Americans. Russia backs the Assad regime in Syria, but the U.S. government once declared the same government to be “reformist.” Violent misadventures in Kosovo, Afghanistan, Iraq, and Libya demonstrate that America has little to gain and much to lose from another attempt at social engineering through war. If anything, the Putin government has done Washington a favor keeping the U.S. out of Syria. ¶ This doesn’t mean America should not confront Moscow when important differences arise. But treating Russia as an adversary risks encouraging it to act like one. Doing so especially will make Moscow more suspicious of America’s relationships with former members of the Warsaw Pact and republics of the Soviet Union. Naturally, Romney wants to “encourage democratic political and economic reform” in Russia — a fine idea in theory, but meddling in another country’s politics rarely works in practice. Just look at the Arab Spring. ¶ Not content with attempting to start a mini-Cold War, Mitt Romney dropped his nominal free-market stance to demonize Chinese currency practices. He complained about currency manipulation and forced technology transfers: “China seeks advantage through systematic exploitation of other economies.” ¶ On day one as president he promises to designate “China as the currency manipulator it is.” Moreover, he added, he would “take a holistic approach to addressing all of China’s abuses. That includes unilateral actions such as increased enforcement of U.S. trade laws, punitive measures targeting products and industries that rely on misappropriations of our intellectual property, reciprocity in government procurement, and countervailing duties against currency manipulation. It also includes multilateral actions to block technology transfers into China and to create a trading bloc open only for nations genuinely committed to free trade.” ¶ Romney’s apparent belief that Washington is “genuinely committed to free trade” is charming nonsense. The U.S. has practiced a weak dollar policy to increase exports. Washington long has subsidized American exports: the Export-Import Bank is known as “Boeing’s Bank” and U.S. agricultural export subsidies helped torpedo the Doha round of trade liberalization through the World Trade Organization. ¶ Of course, Beijing still does much to offend Washington. However, the U.S. must accommodate the rising power across the Pacific. Trying to keep China out of a new Asia-Pacific trade pact isn’t likely to work. America’s Asian allies want us to protect them — no surprise! — but are not interested in offending their nearby neighbor with a long memory. The best hope for moderating Chinese behavior is to tie it into a web of international institutions that provide substantial economic, political, and security benefits. ¶ Beijing already has good reason to be paranoid of the superpower which patrols bordering waters, engages in a policy that looks like containment, and talks of the possibility of war. Trying to isolate China economically would be taken as a direct challenge. Romney would prove Henry Kissinger’s dictum that even paranoids have enemies. ¶ Naturally, Romney also wants to “maintain appropriate military capabilities to discourage any aggressive or coercive behavior by China against its neighbors.” However, 67 years after the end of World War II, it is time for Beijing’s neighbors to arm themselves and cooperate with each other. Japan long had the second largest economy on earth. India is another rising power with reason to constrain China. South Korea has become a major power. Australia has initiated a significant military build-up. Many Southeast Asian nations are constructing submarines to help deter Chinese adventurism. Even Russia has much to fear from China, given the paucity of population in its vast eastern territory. But America’s foreign-defense dole discourages independence and self-help. The U.S. should step back as an off-shore balancer, encouraging its friends to do more and work together. It is not America’s job to risk Los Angeles for Tokyo, Seoul, or Taipei. ¶ Romney similarly insists on keeping the U.S. on the front lines against North Korea, even though all of its neighbors have far more at stake in a peaceful peninsula and are able to contain that impoverished wreck of a country. The Romney campaign proclaims: “Mitt Romney will commit to eliminating North Korea’s nuclear weapons and its nuclear-weapons infrastructure.” Alas, everything he proposes has been tried before, from tougher sanctions to tighter interdiction and pressure on China to isolate the North. What does he plan on doing when Pyongyang continues to develop nuclear weapons as it has done for the last 20 years? ¶ The American military should come home from Korea. Romney complained that the North’s nuclear capability “poses a direct threat to U.S. forces on the Korean Peninsula and elsewhere in East Asia.” Then withdraw them. Manpower-rich South Korea doesn’t need U.S. conventional support, and ground units do nothing to contain North Korea’s nuclear ambitions. Pull out American troops and eliminate North Korea’s primary threat to the U.S. Then support continuing non-proliferation efforts led by those nations with the most to fear from the North. That strategy, more than lobbying by Washington, is likely to bring China around. ¶ Romney confuses dreams with reality when criticizing President Obama over the administration’s response to the Arab Spring. “We’re facing an Arab Spring which is out of control in some respects,” he said, “because the president was not as strong as he needed to be in encouraging our friends to move toward representative forms of government.” Romney asked: “How can we try and improve the odds so what happens in Libya and what happens in Egypt and what happens in other places where the Arab Spring is in full bloom so that the developments are toward democracy, modernity and more representative forms of government? This we simply don’t know.” ¶ True, the president doesn’t know. But neither does Mitt Romney. The latter suffers from the delusion that bright Washington policymakers can remake the world. Invade another country, turn it into a Western-style democracy allied with America, and everyone will live happily every after. But George W. Bush, a member of Mitt Romney’s own party, failed miserably trying to do that in both Afghanistan and Iraq. The Arab Spring did not happen because of Washington policy but in spite of Washington policy. And Arabs demanding political freedom — which, unfortunately, is not the same as a liberal society — have not the slightest interest in what Barack Obama or Mitt Romney thinks. ¶ Yet the latter wants “convene a summit that brings together world leaders, donor organizations, and young leaders of groups that espouse” all the wonderful things that Americans do. Alas, does he really believe that such a gathering will stop, say, jihadist radicals from slaughtering Coptic Christians? Iraq’s large Christian community was destroyed even as the U.S. military occupied that country. His summit isn’t likely to be any more effective. Not everything in the world is about Washington. ¶ Which is why Romney’s demand to do something in Syria is so foolish. Until recently he wanted to work with the UN, call on the Syrian military to be nice, impose more sanctions, and “increase the possibility that the ruling minority Alawites will be able to reconcile with the majority Sunni population in a post-Assad Syria.” Snapping his fingers would be no less effective. ¶ Most recently he advocated arming the rebels. But he should be more cautious before advocating American intervention in another conflict in another land. Such efforts rarely have desirable results. Iraq was a catastrophe. Afghanistan looks to be a disaster once American troops come home. After more than a decade Bosnia and Kosovo are failures, still under allied supervision. Libya is looking bad. ¶ Even without U.S. “help,” a full-blown civil war already threatens in Syria. We only look through the glass darkly, observed the Apostle Paul. It might be best for Washington not to intervene in another Muslim land with so many others aflame. ¶ Despite his support for restoring America’s economic health, Romney wants to increase dramatically Washington’s already outsize military spending. Rather than make a case on what the U.S. needs, he has taken the typical liberal approach of setting an arbitrary number: 4 percent of GDP. It’s a dumb idea, since America already accounts for roughly half the globe’s military spending — far more if you include Washington’s wealthy allies — and spends more in real terms than at any time during the Cold War, Korean War, or Vietnam War, and real outlays have nearly doubled since 2000. By any normal measure, the U.S. possesses far more military resources than it needs to confront genuine threats. ¶ What Romney clearly wants is a military to fight multiple wars and garrison endless occupations, irrespective of cost. My Cato colleague Chris Preble figured that ¶ Romney's 4 percent gimmick would result in taxpayers spending more than twice as much on the Pentagon as in 2000 (111 percent higher, to be precise) and 45 percent more than in 1985, the height of the Reagan buildup. Over the next ten years, Romney's annual spending (in constant dollars) for the Pentagon would average 64 percent higher than annual post-Cold War budgets (1990-2012), and 42 percent more than the average during the Reagan era (1981-1989). ¶ If Mitt Romney really believes that the world today is so much more dangerous than during the Cold War, he should spell out the threat. He calls Islamic fundamentalism, the Arab Spring, the impact of failed states, the anti-American regimes of Cuba, Iran, North Korea, and Venezuela, rising China, and resurgent Russia “powerful forces.” It’s actually a pitiful list — Islamic terrorists have been weakened and don’t pose an existential threat, the Arab Spring threatens instability with little impact on America, it is easier to strike terrorists in failed states than in nominal allies like Pakistan and Saudi Arabia, one nuclear-armed submarine could vaporize all four hostile states, and Russia’s modest “resurgence” may threaten Georgia but not Europe or America. Only China deserves to be called “powerful,” but it remains a developing country surrounded by potential enemies with a military far behind that of the U.S. ¶ In fact, the greatest danger to America is the blowback that results from promiscuous intervention in conflicts not our own. Romney imagines a massive bootstrap operation: he wants a big military to engage in social engineering abroad which would require an even larger military to handle the violence and chaos that would result from his failed attempts at social engineering. Better not to start this vicious cycle. ¶ America faces international challenges but nevertheless enjoys unparalleled dominance. U.S. power is buttressed by the fact that Washington is allied with every industrialized nation except China and Russia. America shares significant interests with India, the second major emerging power; is seen as a counterweight by a gaggle of Asian states worried about Chinese expansion; remains the dominant player in Latin America; and is closely linked to most of the Middle East’s most important countries, such as Israel, Saudi Arabia, Egypt, Jordan, and Iraq. If Mitt Romney really believes that America is at greater risk today than during the Cold War, he is not qualified to be president. ¶ In this world the U.S. need not confront every threat, subsidize every ally, rebuild every failed state, and resolve every problem. Being a superpower means having many interests but few vital ones warranting war. Being a bankrupt superpower means exhibiting judgment and exercising discretion. ¶ President Barack Obama has been a disappointment, amounting in foreign policy to George W. Bush-lite. But Mitt Romney sounds even worse. His rhetoric suggests a return to the worst of the Bush administration. The 2012 election likely will be decided on economics, but foreign policy will prove to be equally important in the long-term. America can ill afford another know-nothing president.

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#### No general surprises---other than the plan

Kamen 10/24 Al is a writer for the Washington Post. “October, yes. Surprise, no.” 2012, http://www.washingtonpost.com/politics/decision2012/october-yes-surprise-no/2012/10/24/66623a14-1df1-11e2-b647-bb1668e64058\_story.html

With less than a week left until we flip a page on the calendar, it’s inevitable that folks like political dabbler Donald Trump would be ginning up an October surprise guaranteed to shake the presidential race to its very core.¶ But at least in recent years, most trumped-up “October surprises” aren’t all that surprising — and, most important, they haven’t ultimately swayed election outcomes.¶ In 2000, a scant five days before voters headed to the polling booths, it came out that George W. Bush was arrested for drunken driving in the ’70s. He still won. (Adviser Karl Rove said the revelation cost Bush evangelical votes, and he lost the popular vote, but still, a win’s a win.)¶ People often refer to the economic collapse in 2008 as that race’s October surprise — but the financial crisis began in September. So it’s disqualified.¶ Another supposed 2008 October surprise was the shocker that Obama had a half-aunt who was an illegal immigrant. (Cue the crickets.)¶ In recent times, most everything of note in October seems to get labeled a surprise, even if it’s not a bombshell revelation or something that can alter a race.

#### Won’t impact the election --- only impacts Northeastern states that are already voting for Obama + they’ll postpone voting

Reuters 10-26, “UPDATE 1-Hurricane Sandy rains on U.S. presidential campaign”, http://www.reuters.com/article/2012/10/26/usa-campaign-weather-idUSL1E8LQF8G20121026

Election officials said they would do everything possible to ensure that voting goes on, even if problems from the storm persisted until Nov. 6.¶ "I have heard from some states like Virginia and Maryland that they are definitely working on contingency plans for problems that may arise as a result of the storm," said Kay Stimson, communications director for the National Association of Secretaries of State.¶ "They are always preparing for any kinds of problems, any thing that could arise that could potentially pose problems for elections," she said.¶ The rules for rescheduling voting in case of bad weather vary from state to state.¶ Virginia election officials said they were monitoring the situation and encouraging in-person absentee voting - the form of early voting allowed in the state - to continue as long as conditions remained safe.¶ In heavily Democratic Maryland, which Obama is expected to carry easily, the state of emergency declared by Governor Martin O'Malley would allow for changes, if necessary, including the postponement of the election in all or part of the state.

#### The plan happens before the election---Congress is holding pro forma sessions now

Cox 9/24 Ramsey is a writer for The Hill. “Congress to hold pro forma sessions until November,” 2012, http://thehill.com/blogs/floor-action/senate/251313-congress-to-hold-pro-forma-sessions-until-november

Rather than being in recess for more than five weeks, both the Senate and the House decided to hold pro forma sessions until after the November elections.

#### Legislation can be passed then

Cover 12 Matt is a writer at CNS news. “Democrats Passed Payroll Tax Extension During ‘Pro Forma’ Session on Dec. 23,” 1/6, http://cnsnews.com/news/

(CNSNews.com) – Senate Majority Leader Harry Reid (D-Nev.) took to the Senate floor during a “pro forma” session on Dec. 23 to pass a two-month extension to the payroll tax. President Barack Obama, however, this week claimed that a pro forma session means the Senate is practically in recess, opening the door for him to make appointments whenever he deems the Senate is out of session.¶ In justifying the appointments made on Wednesday, Jan. 4, while the Senate was in pro forma session, Obama spokesman Dan Pfeiffer said that the Senate was “effectively” in recess because “no Senate business is conducted.”¶ “The Senate has effectively been in recess for weeks, and is expected to remain in recess for weeks,” Pfeiffer wrote on the White House Web site on Jan. 4. “In an overt attempt to prevent the President from exercising his authority during this period, Republican Senators insisted on using a gimmick called ‘pro forma’ sessions, which are sessions during which no Senate business is conducted.”¶ However, **the Senate did conduct business during a pro forma session**, with Majority Leader Reid leading the unanimous consent proceeding to pass the two-month payroll tax extension.

#### The race could still shift---every swing state is close

Cohn 10/24 Nate is an elections expert at The New Republic. “Expect the Unexpected: Diverse Battleground States Mean the Race Can Shift in Any Number of Ways,” 2012, http://www.tnr.com/blog/electionate/109067/diverse-and-competitive-electoral-map-introduces-more-possibilities-surprisi

With a deadlocked popular vote all eyes turn toward the electoral college, where the conventional wisdom holds that the state of the race is pretty straightforward: Romney leads in North Carolina and Florida, but Obama leads in Ohio, Nevada, and Wisconsin, states worth 271 electoral votes. As an advocate of the polling average as the principal means to understand the state of the race, I don’t fundamentally disagree with this view. But this year’s battleground states are so close and so diverse that it would be wise to remain open to unexpected outcomes.¶ That's because the battleground states are all so different demographically. States once deemed microcosmic of the country like Michigan, Pennsylvania, and Missouri have been swept off the map for being a few points too Republican or Democratic, and they’ve been replaced with a diverse set of states that add up to a tight race. “New coalition” states like Virginia and Colorado hold exceptionally well-educated and affluent populations. More than 20 percent of the Virginia and North Carolina electorates might be black in 2012—far more than any battleground state of 2004. Nevada and the once dispositive Orlando area have been dramatically reshaped by an exploding Latino population. Northeast Ohio is full of manufacturing workers, something absent from many other battleground states.¶ Today, the national polls show a truly deadlocked race, and the nine battleground states each appear to rest within about three points on either side of a tie. With diverse battlegrounds, there are plenty of moving pieces that could potentially nudge a state one or two percentage points in either side’s direction without influencing the other battlegrounds. For instance, if Romney sweeps undecided and disaffected white working class voters, it won’t do him much additional good in Virginia but could make the difference in Ohio. If Obama’s GOTV efforts rejuvenate Latino turnout, it barely matters in Iowa but probably ends Romney’s chances in Nevada. If Mourdock comments cause a new round of abortion coverage, it might make a difference in Colorado without any consequence for Ohio or Florida. A strong black turnout wouldn't swing New Hampshire but could be decisive in Virginia.¶ Making matters worse, several of the most important questions of the election are issues that pollsters struggle with the most. While the average of polls is the best available indicator of the state of the race, the polls are neither perfect nor infallible. The RealClearPolitics average, for instance, usually misses its mark by an average of 2 or 3 points, even without systemic bias toward either party and even in years when it gets all the states right. And unlike unscientific criticisms of polls (ie: the party-ID wars), there are many substantive and defensible criticisms of the continuing accuracy of polling in an era of low response rates, including their ability to reach out to Latino voters and people with cell phones. For good measure, likely voter screens are imprecise, to say the least. While all of these issues were potentially problematic a decade ago, many were not as serious. Cell phones weren't yet ubiquitous, and an enclave of Cubans in Miami were the most important Latinos to the election. Young voters were not as critical to the Democratic coalition, since the age gap was far smaller than it is today. These issues give more reason to avoid placing too much faith in a 2-point lead in a polling average, but they could also manifest unevenly across the electoral map. If the polls miss Latino turnout in 2012, that potentially changes the outcome of Colorado, Nevada, and Florida without much of a consequence for Iowa or Ohio. And it’s worth remembering that something like this may have been responsible for Reid and Bennet’s upset victories in 2010. ¶ None of these scenarios are particularly probable, especially individually. But one way or another, we could easily be surprised between now and the time the election is called in 13 days. The polls are pretty good, but they are not perfect, and with observers paying so much attention to the slight distinctions between Obama's 1.9 point lead in Ohio and .6 point lead in Virginia, unrealistic levels of precision may be necessary to avoid surprises. And that's before accounting for the possibility that the race could shift over the final two weeks in subtle ways that move particular demographic groups and states without similar changes in others. The nine battleground states are so close and so diverse that late movement among specific demographic groups or slight errors in the polling could easily reshape the electoral map before November 6.

#### Minds aren’t made up in the key swing states and the margins are slim

Robillard 9/19 Kevin is a writer at Politico. “Poll: Swing states could still swing,” 2012, http://www.politico.com/news/stories/0912/81381.html

More than one-fifth of swing-state voters could change their mind before the election, according to a USA Today/Gallup Poll on Wednesday showing President Barack Obama with a slim lead over GOP nominee Mitt Romney.¶ Among voters in 12 key toss-up states, Obama leads 48 percent to 46 percent. Both candidates have locked down a similar percentage of voters: 38 percent are committed to backing Obama while 39 percent are definitively backing Romney.¶ Five percent of swing-state voters are undecided, 7 percent said there is “some chance” they could change their vote, and 10 percent gave it a “slight chance.”

#### Silver votes neg

Silver 10/26 Nate is an elections expert for the NYT. “Oct. 25: The State of the States,” 2012, <http://fivethirtyeight.blogs.nytimes.com/2012/10/26/oct-25-the-state-of-the-states/?gwh=9157D2A2D5EC17B9DE2F9DF51818F651>

Thursday was a busy day for the polls, with some bright spots for each candidate. But it made clear that Barack Obama maintains a narrow lead in the polling averages in states that would get him to 270 electoral votes. Mr. Obama also remains roughly tied in the polls in two other states, Colorado and Virginia, that could serve as second lines of defense for him if he were to lose a state like Ohio.¶ The day featured the release of 10 national polls, but there was little in the way of a consistent pattern in them. On average, the polls showed a tied race. Furthermore, among the nine polls that provided for a comparison to another poll conducted after the first presidential debate in Denver, the net result was unchanged, on average, with Mr. Obama gaining one percentage point or more in three polls, but Mr. Romney doing so in three others.¶ Mr. Obama held the lead in nine polls of battleground states on Thursday, as compared to three leads for Mr. Romney and two polls showing a tied race.¶ This tally exaggerates the lopsidedness of the polling a bit, since the state polls released on Thursday were something of a Democratic-leaning bunch, some of which had shown strong numbers for Mr. Obama previously.¶ Mr. Romney’s strongest number came in a Fox News poll of Virginia, which had him 2 points ahead there – a sharp reversal from a 7-point advantage there for Mr. Obama before the Denver debate. However, Mr. Romney’s worst poll of the day was probably also in Virginia, where Public Policy Polling showed Mr. Obama’s lead expanding to 5 points from 2.¶ Among the 10 polls that provided for a comparison to another poll conducted after the Denver debate, Mr. Obama gained 1 percentage point, on average. The past week of polling suggests that Mr. Romney is no longer improving his position in the race.¶ Whether Mr. Obama has any momentum of his own, such as because of this week’s debate in New York, is less clear. To me, it looks more like a gradual reversion to the mean than anything all that assertive.¶ At the same time, Mr. Obama has led in the polling averages all year in states that would allow him to win the Electoral College, and that remains the case now.

#### Prefer Nate Silver

LB 10 Leigh Bureau, the world’s preeminent lecture bureau, “Nate Silver,” 2010, http://www.leighbureau.com/speaker.asp?id=498

Nate Silver has been called a "spreadsheet psychic" and "number-crunching prodigy" by New York Magazine.¶ Nate comes out of the world of baseball statistics, but during the 2008 presidential election primaries, he turned his sights and his amazing predictive abilities and forecasting models to the game of politics and current events — with incredible results.¶ He began by predicting 2008 primary election results with stunning accuracy — and often in opposition to the better-known political pollsters. He then moved on to the general election, where he correctly predicted the presidential winner in 49 states and the District of Columbia.

#### Angry voter theory means that backlash will be more salient than any gains

Harpuder 3 Brian, PhD in Philosophy at Ohio State University. “Electoral behavior in U.S. senate elections, a simultaneous choice model,” http://etd.ohiolink.edu/send-pdf.cgi/Harpuder%20Brian%20Eric.pdf?osu1069347453

With respect to evaluations of the economy and personal finances the research clearly shows support for the angry voter hypothesis. Citizens who are dissatisfied with the state of the national economy, angry voters, are more likely to turnout than those who are satisfied. Their dissatisfaction is expressed toward incumbents because they become more likely to vote for the challenging party. Personal financial evaluations are also shown to have a limited impact on electoral behavior.

#### Voters hate fusion

BN 8 Burnaby Now is your online source of local news on Burnaby, “Generating nuclear fusion”, April 23, 2008, http://www.canada.com/burnabynow/news/business/story.html?id=f8fc8807-a2e1-4e4e-a700-fa76e87a0444

Public perception of nuclear fusion and the environmental lobby are two of the bigger hurdles. They are working with an environmental group to do studies on magnetized target fusion, seeing how it fits in with the group's mandate. But convincing a public that equates the word 'nuclear' with disasters, meltdowns and bombs that this is something different: that's going to be trickier, Richardson admits.

#### Plan unpopular --- cost overruns

Economist 10 “Funding for nuclear fusion Expensive Iteration”, Jul 22nd 2010, http://www.economist.com/node/16635938

VIABLE nuclear fusion has been only 30 years away since the idea was first mooted in the 1950s. Its latest three-decade incarnation is ITER, a joint effort by the European Union (EU), America, China, India, Japan, Russia and South Korea to construct a prototype reactor on a site in Cadarache, France, by 2018. If all goes to plan, in about 30 years it will be reliably producing more energy than is put in.¶ The International Thermonuclear Experimental Reactor became plain ITER following public anxiety about anything that has “thermonuclear” next to “experimental” in its name. ITER aims to produce energy by fusing together the nuclei of hydrogen atoms, confined in a magnetic field at high temperatures—a process akin to that which powers the sun.¶ For all its cosmic ambition, ITER has run into the earthiest of difficulties: spiralling costs. The project was never going to be cheap. Initial projections in 2006 put its price at €10 billion ($13 billion): €5 billion to build and another €5 billion to run and decommission the thing. Since then construction costs alone have tripled. ¶ As the host, the EU is committed to covering some 45% of these, with the other partners contributing about 9% each. In May the European Commission, the EU's executive branch, asked member states to stump up an additional €1.4 billion to tide the project over to 2013. They rejected the request and suggested instead tapping the EU's existing research budget.¶ On July 20th the commission offered a compromise: one-third of the shortfall would come from cash earmarked for other research, the rest from unspent agricultural funds.¶ Such a proposal may yet be scuppered by EU governments. Nor has it entirely mollified European scientists who rightly fear that ITER will eat indiscriminately into other programmes. This comes at a time when most European governments are slashing spending on science as part of larger efforts to plug budget deficits.¶ The proposal also needs approval from the European Parliament. Some Green MEPs have called for ITER to be ditched altogether, and its finances diverted to less grandiose ventures. A decision is unlikely in time for a meeting of ITER's governing body on July 27th and 28th, when the project's scope and cost are to be discussed.¶ Unfazed by budgetary wobbles, Fusion for Energy, ITER's European arm, has begun in earnest to divvy out construction work. On July 19th a consortium led by Iberdrola, a Spanish engineering giant, signed a €156m contract to build “winding packs”—massive reactor components that each weigh about 110 tonnes, as much as a jumbo jet.¶ This testifies to the project's technical daring. But the commissioning of these parts also illustrates one of its biggest flaws. The European consortium will build only ten of the planned 19 winding packs; the remaining nine will be forged independently by a Japanese contractor.¶ Unlike the Large Hadron Collider (LHC), another huge international physics experiment near Geneva, ITER does not pool its funds. Instead, each partner orders bits and bobs, typically from compatriots, hoping that everything will dovetail nicely in Cadarache. Moreover, some parties have not got what they had hoped for out of the project, notably Japan, which had wanted to host the reactor. So it has been promised a sweetener in the form of a smaller reactor and a supercomputer. All this is a recipe for duplication.¶ Cost overruns are common in projects as complex as ITER or the LHC. Loosening the purse-strings for energy research and development surely makes sense: government spending on energy research has been falling since the early 1980s, both as a share of GDP and as a proportion of total research budgets, according to the International Energy Agency.¶ That said, it is far from clear whether the best way of countering this trend in energy funding is to plough yet more money into the fusion project, with its vested political interests, at the expense of less prominent scientific endeavours.

#### Plan causes environmental backlash

Leo Hickman, The Guardian, 8/23/11, Fusion power: is it getting any closer?, [www.guardian.co.uk/environment/2011/aug/23/fusion-power-is-it-getting-closer](http://www.guardian.co.uk/environment/2011/aug/23/fusion-power-is-it-getting-closer)

But ITER's projected costs are already rocketing, and politicians across Europe have expressed concern, demanding that budgets be capped. Fusion energy also has its environmental detractors. When the ITER project was announced in 2005, Greenpeace said it "deplored" the project, arguing that the money could be better spent building offshore wind turbines. "Advocates of fusion research predict that the first commercial fusion electricity might be delivered in 50-80 years from now," said Jan Vande Putte, Greenpeace International's nuclear campaigner. "But most likely, it will lead to a dead end, as the technical barriers to be overcome are enormous." Meanwhile, there is criticism from some plasma physicists that the design of ITER is wrong and alternative designs might produce better results for much less money.

#### The environmental base is key to swing Obama over the edge

Bloomberg 11 Mark Drajem and Jim Efstathiou Jr. “Green Vote Cools Toward Obama Risking A Replay Of Gore-Nader,” Aug 30, http://www.bloomberg.com/news/2011-08-31/green-vote-cools-to-obama-over-pipeline-concerns.html

Democratic Vice President Al Gore paid a price in his 2000 presidential campaign for the splintering of environmentalists’ votes. Leaders of some groups, including in Florida, endorsed the independent candidacy of Ralph Nader instead.¶ Gore, who later won the Nobel Peace Prize for his advocacy of limits on greenhouse-gas emissions, lost Florida by 537 votes in the official tally, making Republican George W. Bush president. Nader garnered 97,488 votes in the state.¶ Nader predicted in April that Obama will win re-election, in part because “the liberal base has nowhere to go to send a message” this time. Still, apathy among voters sympathetic to environmentalist goals may prove costly to Obama, according to Doug Schoen, who was a strategist for President Bill Clinton.¶ “Obama won the election because the left, young people who are disproportionately environmentalists, came out in huge numbers,” Schoen said in an interview yesterday. “If he doesn’t have the kind of support he had from the left, from young people, from environmentalists, he is not going to be re- elected. It’s as simple as that.”

#### Obama’s too cautious

Heilbrunn 8/2/12 – senior editor at The National Interest (Jacob, “Obama's October Surprise: Bombing Iran,” The National Interest, http://nationalinterest.org/blog/jacob-heilbrunn/obamas-october-surprise-bombing-iran-7285)

But as Romney calls for "any and all measures" to stop Iran, Obama surely could deflate his sails by launching a strike in October. If it worked, he would be hailed as a hero. The consequences of a strike wouldn't be felt for at least a few weeks—the nightmare scenario is that an oil shock would result in a quadrupling of oil prices, plunging the world into a new Great Depression. Enough time for Obama to sail back into office as a tough foreign-policy president. Given Obama's congenital caution and sobriety, he seems unlikely to follow such a course. But it should not be ruled out. The neocons may be closer to helping bring about an assault on Iran than even they realize. They've already captured Romney. But they may also be on the verge of capturing Obama. Their sustained campaign of pressure, in other words, may be more effective than anyone has acknowledged. For the fact is that Obama already has amply demonstrated his ruthlessness when it comes to confronting America's adversaries. If he were able to carry out regime change in Tehran, he might even start referring to himself as the new Decider.

#### Obama is Velcro and will receive blame for everything

**Nicholas & Hook 10** Peter and Janet, Staff Writers – LA Times, “Obama the Velcro president”, LA Times, 7-30, http://articles.latimes.com/2010/jul/30/nation/la-na-velcro-presidency-20100730/3

If Ronald Reagan was the classic Teflon president, Barack **Obama is made of Velcro.¶** Through two terms, Reagan eluded much of the responsibility for recession and foreign policy scandal. In less than two years, Obama has become **ensnared in blame**.¶ Hoping to **better insulate Obama**, White House aides have sought to **give other Cabinet officials a higher profile** and additional public exposure. They are also crafting new ways to explain the president's policies to a skeptical public.¶ **But Obama remains the colossus of his administration** — to a point where trouble anywhere in the world is often his to solve.¶ The president is on the hook to repair the Gulf Coast oil spill disaster, stabilize Afghanistan, help fix Greece's ailing economy and do right by Shirley Sherrod, the Agriculture Department official fired as a result of a misleading fragment of videotape¶ What's **not sticking to Obama** is a legislative track record that his recent predecessors might envy. **Political dividends** from passage of a healthcare overhaul or a financial regulatory bill **have been fleeting**.¶ Instead, voters are measuring his presidency by a more immediate yardstick: Is he creating enough jobs? So far the verdict is no, and that has taken a toll on Obama's approval ratings. Only 46% approve of Obama's job performance, compared with 47% who disapprove, according to Gallup's daily tracking poll.¶ "I think the accomplishments are very significant, but I think most people would look at this and say, 'What was the plan for jobs?' " said Sen. Byron L. Dorgan (D-N.D.). "The agenda he's pushed here has been a very important agenda, but it hasn't translated into dinner table conversations."¶ Reagan was able to glide past controversies with his popularity largely intact. He maintained his affable persona as a small-government advocate while seeming above the fray in his own administration.¶ Reagan was untarnished by such calamities as the 1983 terrorist bombing of the Marines stationed in Beirut and scandals involving members of his administration. In the 1986 Iran-Contra affair, most of the blame fell on lieutenants.¶ Obama lately has tried to rip off the Velcro veneer. In a revealing moment during the oil spill crisis, he reminded Americans that his powers aren't "limitless." He told residents in Grand Isle, La., that he is a flesh-and-blood president, not a comic-book superhero able to dive to the bottom of the sea and plug the hole.¶ "I can't suck it up with a straw," he said.¶ But as a candidate in 2008, he set sky-high expectations about what he could achieve and what government could accomplish.¶ Clinching the Democratic nomination two years ago, Obama described the moment as an epic breakthrough when "we began to provide care for the sick and good jobs to the jobless" and "when the rise of the oceans began to slow and our planet began to heal."¶ Those towering goals remain a long way off. And most people would have preferred to see Obama focus more narrowly on the "good jobs" part of the promise.¶ A recent Gallup poll showed that 53% of the population rated unemployment and the economy as the nation's most important problem. By contrast, only 7% cited healthcare — a single-minded focus of the White House for a full year.¶ At every turn, Obama makes the argument that he has improved lives in concrete ways.¶ Without the steps he took, he says, the economy would be in worse shape and more people would be out of work. There's evidence to support that. Two economists, Mark Zandi and Alan Blinder, reported recently that without the stimulus and other measures, gross domestic product would be about 6.5% lower.¶ Yet, Americans aren't apt to cheer when something bad doesn't materialize.¶ Unemployment has been rising — from 7.7% when Obama took office, to 9.5%. Last month, more than 2 million homes in the U.S. were in various stages of foreclosure — up from 1.7 million when Obama was sworn in.¶ "Folks just aren't in a mood to hand out gold stars when unemployment is hovering around 10%," said Paul Begala, a Democratic pundit.¶ **Insulating the president from bad news has proved impossible**. Other White Houses have tried doing so with more success. **Reagan's Cabinet officials often took the blame, shielding the boss**.¶ But **the Obama administration is about one man**. Obama is the White House's chief spokesman, policy pitchman, fundraiser and negotiator. **No Cabinet secretary has emerged as an adequate surrogate**. Treasury Secretary Timothy F. Geithner is seen as a tepid public speaker; Energy Secretary Steven Chu is prone to long, wonky digressions and has rarely gone before the cameras during an oil spill crisis that he is working to end.¶ So, **more falls to Obama, reinforcing the Velcro effect: Everything sticks to him**. He has opined on virtually everything in the hundreds of public statements he has made: nuclear arms treaties, basketball star LeBron James' career plans; Chelsea Clinton's wedding.¶ Few audiences are off-limits. On Wednesday, he taped a spot on ABC's "The View," drawing a rebuke from Democratic Pennsylvania Gov. Edward G. Rendell, who deemed the appearance unworthy of the presidency during tough times.¶ "Stylistically he creates some of those problems," Eddie Mahe, a Republican political strategist, said in an interview. "His favorite pronoun is 'I.' When you position yourself as being all things to all people, the ultimate controller and decision maker with the capacity to fix anything, you set yourself up to be blamed when it doesn't get fixed or things happen."¶ A new White House strategy is to forgo talk of big policy changes that are easy to ridicule. Instead, aides want to market policies as more digestible pieces. So, rather than tout the healthcare package as a whole, advisors will talk about smaller parts that may be more appealing and understandable — such as barring insurers from denying coverage based on preexisting conditions.¶ But at this stage, it may be late in the game to downsize either the president or his agenda.

#### Election models are correct 85% of the time

Sides 12 John, Associate Professor of Political Science. PhD, University of California, Berkeley, “In Defense of Presidential Forecasting Models”, 3/29, http://fivethirtyeight.blogs.nytimes.com/2012/03/29/in-defense-of-presidential-forecasting-models/

Second, as Nate acknowledges but doesn’t fully explore (at least not in this post), the models vary in their accuracy. The average error in predicting the two-party vote is 4.6 points for Ray Fair’s model, but only 1.72 points for Alan Abramowitz’s model. In other words, some appear better than others — and we should be careful not to condemn the entire enterprise because some models are more inaccurate. Third, if we look at the models in a different way, they arguably do a good enough job. Say that you just want to know who is going to win the presidential election, not whether this candidate will get 51 percent or 52 percent of the vote. Of the 58 separate predictions that Nate tabulates, **85 percent of them correctly identified the winner** — even though most forecasts were made two months or more before the election and even though few of these forecasts actually incorporated trial heat polls from the campaign.

#### Romney decks US-Russia Relations

Felton 12 Emmanuel Felton is a Toni Stable Fellow at the Columbia School of Journalism. "Mitt Romney Russia Quotes Signal Big Problems For Future US-Russian Relations," March, http://www.policymic.com/articles/6202/mitt-romney-russia-quotes-signal-big-problems-for-future-us-russian-relations

The importance of America’s alliance with Russia is highlighted by the very context of Obama and Medvedev’s conversation. Obama and Medvedev were speaking in private at the Nuclear Security Summit in Seoul, South Korea. Russia is an important U.S. ally in fight against nuclear proliferation. Of the nearly 20,000 nuclear weapons that are in existence, Russia has 10,000 and the United States 8,500. Most will agree that this number is simply far too high. An alliance with Russia is essential to reducing the cold-war stockpile of nuclear weapons that continue to threaten humanity. Flexibility is critical to any alliance. Despite the strategic importance of a relationship with Russia, Republicans have signaled that any compromise on the issue of the missile defense system will be a non-starter if they gain control of the White House and Capitol Hill. The initial criticisms of Obama’s comments went something like this: “What plans are he formulating, that make his “last election” relevant? What is he planning to do that, if the American people were aware of it, would make him unelectable?” While the initial responses to Obama’s comments were purely motivated by November’s elections, Mitt Romney’s remarks went much further. Romney called Russia America’s “number one geopolitical foe.” While you could argue that this is another etch-a-sketch moment, Romney’s comments show a complete disregard for any U.S.-Russian alliance. Romney’s comments are particularly important because he is the most likely to succeed Obama in the fall. His comments have signaled to the world that Republicans don’t necessarily believe that any alliance exists in the first place. This gives Russia free reign to take more hardline positions on nuclear proliferation issues. While Romney’s comments were clearly motivated by election year politics, they also indicate that the party has not escaped Cold War thinking, an approach that says any compromise with Russia is tantamount to weakening America’s strategic position. Until that mindset is broken, global security will continue to be undermined by an increasingly hostile Kremlin.

#### Extinction

Allison 11 (Graham, 10/30, Director of the Belfer Center for Science and International Affairs at Harvard’s Kennedy School of Government, “10 reasons why Russia still matters,” http://dyn.politico.com/printstory.cfm?uuid=161EF282-72F9-4D48-8B9C-C5B3396CA0E6)

That central point is that Russia matters a great deal to a U.S. government seeking to defend and advance its national interests. Prime Minister Vladimir Putin’s decision to return next year as president makes it all the more critical for Washington to manage its relationship with Russia through coherent, realistic policies. No one denies that Russia is a dangerous, difficult, often disappointing state to do business with. We should not overlook its many human rights and legal failures. Nonetheless, Russia is a player whose choices affect our vital interests in nuclear security and energy. It is key to supplying 100,000 U.S. troops fighting in Afghanistan and preventing Iran from acquiring nuclear weapons. Ten realities require U.S. policymakers to advance our nation’s interests by engaging and working with Moscow. First, Russia remains the only nation that can erase the United States from the map in 30 minutes. As every president since John F. Kennedy has recognized, Russia’s cooperation is critical to averting nuclear war. Second, Russia is our most consequential partner in preventing nuclear terrorism. Through a combination of more than $11 billion in U.S. aid, provided through the Nunn-Lugar [CTR] Cooperative Threat Reduction program, and impressive Russian professionalism, two decades after the collapse of the “evil empire,” not one nuclear weapon has been found loose. Third, Russia plays an essential role in preventing the proliferation of nuclear weapons and missile-delivery systems. As Washington seeks to stop Iran’s drive toward nuclear weapons, Russian choices to sell or withhold sensitive technologies are the difference between failure and the possibility of success. Fourth, Russian support in sharing intelligence and cooperating in operations remains essential to the U.S. war to destroy Al Qaeda and combat other transnational terrorist groups. Fifth, Russia provides a vital supply line to 100,000 U.S. troops fighting in Afghanistan. As U.S. relations with Pakistan have deteriorated, the Russian lifeline has grown ever more important and now accounts for half all daily deliveries. Sixth, Russia is the world’s largest oil producer and second largest gas producer. Over the past decade, Russia has added more oil and gas exports to world energy markets than any other nation. Most major energy transport routes from Eurasia start in Russia or cross its nine time zones. As citizens of a country that imports two of every three of the 20 million barrels of oil that fuel U.S. cars daily, Americans feel Russia’s impact at our gas pumps. Seventh, Moscow is an important player in today’s international system. It is no accident that Russia is one of the five veto-wielding, permanent members of the U.N. Security Council, as well as a member of the G-8 and G-20. A Moscow more closely aligned with U.S. goals would be significant in the balance of power to shape an environment in which China can emerge as a global power without overturning the existing order. Eighth, Russia is the largest country on Earth by land area, abutting China on the East, Poland in the West and the United States across the Arctic. This territory provides transit corridors for supplies to global markets whose stability is vital to the U.S. economy. Ninth, Russia’s brainpower is reflected in the fact that it has won more Nobel Prizes for science than all of Asia, places first in most math competitions and dominates the world chess masters list. The only way U.S. astronauts can now travel to and from the International Space Station is to hitch a ride on Russian rockets. The co-founder of the most advanced digital company in the world, Google, is Russian-born Sergei Brin. Tenth, Russia’s potential as a spoiler is difficult to exaggerate. Consider what a Russian president intent on frustrating U.S. international objectives could do — from stopping the supply flow to Afghanistan to selling S-300 air defense missiles to Tehran to joining China in preventing U.N. Security Council resolutions.

#### Romney will cut NNSA funding---causes nuclear terrorist attacks

Easley 11 Jason is a political columnist and chief editor of Politicusa.com. Citing Rachel Maddow. “Rachel Maddow Calls Out The GOP For Budget Cuts That Enable al-Qaeda,” 3/25, <http://www.politicususa.com/rachel-maddow-gop-al-qaeda.html>

On her MSNBC program, Rachel Maddow took on the hypocrisy of a Republican congressional leadership that talks tough on national security but is risking giving al-Qaeda nuclear weapons with their budget cuts. Maddow said, “Republicans really have proposed making it $500 million easier for terrorists to get nuclear material.” Here is the video from MSNBC: Visit msnbc.com for breaking news, world news, and news about the economy Maddow began, “There is a long, dirty history in American politics of using terrifying threats about terrorism to pursue some other totally unrelated political goal. She cited Rush Limbaugh claiming that a “Ground Zero Mosque” is a victory for the terrorists, Jim DeMint claiming that unionized TSA screeners is a victory for terrorists, and George W. Bush saying in 2006 that a vote for Democrats is victory for the terrorists. She then discussed how Republicans upped the ante by using the threat of a mushroom cloud to justify and scare the nation into supporting the Iraq invasion. She pointed out that there is a small US agency that is charge of locking down loose nuclear material, “America’s fear mongering history about the nuclear end of the world is kind of too bad because it is not fear mongering to talk about the nuclear end of the world if you are actually working directly to stop the nuclear end of the world. That is the job of one part of the United States government. It’s an obscure office in the Department of Energy called the National Nuclear Security Administration. They lock down unprotected loose nuclear material around the world to keep it off the black market and out of terrorist hands, which without being hysterical about it, does seem like an important job when you consider that groups like al Qaeda have said over and over again they want to buy nuclear material so they could use it in a terrorist attack and there is evidence they have tried to buy it on the black market.” Rachel Maddow continued, “There is part of the US government that finds the most vulnerable nuclear material in the world and secures it, so if you’re worried about this sort of thing the appropriate response is, good I’m glad we’re doing that. After that agency locked down 111 pounds of nuclear material in Ukraine around Christmas time we hosted the head of the nuclear administration here on this show and christened him the undersecretary for saving the world.” The MSNBC host highlighted the GOP’s proposed budget that would jeopardize national security, “Now the Republicans in Congress want to strip the funding for that agency. Even though they said they wouldn’t make any national security cuts, they want to cut $550 million from the agency that locks down unprotected loose nuclear material to keep it off the black market around the world which means that for what may be the first time in US history an ad that starts this way is actually true and is not fear mongering. ‘What I am about to tell you sounds crazy but it’s true. Speaker John Boehner is making it easier for terrorists to **get nuclear weapons**.’” Rachel Maddow continued, “Sounds crazy? Also true. It sounds like a generic be afraid ad from the Bush administration era. In this case, Republicans really have proposed making it $500 million easier for terrorists to get nuclear material. That was the first line of a new ad voiced by retired Lieutenant General Robert Gard part of a counter proliferation group running these ads against the nuke terrorism cuts in key congressional districts.” After playing the ad, Maddow said, “The ads are targeting not just John Boehner, but Mitch McConnell, Eric Cantor, Paul Ryan, Hal Rogers and Thad Cochran, all elected Republicans who are supporting this big cut. This big cut to the part of the US government that actually works on that whole smoking mushroom cloud problem instead of just freaking you out about it to accomplish some other unrelated political thing. We do not have a word in the English language that means the opposite of fear mongering but if we ever do have that word, this will be the example next to that word in the political science dictionary.” In this case it is appropriate to use the past decade of Republican rhetoric against them. Republican congressional leaders are literally jeopardizing the nation’s security in order to shave $500 million off of the budget, in an ideological attack on what they consider to be big government. This is more evidence that the Republican Party has now moved so far to the right side of the political spectrum that they view all federal government as big government, even when that agency is performing a function that is vital to national security. Unlike the GOP claims of mushroom clouds over America that were used to justify invading Iraq, the threat of al-Qaeda getting nuclear material/weapons and deploying them somewhere in the world is very real. It is one of their stated goals. The hypocrisy is that these same Republicans who puff out their chests and talk tough about keeping America safe are the same individuals who stand poised to sacrifice national security on the alter right wing ideological purity The same John Boehner who once said, “During the 1990s, world leaders looked at the mounting threat of terrorism, looked up, looked away, and hoped the problem would go away,” is now poised to look the threat of a nuclear enabled al-Qaeda in the eye, and aid in furthering their goal of carrying out a catastrophic nuclear attack. Of course, we shouldn’t really be surprised, because Mitch McConnell took the same not my job attitude towards capturing Bin Laden during the Clinton administration, “Domestic terrorism is not a cause we have to fight or a project we need to fund. We are not interested in capturing bin Laden. Even though he has been offered to us. We are not the world’s policemen. It’s not our job to clean up other countries messes or arrest its bad guys.” The conclusion to be drawn here is that Republican views on national security are malleable and wholly contingent on whether not they control the White House. It is this kind of valueless shape shifting that leads many Americans especially those on the left to speculate that Republicans are intentionally trying to make America less safe in order to undermine the Obama administration. It isn’t like they haven’t used national security as a political weapon before, or must we be reminded of the elevated terror alert levels before the elections of 2002, 2004, 2006, and 2008?By their own actions, Republicans have given credibility to the perception that they treat national security as a means to an electoral end. The consequences of allowing Republican neglect and nonchalance about national security to go unchecked could be, to use the language of the GOP, a mushroom cloud over New York, Los Angeles, Washington, D.C. or some city in between. This is why Republican incompetence must be stopped before it enables the realization of al-Qaeda’s nuclear ambitions and dreams.

#### Romney will label China a currency manipulator – causes a trade war

Palmer 12 Doug is a Reuters trade reporter. “Romney would squeeze China on currency manipulation-adviser,” Mar 27, http://www.reuters.com/article/2012/03/28/us-usa-romney-china-idUSBRE82Q0ZS20120328

(Reuters) - Republican presidential candidate Mitt Romney is looking at ways to increase pressure on China over what he sees as currency manipulation and unfair subsidy practices, a Romney campaign adviser said on Tuesday.¶ "I think he wants to maximize the pressure," Grant Aldonas, a former undersecretary of commerce for international trade, said at a symposium on the future of U.S. manufacturing. Aldonas served at the Commerce Department under Republican President George W. Bush.¶ Romney, the front-runner in the Republican race to challenge President Barack Obama for the White House in November, has promised if elected he would quickly label China a currency manipulator, something the Obama administration has six times declined to do.¶ That would set the stage, under Romney's plan, for the United States to impose countervailing duties on Chinese goods to offset the advantage of what many consider to be China's undervalued currency.¶ Last year, the Democratic-controlled Senate passed legislation to do essentially the same thing.¶ However, the measure has stalled in the Republican-controlled House of Representatives, where leaders say they fear it could start a trade war, and the Obama administration has not pushed for a House vote on the currency bill.

#### That causes full-scale war

Landy 7 [Ben Landy, Director of Research and Strategy at the Atlantic Media Company, publisher of the Atlantic Monthly, National Journal, and Government Executive magazines April 3, 2007, <http://chinaredux.com/2007/04/03/protectionism-and-war/#comments>,]

The greatest threat for the 21st century is that these economic flare-ups between the US and China will not be contained, but might spill over into the realm of military aggression between these two world powers. Economic conflict breeds military conflict. The stakes of trade override the ideological power of the Taiwan issue. China’s ability to continue growing at a rapid rate takes precedence, since there can be no sovereignty for China without economic growth. The United States’ role as the world’s superpower is dependent on its ability to lead economically. As many of you will know from reading this blog, I do not believe that war between the US and China is imminent, or a foregone conclusion in the future. I certainly do not hope for war. But I have little doubt that protectionist policies on both sides greatly increase the likelihood of conflict–far more than increases in military budgets and anti-satellite tests**.**

## 2NR

#### Romney will start a trade war with China---this time is different

Bohan 10/3 Caren is a writer for the National Journal and White House correspondent for Reuters. “Why China-Bashing Matters,” 2012, <http://www.nationaljournal.com/magazine/why-china-bashing-matters-20120927>

Mitt Romney is blasting China on the campaign trail as a trade cheat and a thief of American ideas and technology. He has pledged that if he’s elected president, one of his first acts would be to label the country a currency manipulator. It’s a theme the Republican nominee hopes will play well in Midwestern industrial states where workers have seen factories—and their jobs—move overseas. President Obama is talking tough, too. In Ohio this month, he announced a push to try to get the World Trade Organization to sanction China over its subsidies of autos and auto parts.¶ China-bashing by U.S. presidential candidates is nothing new. On the stump in 2008, Obama and Democratic rival Hillary Rodham Clinton both vowed to confront Beijing over a yuan currency that U.S. manufacturers say is kept artificially low. As president, Obama has followed a pragmatic approach, using a combination of pressure and cajoling over the currency while pursuing trade actions in cases involving such goods as tires and autos. Like his predecessor George W. Bush, he has stopped short of branding China a currency manipulator, a step that would sharply ratchet up tensions and possibly ignite a trade war. The interdependence of the United States and its biggest creditor has led many analysts to predict that no matter who wins the White House on Nov. 6, the tough talk on China will soon fade away.¶ But this time could be different.¶ After years of robust, export-fueled expansion, the world’s second-largest economy is slowing. China is grappling with an uneven pace of growth within its borders as it faces a once-in-a-decade leadership transition, with Xi Jinping expected to succeed Hu Jintao as the top leader. And with Europe in crisis, the global economy is fragile, shrinking the market for Chinese-made goods and increasing the temptation for Beijing to use a weak currency to allow it to sell cheap exports. Meanwhile, as American workers struggle with a stagnating jobs market and unemployment above 8 percent, U.S. frustrations over China could grow, putting pressure on politicians in Washington to keep the heat on Beijing. All of this could add up to heightened trade frictions between the two countries.¶ “I think U.S.-China relations are about to go into a period as difficult as we’ve seen since the early 1990s, when we were in the throes of almost constant tension with the Japanese,” said David Rothkopf, head of the international advisory firm Garten Rothkopf.¶ Rothkopf, a former Commerce Department official under President Clinton, said analysts have a tendency to dismiss the campaign rhetoric as “par for the course.” But he added, “What may make it different is that if we’re in a slow economy for a protracted period of time, as seems likely, and we’re not creating jobs in the way we would like to … we could be entering a period where we’re seeing not just U.S.-China tension but we may well see much broader trade tension in the world.”¶ One irony of the campaign-trail sparring over China is that Romney is actually running to the left of Obama on this issue. Romney has accused the president of being a “doormat” on China, leading Obama to fire back by accusing Romney of helping to ship jobs to China through his former role as head of the private-equity firm Bain Capital. The pledge to slap the currency-manipulator label on China is popular with union workers and has found more favor among Democratic lawmakers than Republicans. House Speaker John Boehner has opposed legislation to penalize China over its currency, saying it could lead to a “dangerous” trade war. Boehner’s worries echo those of many in the business community. Although numerous manufacturers would like to see a stronger push on the yuan, large retailers and other companies benefit from trade. Many experts worry that protectionism could worsen the global economy’s woes.¶ In response to Romney’s attacks on China’s currency, the official Xinhua News agency has called his plans foolish and said they would lead to a trade war.¶ Obama’s Treasury Department has so far declined to label China a currency manipulator. It has another chance to do so on Oct. 15, when a report on the currency is due. But the administration could decide to postpone the report until after the election.¶ China ended its fixed peg for the yuan, also known as the renminbi, in 2005. Under pressure from the United States, it allowed the yuan to rise gradually during the later years of the Bush administration and during the Obama administration. But U.S. officials still consider the currency undervalued.¶ Despite Romney’s pledge to label China a currency manipulator, some analysts remain doubtful he would follow through, especially given the business community’s concerns.¶ “Time and again, we’ve seen that what candidates say about China on the campaign trail bears virtually no resemblance to what they do once they’re in office,” said Elizabeth Economy, a China expert at the Council on Foreign Relations. “Whatever political lift they get from scapegoating China on the economic front disappears once the task of governing becomes paramount.”¶ Still, Romney has hammered the currency theme repeatedly, and on his website he lists his vow to label the country a currency manipulator as one of his top priorities. It would be hard for him to back down if he wins the White House.¶ “When a candidate makes a promise as many times as he has made that one, I believe he would have to do it,” said Bonnie Glaser, a senior fellow with the Center for Strategic and International Studies. But Glaser said that the currency-manipulator label would do nothing to create a more level playing field with China. “It’s a feel-good measure. It doesn’t really get us anywhere,” she said.

#### Sandy can only help Obama if he doesn’t get distracted

Howard Kurtz 10-28, Daily Beast, “Hurricane Sandy Upends the Presidential Campaign”, http://www.thedailybeast.com/articles/2012/10/28/hurricane-sandy-upends-the-presidential-campaign.html

There is one bright spot for Obama, who has been briefed on the storm’s progress by the heads of FEMA, the National Hurricane Center, and the Homeland Security Deparment. If the hurricane is as deadly as everyone expects, he will be able to make news as commander in chief, mobilizing the federal response, and expressing compassion for victims. That might be a better image than that of a candidate repeating the same attack lines on the hustings.

# States CP

## 1NC

#### The State and Territorial Governments in the Department of Energy’s Experimental Program to Stimulate Competitive Research should substantially increase financial support for federal programs for fusion energy generation in the United States.

#### DOE EPSCoR program empirically funds fusion research at national labs, including STEM students – states can contribute funds

Gary C. April, PhD, Associate Director Alabama DOE EPSCoR, 2005, “Alabama DOE EPSCoR,” http://www.netl.doe.gov/publications/proceedings/05/EPSCoR/pdf/abstracts/powell-abstract.pdf

The Alabama DOE EPSCoR Program is made up of three integrated components including Program Coordination, Human Resources Development, and Energy Research Clusters. All programmatic elements are coordinated through a statewide steering committee. The first Implementation Award for the Alabama DOE EPSCoR Program (1994-2000) had three energy research clusters: Fusion Energy, Novel Organic Semiconducting Materials, and Petroleum Reservoir Characterization. Alabama’s second Implementation Award (2001- 2007) builds on the success of these clusters and expands the interest and focus of energy related research through Fuel Cell technology and manufacturing. Collectively, the success of the first three energy research clusters can be measured against the record that they established during the six-year tenure of their work. For an investment of $3.4 MM from DOE and $4.4MM from institutional/state matching, these programs supported the research of: a) 21 research professors, b) 32 post-doctoral associates, c) 40 doctoral-level graduate students, and d) 41 undergraduate research students. Their research also brought in an additional $18MM in non-DOE EPSCoR funding. Add to these numbers the $1.5MM from DOE, state and institutional sources for Human Resources Development activities elevating energy awareness among K – post doctoral participants, an additional $1.2MM from DOE Traineeship Awards and success in the DOE State Laboratory Partnership Awards by six investigators at a total of nearly $2.1MM and the true impact of the support base for energy-related programs in Alabama is quite evident. The Fuel Cell energy research cluster is located at the University of Alabama and Alabama A&M University (HBCU). The program is in its fourth year of the second Implementation Award. DOE awarded the Fuel Cell group a total of $1.2MM for four years with matching support from institutional/state matching. To date, the program has supported: a) 13 research faculty, b) 10 undergraduates, c) 15 graduates, and d) three post-doctoral associates. Their research has thus far produced an additional $5MM in non-DOE EPSCoR funding. The Human Resources Development Travel and Enhancement Grant Programs are intended to help cover the costs incurred by young Alabama researchers seeking an opportunity to visit a Federal Laboratory for the purpose of on-site research or developing collaborative research between institutions. Since the programs were initiated, 12 research faculty from four EPSCoR institutions, including one HBCU, one visiting scholar, one undergraduate student, 10 graduate students, and one post-doctoral associate have participated in research efforts at Argonne, Oak Ridge, Los Alamos, and the Pacific Northwest National Laboratories.

## 2NC

#### EPSCoR allows state collaboration with national labs on fusion and solves all their “STEM students key” arguments

DOE, 3-16-2011, “Experimental Program to Stimulate Competitive Research,” EPSCoR, http://science.energy.gov/bes/epscor/about/

Overview: DOE EPSCoR is located in the Office of Science and assists the Office by supporting basic and applied research and development across a wide range of interdisciplinary program areas including but not limited to: Advanced Scientific Computing Research, Basic Energy Sciences, Biological and Environmental Research, Fusion Energy Sciences, High Energy Physics and Nuclear Physics. It also supports research that is relevant to other DOE Program Offices, including but not limited to: the Office of Civilian Radioactive Waste Management; the Office of Electricity Delivery and Energy Reliability; the Office of Energy Efficiency & Renewable Energy; the Office of Environmental Management; the Office of Fossil Energy; the Office of Legacy Management; and, the Office of Nuclear Energy. The participation of these other programs is critical to the success of EPSCoR applications and developing understanding of these programs should be long-term objective of all EPSCoR applicants. Goals of DOE EPSCoR: a) improve the capability of designated states and territories to conduct sustainable and nationally competitive energy-related research; b) jumpstart infrastructure development in designated states and territories through increased human and technical resources, training scientists and engineers in energy-related areas; and c) build beneficial relationships between scientists and engineers in the designated states and territories with the 10 world-class laboratories managed by the Office of Science, leverage DOE national user facilities, and take advantage of opportunities for intellectual collaboration across the DOE system. Through broadened participation DOE EPSCoR seeks to provide the most comprehensive network of energy-related research across the nation. DOE EPSCoR requests an annual budget of approximately $8 million per year and posts Funding Opportunity Announcements (FOAs) every one to two years. Program Priorities: DOE EPSCoR is a science-driven, merit-based program that supports basic and applied research activities spanning the broad range of science and technology programs within DOE. In addition, the program places high priority on increasing the number of scientists and engineers in energy-related areas. The program places particular emphasis and importance of collaboration with young faculty, postdoctoral associates, graduate and undergraduate students with scientists from the DOE national laboratories where unique scientific and technical capabilities are present. The program supports the most meritorious proposals based on merit and peer review. To maximize the effectiveness of the program, the development of the science and engineering resources component is closely coupled with the research part of the program.

#### Any solvency deficit applies just as much to the aff – the EPSCoR Fusion Energy Sciences program funds ITER and all 3 tokamaks in the status quo

US DOE, 3-23-2011, “Fusion Energy Sciences (FES) – FES Facilities,” http://science.energy.gov/fes/facilities/

FES Facilities ITER (Latin for "the way") is a critical step between today’s studies of plasma physics and tomorrow’s fusion power plants producing electricity and hydrogen. An unprecedented international collaboration of scientists and engineers led to the design of this advanced physics experiment. Project partners are China, the European Union, India, Japan, Russia, South Korea, and the United States. ITER is technically ready to start construction, with experimental operations planned to begin in approximately 10 years. The site selected for the project is Cadarache, in southeastern France. ITER is expected to operate for 20 years, and to demonstrate production of at least 10 times the power used to heat the fusion fuel. For more information, please visit the websites of the U.S. ITER Project Officeand the ITER International Organization. The DIII-D tokamak operated by General Atomics in San Diego, CA is the largest magnetic fusion facility in the United States. DIII-D provides for considerable experimental flexibility and has extensive diagnostic instrumentation to measure the properties of high temperature plasmas. It also has unique capabilities to shape the plasma and provide feedback control of error fields that, in turn, affect particle transport and the stability of the plasma. In addition, DIII-D has been a major contributor to the world fusion program over the past decade in the areas of plasma turbulence, energy transport, boundary layer physics, and electron-cyclotron plasma heating and current drive. For more information, please click here. NSTX (the National Spherical Torus Experiment) is an innovative magnetic fusion device that was constructed by the Princeton Plasma Physics Laboratory (PPPL) in collaboration with the Oak Ridge National Laboratory, Columbia University, and the University of Washington at Seattle. It produces a plasma that is shaped like a sphere with a hole through its center, different from the "donut" shaped plasmas of conventional tokamaks. This configuration may have several advantages, a major one being the ability to confine a higher plasma pressure for a given magnetic field strength, which could enable the development of smaller, more economical fusion reactors. For more information, please click here. Alcator C-Mod at the Massachusetts Institute of Technology is the only tokamak in the world operating at and above the ITER design magnetic field and plasma densities, and it produces the highest pressure tokamak plasma in the world, approaching pressures expected in ITER. It is also unique in the use of all-metal walls to accommodate high power densities. Because of these characteristics, C-Mod is particularly well suited to examine plasma regimes that are highly relevant to ITER. The facility has made significant contributions to the world fusion program in the areas of plasma heating and current drive, stability, and confinement in high field tokamaks. For more information, please click here.

#### EPSCoR solves R&D and STEM

Christopher Lawson, Physics Prof @ Alabama, Exec. Dir. Alabama EPSCoR, 3-22-2012, CQ Testimony, ln

EPSCoR provides a mechanism to address those geographical imbalances. The program has been a huge success, investments have generated growth in state economies, attracted students into STEM fields, and created a broader base of high tech research expertise. NSF EPSCoR provides co planning meritorious proposed research and EPSCoR states and by infrastructure improvement awards to support academic research infrastructure and cyber infrastructure improvements in areas critical to the states' high tech economic development. NSF EPSCoR infrastructure funding matched by the states to leverage the federal investments. In my home state of Alabama, NSF EPSCoR funding is generated revolutionary advancements in science and engineering that have led to new business growth and high-paying jobs. NSF EPSCoR funding has been vital for advancing students to STEM ideas and research and introduce more than 2,000 students across Alabama to these science and technology and engineering concepts in one year alone. In a time when the President and Congress are working to engage students in STEM fields, it only makes sense to build on this success and continue to fund the NSF EPSCoR program at the Administration's budget request of $158 million. This will ensure that states such as Alabama continue to develop a robust research infrastructure so that they can compete for Federal research grants and continue to prepare a skilled, high tech workforce capable of delivering innovation in the future. Congress designed NASA EPSCoR to increase the research capacity of states with limited NASA R&D funding in areas related to NASA's mission. NASA EPSCoR funds both grants for Research Infrastructure Development and to seed research in critical research areas. Together, they attract students into STEM fields, allow more states to participate in NASA research enterprise, and provide opportunities for high tech economic growth in local communities nationwide. Like the NSF EPSCoR program, states help increase the Federal benefit by matching funds. Funding the NASA EPSCoR at the congressionally authorized level of $25 million is truly a win-win program for the states and our nation. At a time of economic challenges and tight budgets, programs like EPSCoR that seek a broader distribution in research funding makes solid fiscal sense. Limiting these resources to a few states and institutions is self defeating for our nation in the long run. NSF and NASA EPSCoR help all states to benefit from taxpayer investments and federal research and development, and they generate long term growth and a skilled workforce for the future. NSF and NASA EPSCoR stretch limited federal dollars further through state matching. Not only do states benefit from increased research capacity and growth, but our nation benefits from the rich and diverse pool of talent that our entire country can provide. In a time that 33 percent of all bachelors degree in China are in engineering, compared to 4.5 percent in the US, if we are going to remain globally competitive, instead of restricting ourselves to a few states and institutions, we need to be training and harnessing all of our nation's brainpower, and EPSCoR is working to achieve this goal.

#### DOE EPSCoR boosts US leadership and STEM workers

New Mexico EPSCoR, 2009, “DOE EPSCoR State and National Laboratory Partnership Program,” http://nmepscor.org/content/doe-epscor-state-and-national-laboratory-partnership-program

The Department of Energy's Experimental Program to Stimulate Competitive Research (DOE EPSCoR) is a federal-state partnership program designed to help the Department lead the world in meeting today's and tomorrow's energy needs through increased competition in energy-related research and development across the entire nation. The mission of DOE EPSCoR is to support basic research activities spanning the broad range of science and technology programs within DOE, and to increase the number of scientists and engineers in energy-related areas.

#### States can empirically fund energy research at national labs

Kay Corditz, 3-15-2010, “State Grant to Fund Advanced Battery Materials Partnership,” Brookhaven National Lab, http://www.bnl.gov/newsroom/news.php?a=21663

Funded by a $550,000 grant from the New York State Energy Research and Development Authority (NYSERDA), Brookhaven National Laboratory will partner with battery materials researchers from leading New York State universities to explore new chemistries and synthesize new materials for long-lasting batteries. The Laboratory will partner with SUNY’s University at Buffalo and Binghamton University on three projects to develop improved batteries for use in stationary grid-scale energy storage applications, including lithium-air, lithium-ion, and lithium-titanate batteries. The Brookhaven effort, led by Brookhaven materials scientist Jason Graetz, will focus on the development and synthesis of new materials, and application of advanced experimental techniques to characterize these materials using Brookhaven’s National Synchrotron Light Source (NSLS). The SUNY-Buffalo lead is Esther S. Takeuchi, and the Binghamton University lead is M. Stanley Whittingham. “This partnership among Brookhaven and two leading SUNY schools will capitalize on the research strengths of each, and our materials characterization capabilities will be a key element of the project,” said James Misewich, Brookhaven’s Associate Laboratory Director for Basic Energy Sciences. The collaboration grew out of a workshop sponsored by Brookhaven and Stony Brook University’s Joint Photon Sciences Institute (JPSI) last spring. Chi-Chang Kao, NSLS Chair and Founding Director of JPSI, coordinated the collaboration’s successful proposal. “It is an excellent example of how universities, industries, and national laboratories can work together to address an important scientific challenge with major societal impact,” said Kao. Said Graetz: “NYSERDA’s funding of this program will give us the opportunity to expand our energy storage research to large-scale stationary energy storage systems, which are crucial for integrating intermittent renewable generation sources such as wind and solar. In the past, the vast majority of battery research investment has focused on the important problem of electrical energy storage for transportation. However, a different set of criteria exist for stationary systems, and this project will allow us to explore new electrode materials, like lithium titanate, that meet those criteria.”

#### DOE EPSCoR allows states to work with national labs

Timothy Fitzsimmons, PhD, 2012, “Department of Energy,” EPSCoR/IDEA Foundation, http://www.epscorideafoundation.org/about/agency/doe/

The Department of Energy’s Experimental Program to Stimulate Competitive Research (DOE EPSCoR) was established by Section 2203 of the Energy Policy Act of 1992 (P.L. 102-486). DOE EPSCoR enhances the capability of 25 eligible states and Puerto Rico to conduct sustainable and nationally competitive energy-related research, increase the number of competitive scientists and engineers in energy-related areas, and build beneficial relationships between designated states and territories and the 10 world-class laboratories managed by the Office of Science, leveraging DOE national user facilities and intellectual collaboration. The DOE EPSCoR effort to develop science and engineering research infrastructure and human resources enables the states to contribute to the current and future energy-related needs.

#### State grants can fund national lab projects

John Brandon, 10-5-2012, “Could EV car batteries be made from salt water?” Fox News, http://www.foxnews.com/leisure/2012/10/05/could-ev-car-batteries-be-made-from-salt-water/

A California company is hoping to supply 20% of the world’s lithium by 2020 with an ingenious plan to produce this material used in the batteries that power most electric cars. Simbol Materials says it wants to build a plant in the Salton Sea near Imperial Valley, California, to extract lithium from the salt water brine that flows up from geo-thermal power generators. The salt water extraction process was originally conceived at California’s Lawrence Livermore National Laboratory (LLNL) with funds from a state grant, while Argonne National Laboratory in Chicago adapted it to be used with geothermal fluids.

#### States can fund National Labs

YubaNet, 2-3-2012, “Local Water Suppliers collaborate with Lawrence Livermore National Laboratory,” http://yubanet.com/regional/Local-Water-Suppliers-collaborate-with-Lawrence-Livermore-National-Laboratory-on-Martis-Valley-Groundwater-Model-and-Management-Plan-Effort.php#.UG-N4U0xByQ

The Truckee Donner Public Utility District (TDPUD), Northstar Community Services District (NSCSD) and Placer County Water Agency (PCWA) continue its partnership in developing a groundwater management plan and groundwater model for the Martis Valley basin. This effort recently gained further technical resources with the addition of a Lawrence Livermore National Laboratory (LLNL) study of climate change impacts to recharge and groundwater quality in the Martis Valley. Previous studies have indicated that some water in the Martis Valley groundwater basin may be in excess of 1,000 years old. And in the case of groundwater, older seems better as the age of water indicates how fast it is moving, how it is being replenished in the basin, and the outlook for long-term sustainable supplies. The LLNL water aging study will help further the ongoing efforts to determine how the aquifer functions. The LLNL study is being funded by the State of California Groundwater Ambient Monitoring & Assessment Special Studies Program. The results of the study will supplement and validate the Martis Valley groundwater model being prepared under a separate grant to the Desert Research Institute (DRI) by the Bureau of Reclamation.

#### National labs work in partnership with states on energy research – ORNL proves

Wikipedia, 2012, “Oak Ridge National Laboratory,” http://en.wikipedia.org/wiki/Oak\_Ridge\_National\_Laboratory

Oak Ridge National Laboratory (ORNL) is a multiprogram science and technology national laboratory managed for the United States Department of Energy (DOE) by UT-Battelle. ORNL is the largest science and energy national laboratory in the Department of Energy system.[1] ORNL is located in Oak Ridge, Tennessee, near Knoxville. ORNL's scientific programs focus on materials, neutron science, energy, high-performance computing, systems biology and national security. ORNL partners with the state of Tennessee, universities and industries to solve challenges in energy, advanced materials, manufacturing, security and physics.

#### LLNL is operated by the state of California

Wikipedia, 2012, “Lawrence Livermore National Laboratory,” http://en.wikipedia.org/wiki/Lawrence\_Livermore\_National\_Laboratory#Budget

Lawrence Livermore National Laboratory (LLNL) is a Federally Funded Research and Development Center (FFRDC) founded by the University of California in 1952. It is primarily funded by the United States Department of Energy (DOE) and managed and operated by Lawrence Livermore National Security, LLC (LLNS), a partnership of the University of California, Bechtel, Babcock & Wilcox, URS, and Battelle Memorial Institute in affiliation with the Texas A&M University System. On October 1, 2007 LLNS assumed management of LLNL from the University of California, which had exclusively managed and operated the Laboratory since its inception 55 years before. The laboratory was honored in 2012 by having the synthetic chemical element livermorium named after it.

#### Lawrence Livermore does work for state agencies

Wikipedia, 2012, “Lawrence Livermore National Laboratory,” http://en.wikipedia.org/wiki/Lawrence\_Livermore\_National\_Laboratory#Budget

LLNL's principal sponsor is the Department of Energy/National Nuclear Security Administration (DOE/NNSA) Office of Defense Programs, which supports its stockpile stewardship and advanced scientific computing programs. Funding to support LLNL's global security and homeland security work comes from the DOE/NNSA Office of Defense Nuclear Nonproliferation as well as the Department of Homeland Security. LLNL also receives funding from DOE’s Office of Science, Office of Civilian Radioactive Waste Management, and Office of Nuclear Energy. In addition, LLNL conducts work-for-others research and development for various Defense Department sponsors, other federal agencies, including NASA, Nuclear Regulatory Commission (NRC), National Institutes of Health, and Environmental Protection Agency, a number of California State agencies, and private industry.

# T R&D

#### R&D isn’t T

#### Violates Energy production---it’s pre-production

Koplow 4 Doug Koplow is the founder of Earth Track in Cambridge, MA. He has worked on natural resource subsidy issues for 20 years, primarily in the energy sector "Subsidies to Energy Industries" Encyclopedia of Energy Vol 5 2004www.earthtrack.net/files/Energy%20Encyclopedia,%20wv.pdf

3. SUBSIDIES THROUGH THE FUEL CYCLE

Because no two fuel cycles are exactly the same, examining subsidies through the context of a generic fuel cycle is instructive in providing an overall framework from which to understand how common subsidization policies work. Subsidies are grouped into preproduction (e.g., R&D, resource location), production (e.g., extraction, conversion/generation, distribution, accident risks), consumption, postproduction (e.g., decommissioning, reclamation), and externalities (e.g., energy security, environmental, health and safety).

3.1 Preproduction

Preproduction activities include research into new technologies, improving existing technologies, and market assessments to identify the location and quality of energy resources.

3.1.1 Research and Development

R&D subsidies to energy are common worldwide, generally through government-funded research or tax breaks. Proponents of R&D subsidies argue that because a portion of the financial returns from successful innovations cannot be captured by the innovator, the private sector will spend less than is appropriate given the aggregate returns to society. Empirical data assembled by Margolis and Kammen supported this claim, suggesting average social returns on R&D of 50% versus private returns of only 20 to 30%.

However, the general concept masks several potential concerns regarding energy R&D. First, ideas near commercialization have much lower spillover than does basic research, making subsidies harder to justify. Second, politics is often an important factor in R&D choices, especially regarding how the research plans are structured and the support for follow-on funding for existing projects.

Allocation bias is also a concern. Historical data on energy R&D (Table III) demonstrate that R&D spending has heavily favored nuclear and fossil energy across many countries. Although efficiency, renewables, and conservation have captured a higher share of public funds during recent years, the overall support remains skewed to a degree that may well have influenced the relative competitiveness of energy technologies. Extensive public support for energy R&D may also reduce the incentive for firms to invest themselves. U.S. company spending on R&D for the petroleum refining and extraction sector was roughly one-third the multi-industry average during the 1956-1998 period based on survey data from the U.S. National Science Foundation. For the electric, gas, and sanitary services sector, the value was one-twentieth, albeit during the more limited 1995-1998 period.

3.1.2 Resource Location

Governments frequently conduct surveys to identify the location and composition of energy resources. Although these have addressed wind or geothermal resources on occasion, they most often involve oil and gas. Plant siting is another area where public funds are used, primarily to assess risks from natural disasters such as earthquakes for large hydroelectric or nuclear installations. Survey information can be important to evaluate energy security risks and to support mineral leasing auctions, especially when bidders do not operate competitively. However, costs should be offset from lease sale revenues when evaluating the public return on these sales. Similarly, the costs of siting studies should be recovered from the beneficiary industries.

3.2 Production

Energy production includes all stages from the point of resource location through distribution to the final consumers. Specific items examined here include resource extraction, resource conversion (including electricity), the various distribution links to bring the energy resource to the point of final use, and accident risks.

#### Violates incentives---they have to provide money to the private sector---r&D is distinct

CCES 9 Center for Climate and Energy Solutions (also called c2es) “Buildings and Emissions: Making the Connection” No specific date dated, most recent citation from 2009 www.c2es.org/technology/overview/buildings

Policy Options to Promote Climate-Friendly Buildings

The mosaic of current policies affecting the building sector is complex and dynamic involving voluntary and mandatory programs implemented at all levels of government, from local to federal. Government efforts to reduce the overall environmental impact of buildings have resulted in numerous innovative policies at the state and local levels. Non-governmental organizations, utilities, and other private actors also play a role in shaping GHG emissions from buildings through third-party “green building” certification, energy efficiency programs, and other efforts.

Various taxonomies have been used to describe the policy instruments that govern buildings, typically distinguishing between regulations, financial incentives, information and education, management of government energy use, and subsidies for research and development (R&D). Each of these is broadly described below.

-Standards and codes

Regulatory policies include building and zoning codes, appliance energy efficiency standards, clean energy portfolio standards, and electricity interconnection standards for distributed generation equipment. Building codes can require a minimum level of energy efficiency for new buildings, thus mandating reductions at the construction stage, where there is the most opportunity to integrate efficiency measures. Zoning codes can provide incentives to developers to achieve higher performance. Because of regional differences in such factors as climatic conditions and building practices, and because building and zoning codes are implemented by states and localities, the codes vary considerably across the country. While substantial progress has been made over the past decade, opportunities to strengthen code requirements and compliance remain.

Appliance and equipment standards require minimum efficiencies to be met by all regulated products sold; they thereby eliminate the least efficient products from the market. Federal standards exist for many residential and commercial appliances, and several states have implemented standards for appliances not covered by federal standards (see Appliance Efficiency Standards).

-Financial incentives

Financial incentives can best induce energy-efficient behavior where relatively few barriers limit information and decision-making opportunities (e.g., in owner-occupied buildings). Financial incentives include tax credits, rebates, low-interest loans, energy-efficient mortgages, and innovative financing, all of which address the barrier of first costs. Many utilities also offer individual incentive programs, because reducing demand, especially peak demand, can enhance the utility’s system-wide performance.

-Information and education

While many businesses and homeowners express interest in making energy-efficiency improvements for their own buildings and homes, they often do not know which products or services to ask for, who supplies them in their areas, or whether the energy savings realized will live up to claims. Requiring providers to furnish good information to consumers on the performance of appliances, equipment and even entire buildings is a powerful tool for promoting energy efficiency by enabling intelligent consumer choices.

-Lead-by-example programs

A variety of mechanisms are available to ensure that government agencies lead by example in the effort to build and manage more energy-efficient buildings and reduce GHG emissions. For example, several cities and states, and federal agencies (including the General Services Administration), have mandated LEED or LEED-equivalent certification for public buildings, and the Energy Independence and Security Act of 2007 includes provisions for reduced energy use and energy efficiency improvements in federal buildings.

-Research and development (R&D)

In the long run, the opportunities for a low-greenhouse gas energy future depend critically on new and emerging technologies. Some technological improvements are incremental and have a high probability of commercial introduction over the next decade (such as low-cost compact fluorescents). Other technology advances will require considerable R&D before they can become commercially feasible (such as solid-state lighting). The fragmented and highly competitive market structure of the building sector and the small size of most building companies discourage private R&D, on both individual components and the interactive performance of components in whole buildings.

Building Technologies Center. The Oak Ridge National Laboratory’s Buildings Technology Center was established by the U.S. Department of Energy (DOE) and performs research into issues including heating and cooling equipment, thermal engineering, weatherization, building design and performance, envelope systems and materials, and power systems.

Emerging Technologies. This U.S. DOE-sponsored program develops technology that would reduce energy use in residential and commercial buildings by 60-70 percent. Technologies are in fields including solid-state lighting, space conditioning and refrigeration, building envelopes, and analysis tools and design strategies that would facilitate the development of energy efficient buildings through software and computer-based building analysis.

#### At best they’re indirect which means they’re FX---this cards draws a predictable limit and brightline

GSWH 11 Global Solar Water Heating Market Transformation and Strengthening Initiative, This publication is the result of a joint effort from the following contributors: The European Solar ThermalIndustry Federation (ESTIF), the United Nations Environment Program (UNEP) through its Division ofTechnology, Industry and Economics (DTIE) and the Global Environment Fund (GEF). "Guidelines for policy and framework conditions" No Specific Date Cited, Most Recent Citations From 2011 www.solarthermalworld.org/files/policy\_framework.pdf?download

8 Non financial incentives for solar thermal

Non Financial Incentives include all public policies that support the creation of public good, even when providing an indirect financial advantage to the solar thermal market. For instance: an awareness raising campaign financed from public money or a programme to subsidise craftsmen training or R&D, etc. Obviously, all these instruments create an indirect financial advantage for companies involved in the market and this benefit is then passed on to the users.

8.1 Solar thermal obligations

• What is a Solar Thermal Obligation (STO)?

STO are legal provisions making mandatory the installation of solar thermal systems in buildings. The obligation mainly applies to new buildings and those undergoing major refurbishment. The owner must then install a solar thermal system meeting legal requirements. Most of the existing STOs are connected to national or regional energy laws and implemented through the municipal building codes. A growing number of European municipalities, regions and countries have adopted solar thermal obligations. Already today, more than 150 million people live in regions covered by a STO.

• Benefits

A major benefit of solar thermal ordinances is their effectiveness combined with low costs and limited administrative overheads for public authorities. As part of the building permit process, the inspection with regard to the renewable energy requirement is simple and thus does not strain public finances.

The introduction of a solar thermal ordinance prevents market fluctuation caused by inconsistent incentive programmes. It provides a stable planning environment for market actors and investors, encouraging local economic growth and creating new jobs in this sector.

• Unwanted effects and flanking measures

Solar obligations have a profound effect on the solar thermal market's structure. Therefore, to maximise their benefits, they require flanking measures.

In a market where solar thermal becomes mandatory, promoters and customers will tend to question the solar systems' operation and react more negatively than in a voluntary market.

Ends users and the construction sector will often go for the cheapest possible solution, while building owners will try to circumvent the obligation through exemptions. The real impact of any regulation strongly depends on its technical parameters and control procedures.

It is vital, therefore, that the regulations adopted ensure state-of-the-art quality assurance, products, planning, installation and maintenance of the system, guaranteeing the same high level of customer satisfaction as in the current voluntary market. Poor performance of "mandatory" systems would not only undermine public acceptance of the obligation, but also, possibly, of the solar thermal technology in general.

Israel, 30 years of experience with solar thermal ordinances

Thirty years ago, Israel was the first country to pass legislation on solar thermal installations. With the second oil crisis at the end of the 1970s, members of parliament examined ways to make their country less dependent on imported energy. The result was a law, which made solar water heaters mandatory in new buildings such as residential housing, hotels, guest houses and old people's homes up to 27 metres high. The legislation entered into force in 1980.

Nowadays over 80% of Israel's households get their domestic hot water from solar rooftop heaters. A typical domestic unit consists of a 150 litre insulated storage tank and a 2 m2 collector. These hot water heaters save the country the need to import about 4% of its energy needs, and replace about 9% of the electricity production.

The law has now become redundant. More than 90% of the solar systems are installed on a voluntary basis, i.e. they are installed in existing buildings, or the systems are larger than required by the obligation.

Source: PROSTO project

8.2 Quality, standards and certification policy

The need and methods to ensure quality in the market are so important for solar thermal, that a complete guide is dedicated to this topic in the framework of the GSWH project.

Why do we need standards?

The objective of standardisation and quality assurance is to guarantee product safety and quality, as well as lower prices. At every stage of market development, the capacity of solar thermal systems to deliver the expected level of performance is a key factor. In the early stage of the market, quality issues have had long lasting devastating effects. The existence of standards is the cornerstone of quality assurance.

The actors of standards and certification

Standardisation and quality for solar thermal should be the result of a joint effort from public authorities (market regulation), the industry, the technical community and, when they are adequately organised, the end users.

• Public authorities have a key role to play in imposing stringent quality requirements and in initiating, facilitating and controlling the standardisation process.

• The industry must provide product and technical expertise. It must understand the benefits

of ensuring standardised level of quality. Public authorities should guarantee that the standards are neutral and do not favour certain products or companies.

• I t is essential to be able to rely on independent testing facilities and certification bodies. If the private initiative is not adequate, then public authorities should actively support the creation of such structures.

• Consumer organisations can bring a useful contribution to the process. Quality installation for quality products

Solar thermal products usually need to be installed. This operation can be simple to the extent that it might not require the intervention of a specialist, e.g. some termosiphons systems, but on average it should be undertaken by a professional. To guarantee performance, the quality of the installation is as important as the quality of the system. Minimum requirements in terms of training and qualification of installers should be implemented in parallel with product requirements. Public authorities should regulate in the absence of initiatives from trade and industry.

Performance and quality for a sustainable market

Performance and quality measures do not constitute flanking or accompanying measures. Framework and regulations should be developed, and relevant bodies involved from the beginning, even if this has to be imposed to the market to some extent.

The market tends to be shortsighted; industry will naturally prefer to avoid costs and regulations. The benefits of high quality regulations and market surveillance will emerge eventually and guarantee a sustainable market. Public authorities should ensure that incentives and promotion endorse quality.

8.3 Research and development, demonstration projects (definition, importance, recommendations, examples)

Solar thermal is a simple and mature technology; however, research and development are necessary to guarantee that performance will continue to improve and costs to decrease. Research and development can also contribute to adapt the technical features of products to local needs, e.g. improve water tightness in tropical areas, resistance to frost in mountainous regions. Research and development cannot proceed only from public initiative but, through public universities and public research centres, public authorities have a leading role to play.

Building up centres of technical excellence

Applied research, engineering education, development, product innovation, standardisation, testing are closely linked and there are a lot of synergies between those fields. Most of the time, the same persons will be likely to teach, test and lead research projects. A sustainable market will always require relying on a high level engineering community. Public authorities should encourage the creation of multi disciplinary technical facilities for solar thermal engineering and encourage or even impose on the industry to participate in this effort.

Importance of demonstration projects

For both promotion and technical (experimental) reasons demonstrations projects are extremely useful. Projects implementing technologies that are not market ready, but which have an important potential, will allow testing and improving the solution, gather data, monitor functioning and finally demonstrate the feasibility to the general public and the industry in order to prepare the introduction on the market.

9 Financial incentives (direct, indirect, tax incentives, low interest loans): definition, importance, recommendations, examples

Financial Incentives include any public policy giving a financial advantage to those who install a solar thermal system or that use solar thermal energy.

#### Voting issue for limits and ground---creates an unmanageable topic of new speculative tech via government research that doesn’t interact with the market

**Dyson et al, 3** - International Union for Conservation of Nature and Natural Resources (Megan, Flow: The Essentials of Environmental Flows, p. 67-68)

Understanding of the term ‘incentives’ varies and economists have produced numerous typologies. A brief characterization of incentives is therefore warranted. First, the term is understood by economists as incorporating both positive and negative aspects, for example a tax that leads a consumer to give up an activity that is an incentive, not a disincentive or negative incentive. Second, although incentives are also construed purely in economic terms, incentives refer to more than just financial rewards and penalties. They are the “positive and negative changes in outcomes that individuals perceive as likely to result from particular actions taken within a set of rules in a particular physical and social context.”80 Third, it is possible to distinguish between direct and indirect incentives, with direct incentives referring to **financial** or other inducements and indirect incentives referring to both variable and **enabling incentives**.81 Finally, incentives of any kind may be called ‘perverse’ where they work against their purported aims or have significant adverse side effects. ¶ Direct incentives lead people, groups and organisations to take particular action or inaction. In the case of environmental flows these are the same as the net gains and losses that different stakeholders experience. The key challenge is to ensure that the incentives are consistent with the achievement of environmental flows. This implies the need to compensate those that incur additional costs by providing them with the appropriate payment or other compensation. Thus, farmers asked to give up irrigation water to which they have an established property or use right are likely to require a payment for ceding this right. The question, of course, is how to obtain the financing necessary to cover the costs of developing such transactions and the transaction itself. ¶ Variable incentives are policy instruments that affect the relative costs and benefits of different economic activities. As such, they can be manipulated to affect the behaviour of the producer or consumer. For example, a government subsidy on farm inputs will increase the relative profitability of agricultural products, hence probably increasing the demand for irrigation water. Variable incentives therefore have the ability to greatly increase or reduce the demand for out-of-stream, as well as in-stream, uses of water. The number of these incentives within the realm of economic and fiscal policy is practically **limitless.**

# LFTR CP

## 1NC

#### The United States Federal Government should substantially augment funding for production of liquid fluoride thorium reactors in the United States.

#### The United States Federal Government should eliminate all US financial support for fusion research.

#### The United States Federal Government should publically declare that it will continue to fund ITER development

#### LFTR solve every aff advantage and would be streamlined – can’t melt down, solve prolif, are cost competitive, solve waste and desal and can be built as SMRs

Kirk Sorenson, Co-founder and Chief Technologist at Flibe Energy, chief nuclear technologist at [Teledyne Brown Engineering](http://www.linkedin.com/company/teledyne-brown-engineering?trk=ppro_cprof), aerospace engineer at NASA, 2009, <http://energyfromthorium.com/lftradsrisks.html>

Some of the many advantages of the LFTR system over other nuclear reactor designs are outlined below. While LWRs can produce U233 from thorium, they will not provide the various advantages outlined below, because of their use of thorium in solid form. It is the unique combination of the thorium cycle and the liquid fluoride reactor that grants all of the following advantages only from the LFTR system.¶ ¶ Safety--LFTRs are designed to take advantage of the physics of the thorium cycle for optimum safety. The fluid in the core is not pressurized, thus eliminating the driving force of radiation release in conventional approaches. The LFTR reactor cannot melt down because of a runaway reaction or other nuclear reactivity accidents (such as at Chernobyl), because any increase in the reactor's operating temperature results in a reduction of reactor power, thus stabilizing the reactor without the need for human intervention. Further, the reactor is designed with a salt plug drain in the bottom of the core vessel. If the fluid gets too hot or for any other reason including power failures, the plug naturally melts, and the fluid dumps into a passively cooled containment vessel where decay heat is removed. This feature prevents any Three Mile Island-type accidents or radiation releases due to accident or sabotage and provides a convenient means to shut down and restart the system quickly and easily.¶ Proliferation Resistance--For all practical purposes, U233 is worthless as a nuclear weapons material, and indeed no nation has attempted to weaponize U233 because of the abundance of difficulties. U233 is considered an unsuitable choice for nuclear weapons material because whenever U233 is generated, uranium-232 (U232) contamination inevitably occurs. U232 rapidly decays into other elements, including thallium-208, a hard-gamma-ray emitter whose signature is easily detectable. The hard gamma rays from thallium-208 cause ionization of materials destroying the explosives and electronics of a nuclear weapon, and heavy lead shielding is required to protect personnel assembling the warhead. It is possible to generate U233 with little U232 contamination using specialized reactors (such as at the Hanford Site), but not with an LFTR. Any attempt to increase production of U233 in an LFTR reactor will generate U232 contamination and any attempt to steal quantities of U233 results in the reactor shutting down.¶ Energy Production--Because nearly all of the thorium is used up in an LFTR (versus only about 0.7% of uranium mined for an LWR), the reactor achieves high energy production per metric ton of fuel ore, on the order of 300 times the output of a typical uranium LWR. The LFTR allows much higher operating temperatures than does a typical LWR therefore a higher thermodynamic efficiency. The turbine system believed best suited for its operation is a triple-reheat closed-cycle helium turbine system, which should convert 50% of the reactor heat into electricity compared to today's steam cycle (~25% to 33%). This efficiency gain translates to about 4.11 million barrels of crude oil equivalent per year more than that generated by a steam system. Capital costs are lower due to smaller reactor & turbo-machinery size, low reactor pressures and minimal redundant safety systems. The greater energy production capability of LFTRs means we estimate the cost for electricity from a LFTR plant could be 25% to over 50% less than that from a LWR.¶ Waste--In theory, LFTRs would produce far less waste along their entire process chain, from ore extraction to nuclear waste storage, than LWRs. A LFTR power plant would generate 4,000 times less mining waste (solids and liquids of similar character to those in uranium mining) and would generate 1,000 to 10,000 times less nuclear waste than an LWR. Additionally, because LFTR burns all of its nuclear fuel, the majority of the waste products (83%) are safe within 10 years, and the remaining waste products (17%) need to be stored in geological isolation for only about 300 years (compared to 10,000 years or more for LWR waste). Additionally, the LFTR can be used to "burn down" waste from an LWR (nearly the entirety of the United States' nuclear waste stockpile) into the standard waste products of an LFTR, so long-term storage of nuclear waste would no longer be needed.¶ Supply--Thorium is abundant in the Earth's crust. It is the 36th most plentiful element in the crust--four times as common as uranium and 5,000 times as plentiful as gold. According to the U.S. Geological Survey's 2006 Mineral Yearbook, the United States is estimated to have 300,000 tons of thorium reserves (about 20% of the world's supply), more than half of which is easily extractable. Considering only the readily accessible portion, this national resource translates to nearly 1 trillion barrels of crude oil equivalent--five times the entire oil reserves of Saudi Arabia. In addition to the naturally occurring reserves, the United States currently has 3,200 metric tons of processed thorium nitrate buried in the Nevada desert. That supply is roughly equivalent to 21 billion barrels of crude oil equivalent when used in an LFTR with only minimal processing effort.¶ Secondary Products--Because an LFTR is so energy dense, the electricity and excess heat from the reactor can be used to fuel other industries beyond electricity production, including economical desalinization of water, cracking of hydrogen from water or hydrocarbons, generation of ammonia for fertilizer and fuel cells, and extraction of hydrocarbons from oil shale and tar sands. Additionally, the nuclear waste products from the LFTR include stable rhodium and ruthenium, rare elements needed in modern electronics; technetium-99, which offers great promise as a catalyst similar to platinum; iodine-131 and cesium-137 for medical applications; strontium-90 for radioisotope power; and xenon, used in commercial products and industrial processes. The Risks While LFTRs offer much promise, several economic and engineering issues need to be addressed before this technology can become a reality. Thorium as a Fuel--Thorium has never actually been continually processed for fuel in a fully operational liquid fluoride reactor. The MSRE used U233 as a fuel, but the U233 was generated in another reactor. A follow-on reactor design was planned to do the full-system tests, which the MSRE was too cost-constrained to perform, but it was never funded. A prototype reactor based on the ORNL design work would need to be built and the continuous thorium cycle processing validated as the fuel source in an operational LFTR. Turbine System--The gas turbo-machinery is similar engineering to the well-developed open-cycle turbine (e.g., jet aircraft engine). However, this kind of closed-cycle electric generation system has never been built. A new triple-reheat closed-cycle Brayton system would need to be built and tested along with the LFTR. However, this is a minimal engineering risk in obtaining the overall efficiency of the electricity generation system. If the close cycle turbine system proves not to be economically viable, a steam system can be used. Cost of Thorium--The price of thorium ore is difficult to quantify. On one hand, some will argue that it is expensive, citing the lack of demand and the consequently limited market supply. On the other hand, the case can be made that thorium is nearly worthless in light of the U.S. government's decision to essentially "throw away" 3,200 metric tons of processed thorium by burying it in the Nevada desert. We cannot predict how the price of thorium would be affected if the world's thorium reserves were exploited for use in LFTRs. However, thorium does not incur a cost of enrichment as uranium does, mostly due to the fact that natural thorium occurs only in one isotope. We believe that if the world's thorium supplies were exploited for energy, its price would drop to be comparable to--or even lower than--current uranium ore prices. Cost of Thorium Reactors--Even though a full-scale LFTR has never been built, we expect the lifecycle cost of thorium reactors could be at least 30% to 50% less than equivalent-power uranium-based LWRs. Nevertheless, the engineering, fabrication and licensing of any energy-dense endeavourer is never certain and subject to many outside factors. Because of the various advantages afforded by the LFTR technology, we expect there will be a reduced regulatory burden, which would lessen costs and accelerate startups. For full-scale construction of LFTRs, factory-built modular construction can be used to provide scalable reactors from 100-kilowatt to multi-gigawatt production. This flexibility in site location eliminates the largest risk facing new U.S. commercial power plants today. Further, LFTRs have operational cost advantages over both types of reactors currently licensed. Unlike pressurized water reactors, LFTRs will not have to be shut down for extensive periods for refueling. Unlike boiling water reactors, LFTRs do not radioactively contaminate the turbines used for electrical generation, which should translate into significantly reduced operational and maintenance costs for this portion of the power plant and reduced amounts of low-level waste for end-of-life disposal.

# Solvency

#### Fusion is impossible and even the best case is 60 years – obstacles are enormous

Chris Rhodes, Sussex University, Physical Chemistry Professor, 6/10/2012, The Progress made in the Different Fields of Nuclear Fusion, oilprice.com/Alternative-Energy/Nuclear-Power/The-Progress-made-in-the-Different-Fields-of-Nuclear-Fusion.html

When I was about 10, I recall hearing that nuclear fusion power would become a reality "in about thirty years". The estimate has increased steadily since then, and now, forty odd years on, we hear that fusion power will come on-stream "in about fifty years". So, what is the real likelihood of fusion-based power stations coming to our aid in averting the imminent energy crisis? Getting two nuclei to fuse is not easy, since both carry a positive charge and hence their natural propensity is to repel one another. Therefore, a lot of energy is required to force them together so that they can fuse. To achieve this, suitable conditions of extremely high temperature, comparable to those found in stars, must be met. A specific temperature must be reached in order for particular nuclei to fuse with one another. This is termed the "critical ignition temperature", and is around 400 million degrees centigrade for two deuterium nuclei to fuse, while a more modest 100 million degrees is sufficient for a deuterium nucleus to fuse with a tritium nucleus. For this reason, it is deuterium-tritium fusion that is most sought after, since it should be most easily achieved and sustained. One disadvantage of tritium is that it is radioactive and decays with a half-life of about 12 years, and consequently, it exists naturally in only negligible amounts. However, tritium may be "bred" from lithium using neutrons produced in an initial deuterium-tritium fusion. Ideally, the process would become self-sustaining, with lithium fuel being burned via conversion to tritium, which then fuses with deuterium, releasing more neutrons. While not unlimited, there are sufficient known resources of lithium to fire a global fusion programme for about a thousand years, mindful that there are many other uses for lithium, ranging for various types of battery to medication for schizophrenics. The supply would be effectively limitless if lithium could be extracted from the oceans. In a working scenario, some of the energy produced by fusion would be required to maintain the high temperature of the fuel such that the fusion process becomes continuous. At the temperature of around 100 - 300 million degrees, the deuterium/lithium/tritium mixture will exist in the form of a plasma, in which the nuclei are naked (having lost their initial atomic electron clouds) and are hence exposed to fuse with one another. The main difficulty which bedevils maintaining a working fusion reactor which might be used to fire a power station is containing the plasma, a process usually referred to as "confinement" and the process overall as “magnetic confinement fusion” (MCF). Essentially, the plasma is confined in a magnetic bottle, since its component charged nuclei and electrons tend to follow the field of magnetic force, which can be so arranged that the lines of force occupy a prescribed region and are thus centralised to a particular volume. However, the plasma is a "complex" system that readily becomes unstable and leaks away. Unlike a star, the plasma is highly rarefied (a low pressure gas), so that the proton-proton cycle that powers the sun could not be thus achieved on earth, as it is only the intensely high density of nuclei in the sun's core that allows the process to occur sustainably, and that the plasma is contained within its own gravitational mass, and isolated within the cold vacuum of space. In June 2005, the EU, France, Japan, South Korea, China and the U.S. agreed to spend $12 billion to build an experimental fusion apparatus (called ITER) by 2014. It is planned that ITER will function as a research instrument for the following 20 years, and the knowledge gained will provide the basis for building a more advanced research machine. After another 30 years, if all goes well, the first commercial fusion powered electricity might come on-stream. The Joint European Torus (JET) I attended a fascinating event recently - a Cafe' Scientifique meeting held in the town of Reading in South East England. I have also performed in this arena, talking about "What Happens When the Oil Runs Out?", which remains a pertinent question. This time it was the turn of Dr Chris Warrick from the Culham Centre for Fusion Energy based near Abingdon in Oxfordshire, which hosts both the MAST (Mega Amp Spherical Tokamak) and the better known JET (Joint European Torus) experiments. In the audience was a veteran engineer/physicist who had worked on the pioneering ZETA4 experiment in the late 1950s, from which neutrons were detected leading to what proved later to be false claims that fusion had occurred, their true source being different versions of the same instability processes that had beset earlier machines. Nonetheless, his comment was salient: "In the late 50s, we were told that fusion power was 20 years away and now, 50-odd years later it is maybe 60 years away." Indeed, JET has yet to produce a positive ratio of output power/input energy, and instability of the plasma is still a problem. Dr Warrick explained that while much of the plasma physics is now sorted-out, minor aberrations in the magnetic field allow some of the plasma to leak out, and if it touches the far colder walls of the confinement chamber, it simply "dies". In JET it is fusion of nuclei of the two hydrogen isotopes, deuterium and tritium that is being undertaken, a process that as noted earlier, requires a "temperature" of 100 million degrees. I say "temperature" because the plasma is a rarefied (very low pressure) gas, and hence the collisions between particles are not sufficiently rapid that the term means the same distribution of energy as occurs under conditions of thermal equilibrium. It is much the same as the temperatures that may be quoted for molecules in the atmospheric region known as the thermosphere which lies some 80 kilometres above the surface of the Earth. Here too, the atmosphere is highly rarefied and thus derived temperatures refer to translational motion of molecules and are more usefully expressed as velocities. However expressed, at 100 million degrees centigrade, the nuclei of tritium and deuterium have sufficient translational velocity (have enough energy) that they can overcome the mutual repulsion arising from their positive charges and come close enough that they are drawn together by attractive nuclear forces and fuse, releasing vast amounts of energy in the process. JET is not a small device, at 18 metres high, but bigger machines will be necessary before the technology is likely to give out more energy than it consumes. Despite the considerable volume of the chamber, it contains perhaps only one hundredth of a gram of gas, hence its very low pressure. There is another matter and that is how long the plasma and hence energy emission can be sustained. Presently it is fractions of a second but a serious "power station" would need to run for some hours. There is also the problem of getting useful energy from the plasma to convert into electricity even if the aforementioned and considerable problems can be overcome and a sustainable, large-scale plasma maintained. The plan is to surround the chamber with a "blanket" of lithium with pipes running through it and some heat-exchanger fluid passing through them. The heated fluid would then pass on its heat to water and drive a steam-turbine, in the time-honoured fashion used for fossil fuel fired and nuclear power plants. Now my understanding is that this would not be lithium metal but some oxide material. The heat would be delivered in the form of very high energy neutrons that would be slowed-down as they encounter lithium nuclei on passing through the blanket. In principle this is a very neat trick, since absorption of a neutron by a lithium nucleus converts it to tritium, which could be fed back into the plasma as a fuel. Unlike deuterium, tritium does not exist is nature, being radioactive with a half-life of about 12 years. However produced, either separately or in the blanket, lithium is the ultimate fuel source, not tritium per se. Deuterium does exist in nature but only to the extent of one part in about two thousand of ordinary hydrogen (protium) and hence the energy costs of its separation are not inconsiderable. The neutron flux produced by the plasma is very high, and to enhance the overall breeding efficiency of lithium to tritium the reactor would be surrounded with a “lithium” blanket about three feet thick. The intense neutron flux will render the material used to construct the reactor highly radioactive, to the extent that it would not be feasible for operators to enter its vicinity for routine maintenance. The radioactive material will need to be disposed of similarly to the requirements for nuclear waste generated by nuclear fission, and hence fusion is not as "clean" as is often claimed. Exposure to radiation of many potential materials necessary to make the reactor, blanket, and other components such as the heat-exchanger pipes would render them brittle, and so compromise their structural integrity. There is also the possibility that the lithium blanket around the reactor might be replaced by uranium, so enabling the option of breeding plutonium for use in nuclear weapons. Providing a fairly intense magnetic field to confine the plasma (maybe Tesla - similar to that in a hospital MRI scanner) needs power (dc not ac as switching the polarity of the field would cause the plasma to collapse) and large power-supply units containing a lot of metals including rare earths which are mined and processed using fossil fuels. The issue of rare earths is troublesome already, and whether enough of them can be recovered to meet existing planned wind and electric car projects is debatable, let alone that additional pressure should be placed upon an already fragile resource to build a first generation of fusion power stations. World supplies of lithium are also already stressed, and hence getting enough of it not only to make blankets for fusion reactors and tritium production but also for the millions-scale fleet of electric vehicles needed to divert our transportation energy demand away from oil is probably a bridge too far, unless we try getting it from seawater, which takes far more energy than mining lithium minerals. The engineering requirements too will be formidable, however, most likely forcing the need to confront problems as yet unknown, and even according to the most favourable predictions of the experts, fusion power is still 60 years away, if it will arrive at all. Given that the energy crisis will hit hard long before then, I suggest we look to more immediate solutions, mainly in terms of energy efficiency, for which there is ample scope. To quote again the ZETA veteran, "I wonder if maybe man is not intended to have nuclear fusion," and all in all, other than from solar energy I wonder if he is right. At any rate, garnering real electrical power from fusion is so far distant as to have no impact on the more immediately pressing fossil fuels crisis, particularly for oil and natural gas. Fusion Power is a long-range "holy grail" and part of the illusion that humankind can continue in perpetuity to use energy on the scale that it presently does. Efficiency and conservation are the only real means to attenuate the impending crisis in energy and resources.

#### Even if it’s theoretically possible, fusion can’t be commercialized – prefer our ev, it’s from the grandfather of fusion---also proves elections link

Robert L. Hirsch, PhD, former director of the US Fusion Energy Program with the Atomic Energy Commission, and part of basically every major energy and fusion institute in existence, 10-19-2012, “A Veteran of Fusion Science Proposes Narrowing the Field,” NYT, http://dotearth.blogs.nytimes.com/2012/10/19/a-veteran-of-fusion-science-proposes-narrowing-the-field/

Many outstanding people turned to the pursuit of fusion power. A number of fusion concepts emerged and were investigated. Soon it became painfully clear that practical fusion power would not happen quickly. First, we had to develop the science of plasma physics. After decades of effort, a great deal has been learned and accomplished, but a practical fusion power concept has not been forthcoming. Note that I said ”practical fusion power.” Unlike fire, fusion power has to compete against a number of other options. The word “practical” means that a fusion power system must be desirable, based on the realities of the society into which it will be introduced. An unfortunate problem today is that many people in fusion research believe that producing a fusion-something that simply works is the goal, but that is definitely wrong! Fusion power and fire are distinctly different. Let’s consider some specific criteria for practical fusion power. In 1994, the U.S. Electric Power Research Institute – EPRI – convened a panel of utility technologists to develop “Criteria for Practical Fusion Power Systems.” The result was a four-page folder that outlined “Three principal types of criteria:” Economics, Public Acceptance, and Regulatory Simplicity. The criteria are almost self-explanatory, but let me quote from the Economics Criteria: “To compensate for the higher economic risks associated with new technologies, fusion plants must have lower lifecycle costs than competing technologies available at the time of commercialization.” Details for the criteria are given in the report, which I commend to anyone motivated to help develop fusion power. Against these criteria, let’s consider tokamak fusion, the centerpiece of which is ITER – the International Thermonuclear Experimental Reactor – under construction in France. As we know, it’s an enormously large machine, which is generally considered to be a prototype of a practical fusion power plant. Comparing the ITER and the core of a comparable commercial fission reactor shows an enormous difference in size – a factor of 5-10 — ITER being huge by comparison to a fission reactor core. It is known in engineering and technology development that the cost of a finished machine or product is roughly proportional to the mass of the device. Eyeballing ITER compared to a fission reactor core, it’s obvious that an ITER-like machine is many times more massive. Yes, you can argue details, like the hollow bore of a tokamak, but the size of the huge superconducting magnets and their heavy support structures provides no relief. Bottom line – On the face of it, an ITER-like power system will be much more expensive than a comparable fission reactor, so I believe that tokamak fusion loses big-time on cost, independent of details. Next, consider the fact that deuterium-tritium fusion inherently emits copious neutrons, which will induce significant radioactivity in adjacent tokamak structural and moderating materials. Accordingly, a tokamak power system will become highly radioactive as soon as it begins to operate and, over time, radiation damage will render those same materials structurally weak, requiring replacement. In the U.S., as elsewhere in the world, we have a Nuclear Regulatory Commission, which will almost certainly be given the task of ensuring that the public is safe from mishaps associated with tokamak power system failures. Expected regulation will require all kinds of safety features, which will add further costs to tokamak power. While the character of the plasma in a tokamak power reactor will not likely represent a large energy-release safety issue, the superconducting magnets would contain a huge amount of stored energy. If those magnets were to go normal – lose their superconducting properties – the energy release would be very large. It can be argued that the probability of that happening will be small, but it will nevertheless not be zero, so the regulators will require safety features that will protect the public in a situation where the magnets go normal, releasing very large amounts of energy. Accordingly, it is virtually certain that the regulators will demand a containment building for a commercial tokamak reactor that will likely resemble what is currently required for fission reactors, so as to protect the public from normal-going superconducting magnet energy release. Because an ITER-like tokamak reactor is inherently so large, such a building will be extremely expensive, further increasing the costs of something that is already too expensive. Next, there’s the induced radioactivity in the structure and moderator of a tokamak power reactor. Some tokamak proponents contend that structure might be made out of an exotic material that will have low induced radioactivity. Maybe, but last I looked, such materials were very expensive and not in common use in the electric power industry. So if one were to decide to use such materials, there would be another boost to cost, along with an added difficulty for industry to deal with. No matter what materials are chosen, there will still be neutron-induced materials damage and large amounts of induced radioactivity. There will thus be remote operations required and large amounts of radioactive waste that will have to be handled and sent off site for cooling and maybe burial. That will be expensive and the public is not likely to be happy with large volumes of fusion-based radioactivity materials being transported around the country. Remember the criteria of public acceptance. I could go on with other downsides and showstoppers associated with tokamak fusion power, but I won’t. It is enough to say that tokamak fusion power has what I believe are insurmountable barriers to practicability and acceptability. By the way, my arguments assume that tokamak physics and technology works well and is reasonably simple, meaning that not many more components will have to be added to the system to allow it to operate on a steady basis for very long periods of time between the long shutdowns needed to change out radiation-damaged, radioactive materials. What I’ve just described is not a happy story. At some point, probably in a matter of years, a group of pragmatic power industry engineers will be convened to seriously scrutinize tokamak fusion, and they are virtually certain to declare that it cannot become a practical power system. That will certainly be a calamity for the people involved and for the cause of fusion power. Let’s review what I’ve said. First, we have to recognize that practical fusion power must measure up to or be superior to the competition in the electric power industry. Second, it is virtually certain that tokamak fusion as represented by ITER will not be practical.

#### Money doesn’t change the calculus – more fusion research doesn’t speed up commercialization

Hank Campbell, 10-15-2012, “Fusion In A Coffee Mug,” Science 2.0, http://www.science20.com/science\_20/fusion\_coffee\_mug-95126

They are basically correct about one part. Fusion is not ready yet. It may be another 50 years before it is ready. But, as much as it will send some in the broad audience into hysterical shrieks to read it, we have that 50 years and it will be time well spent. CO2 from energy companies have plummeted and the dirtiest source, coal, is in steep decline and producing levels of emissions not seen since Reagan was in his first term. Our current energy is getting cleaner and nothing else is ready to take its place - we'd need to build a nuclear plant every day for the next 50 years to meet our energy needs and even then we can do it only because fission energy is relatively efficient; if we instead tried to use solar power, the environmental energy darling du jour, it would be close to impossible. The 'greenmail' and environmental lawsuits that appear every time a decent-sized solar plant is even proposed makes it too flaky in a nation that wants a reliable energy plan.(1) Politicians think about 'the now' and fusion is not exciting people, despite its potential. Like solar power, it's already been promised for 60 years and made no huge advances. If a president comes into power who is a believer, it may get tens of billions of dollars in subsidies thrown at it, like solar power has, but here on Science 2.0 we would still ridicule it because you can't just throw money at a company or a school and have a basic research miracle spring to life. It takes time, and mistakes, and increments, before anything revolutionary happens. Instead of invoking yet another Cold War military-industrial pipe dream - government loves to build "Manhattan Project of X" behemoths despite none of them working since the actual Manhattan Project - a smaller, nimbler, 21st century way of doing science makes more sense when it comes to fusion. Lots of programs that are outside Big Science may lead to a real breakthrough and aren't 'all or nothing' financially. It's being done now, in both corporate- and government-funded science, and one recent program may be worth getting excited about.

# STEM Adv

#### US education is unmatched—guarantees strong military

Joffe, pol sci prof, 9—Senior Fellow of Stanford's Freeman-Spogli Institute for International Studies. Fellow in International Relations at the Hoover Institutionand. Associate of the Olin Institute for Strategic Studies at Harvard University (Josef, The Default Power: The False Prophecy of America's Decline, Foreign Affairs Sep/Oct 2009. Vol. 88, Iss. 5; pg. 21, 15 pgs, )

LAST MAN STANDING COMPOUND-INTEREST games are entertaining but not enlightening, since power, the most elusive concept in political science, is not just a matter of growth rates. What, then, makes a country great? A large population, a large economy, and a large military are necessary but not sufficient conditions. What puts the United States in a league of its own? For one, the world's most sophisticated military panoply, fed by a defense budget that dwarfs all comers and gives the United States the means to intervene anywhere on the planet. But there is even more: an unmatched research and higher-education establishment that continues to drive excellence. All projections that show China surpassing the United States in the first half of this century leave out these two unspectacular - but critical - sources of power. Of the world's top 20 universities, all but three are American; of the top 50, all but 11 are located in the United States. By contrast, India's two best universities are tucked away in the world's 300^0-400 tier. China does a bit better, its top three - Nanjing University, Peking University, and Shanghai University - are in the 20o-to-3oo group of the world's 500 best. Harvard and Stanford are not quaking, and neither are Cambridge and Oxford. China's public spending on education, meanwhile, has been in the range of 2.0-2.5 percent of gdp over the last quarter century - this for a population four times as large as the United States' and an economy four times as small. In the United States, average spending has been close to six percent, higher than that of India, Japan, Russia, and the eu. The same pattern holds for research and development (R & D) outlays, with the U.S. rate almost twice as high as China's - again as a fraction of a vastly larger gdp. Education and R & D are critical because they condition future performance. True, an increasing number of U.S. graduates in the hard sciences are foreign born or first-generation immigrants. But far from betraying a failure on the United States' part, this trend actually dramatizes a unique advantage: no other country draws so many of the world's best and brightest to its labs and universities, especially from China and India.

#### US Science and tech competitiveness high

Hosek, economics prof, 7—prof, Pardee RAND Grad School. Editor, RAND Journal of Economics. PhD in economics, U Chicago. BA in English, Cornell—AND—Titus Galama—Ph.D. and M.Sc. in physics, University of Amsterdam; M.B.A., INSEAD (James, U.S. Competitiveness in Science and Technology, http://www.rand.org/pubs/monographs/2008/RAND\_MG674.pdf, )

We find that the United States continues to lead the world in science and technology. The United States grew faster in many measures of S&T capability than did Japan and Europe, and developing nations such as China, India, and South Korea showed rapid growth in S&T output measures, but they are starting from a small base. These developing nations do not yet account for a large share of world innovation and scientific output, which continues to be dominated by the United States, Europe, and Japan. The United States accounts for 40 percent of total world R&D spending and 38 percent of patented new technology inventions by the industrialized nations of the Organisation for Economic Cooperation and Development (OECD), employs 37 percent (1.3 million) of OECD researchers (FTE), produces 35 percent, 49 percent, and 63 percent, respectively, of total world publications, citations, and highly cited publications, employs 70 percent of the world’s Nobel Prize winners and 66 percent of its most-cited individuals, and is the home to 75 percent of both the world’s top 20 and top 40 universities and 58 percent of the top 100. A comparison of S&T indicators for the United States with those of other nations/regions reveals the following: Other nations/regions are not significantly 􀁴􀀁 outpacing the United States in R&D expenditures. China and South Korea, which are showing rapid growth in R&D expenditures, are starting from a small base, and the EU-15 and Japan are growing slower than the United States. 􀁴􀀁 Other nations/regions are not outpacing the United States in S&T employment, as growth in researchers in the EU-15 was comparable to, and that of Japan considerably lower than, that of the United States. China, however, added about the same number of researchers as the United States did and overtook Japan during the period 1995 to 2002. 􀁴􀀁 Other nations/regions are rapidly educating their populations in S&T, with the EU-15 and China graduating more scientists and engineers than the United States. 􀁴􀀁 China, India, and South Korea are starting to account for a significant portion of the world’s S&T inputs and activities (R&D funding in dollars at purchasing power parity, research jobs, S&T education, etc.) and are showing rapid growth in outputs and outcomes, yet they account for a very small share of patents, S&T publications, and citations. 􀁴􀀁 percentage-point loss in world share in publications, citations, and top 1 percent highly cited publications between 1993–1997 and 1997–2001. 􀁴􀀁 On measures such as additions to the S&T workforce and patented innovations, U.S. growth in S&T was on par with, or above, world average trends. By comparison, Japan grew more slowly in additions to the S&T workforce, and both the EU-15 and Japan had slower growth in patented innovations. High growth in R&D expenditures, patents, and S&E employment, combined with continuing low unemployment of S&E workers, suggest that U.S. S&E has remained vibrant. These signs do not support the notion that jobs are being lost at substantial rates as a result of the outsourcing and offshoring of S&T. U.S. gains in S&T occur against a backdrop in which R&D expenditures, S&E employment, and patents are also increasing in the EU-15, Japan, China, Korea, and many other nations/regions. Studies of the offshoring of high-skill work suggest that it does not result in job losses in the originating country, as it is increasingly driven by the need to access scarce talent, but rather that the overall number of jobs is increasing. A future in which a significant share of new technologies is invented elsewhere will benefit the United States as long as it maintains the capability to acquire and implement technologies invented abroad. Technology is an essential factor of productivity, and the use of new technology (whether it was invented in the United States or elsewhere) can result in greater efficiency, economic growth, and higher living standards. The impact of globalization on U.S. innovative activity is less clear. On the one hand, significant innovation and R&D elsewhere may increase foreign and domestic demand for U.S. research and innovation if the United States keeps its comparative advantage in R&D. On the other hand, the rise of populous, low-income countries may threaten this comparative advantage in R&D in certain areas if such countries develop the capacity and institutions necessary to apply new technologies and have a well-educated, low-wage S&T labor force. Looking only at federal expenditures on R&D a few years ago might have left the impression that the United States was underinvesting in R&D at the end of the Cold War: Total federal R&D spending grew at 2.5 percent per year from 1994 to 2004, much lower than its long-term average of 3.5 percent per year from 1953 to 2004 (in real terms, i.e., after correction for inflation). Yet federal R&D accounted for only $86 billion of $288 billion total U.S. R&D expenditures in 2004. Industrial R&D expenditures, the largest source of R&D, grew rapidly, at an average rate of 5.4 percent and 5.3 percent per year for the periods 1953–2004 and 1994–2004, respectively, and accounted for most of the growth in total R&D (4.7 percent and 4.4 percent for the periods 1953–2004 and 1994–2004, respectively). As a result, growth in total R&D was on par with the world’s average growth: Measured in dollars at purchasing power parity (PPP), U.S. R&D expenditures grew at an average rate of 5.8 percent per annum from 1993 to 2003, close to the world’s average of 6.3 percent. Further, total basic research showed the greatest rate of increase, at an average of 6.2 percent and 5.1 percent per year (4.7 percent and 4.4 percent for total R&D) for the periods 1953–2004 and 1994–2004, respectively. Also, federally funded basic research grew by 3.4 percent per year over the period 1970–2003 and 4.7 percent per year over the period 1993–2003. As industrial and federal R&D grew, universities and colleges managed to increase their R&D by an average of 6.6 percent and 5.1 percent per year for 1953–2004 and 1994–2004, respectively. This is reassuring, given the importance of basic and academic research to innovation. However, most of the increase in federally funded basic research was in the life sciences, whereas basic research funding for the physical sciences was essentially flat. The allocation of federal R&D dollars presumably was based on an assessment that the potential payoffs were far higher in the life sciences than in the physical sciences, just as physical sciences had received the major portion of federal R&D funds in the decade after Sputnik. Still, taken as a whole, total basic research and federally funded basic research have increased rapidly in real terms (constant dollars) on average, by between 3 percent and 6 percent per year for the last three decades.

#### Demonstration of fusion would spark pure fusion weaponization and arms racing

Makhijani 98 Arjun, Ph.D. and Pres. Inst. for Energy and Environmental Research, and Hisham Zerriffi, Project Scientist, 7-15, “Dangerous Thermonuclear Quest: The Potential of Explosive Fusion Research for the Development of Pure Fusion Weapons,” IEER, http://ieer.org/resource/reports/dangerous-thermonuclear-quest/

In the long term, facilities such as the National Ignition Facility and MTF facilities pose even greater threats to both the CTBT and the disarmament process. As discussed above, if ignition is demonstrated in the laboratory, the weapons labs and the DOE would likely exert considerable pressure to continue investigations and to engage in preliminary design activities for a new generation of nuclear weapons (even if it is just to keep the designers interested and occupied). Ignition would also boost political support and make large-scale funding of such activities more likely. Even without the construction of actual weapons, these activities could put the CTBT in serious jeopardy from forces both internal and external to the United States. Internally, those same pressures, which could lead to the resumption of testing of current generation weapons, could also lead to the testing of new weapons (to replace older, less safe or less reliable weapons). Externally, the knowledge that the United States or other weapons states were engaging in new fusion weapons design activities could lead other states to view this as a reversal of their treaty commitments. Comparable pressures to develop pure fusion weapons would be likely to mount in several countries. This would have severe negative repercussions for both non-proliferation and complete nuclear disarmament. The time to stop this dangerous thermonuclear quest for explosive ignition is now, before its scientific feasibility is established.

#### Nuclear war

Cohen and Douglass 2 Sam, nuclear weapons analyst and Joe, national security analyst, both members of the Los Alamos Tactical Nuclear Weapons panel, 3-11, “Nuclear Threat That Deesn’t Exist – Or Does It?” Rense, http://rense.com/general35/doex.htm

The comparison of a pure-fusion warhead with a normal fission warhead is even more stark. The lethal area to military troops of a 10 ton (high explosive equivalent yield) pure-fusion device would be approximately the same as the lethal area of a fission warhead several hundred times larger; that is, one in the kiloton range! The cost of a pure-fusion warhead is also reduced. In terms of the precious nuclear material that is required, namely, tritium and deuterium, pure-fusion devices are extremely cheap. Because the pure-fusion warhead does not need active nuclear material, such as plutonium, to "trigger" the deuterium-tritium burn, they can be made for a fraction of the cost of one fission-fusion neutron bomb of the 1980s. The inherent consequences of a pure-fusion device go far beyond low cost and greatly reduced explosive yield. Most significant, pure-fusion warheads, in contrast to warheads that use fissionable material, are not covered by the Nuclear Non-Proliferation Treaty (NPT). Any country can, in terms of international law, legally possess and even sell such weapons and not be in violation of the NPT. Also, deuterium-tritium fuel can be purchased openly on the international market. The spirit of the NPT may be in violation, but not the letter. Still further, because there is no fissionable component and because the explosive yield is so small, full operational tests of a pure-fusion device could be conducted in any country and not be detected by systems set up to monitor nuclear weapons tests. If tests were conducted underground at a moderate depth, say 50 to 100 meters, even the local inhabitants would suspect nothing. These consequences drive a stake through the heart of U.S. non-proliferation policies. These policies are based on preventing those who want to "go nuclear" from having access to the active nuclear material. A warhead or "device" that does not use active nuclear material (uranium or plutonium) is not prohibited. To make matters worse, in no sense can they be termed weapons of "mass destruction." Indeed, the pure-fusion devices are even more discriminant than the neutron bomb because there is, in comparison, negligible physical damage and a total absence of fission by-products and related contaminating fallout. Because of this, the pure-fusion device represents the worst fear of those whose personal crusade is to stop the spread of nuclear weapons and preserve the fire break in a hope that this will prevent a nuclear war. The pure-fusion device is less destructive than most conventional bombs, is reasonably cheap, and can be tested with impunity. It produces no fission radioactive by-products or fallout of serious concern. That is, the pure-fusion device renders the unthinkable thinkable. This is why officials do not want to discuss the possibility of pure-fusion warheads and, as will be seen, will do their best to deny their possible existence.

#### Economic interdependence ensures cooperation

Bremmer ’10 – president of Eurasia Group, the leading global political risk research and consulting firm, American political scientist specializing in U.S. foreign policy, states in transition, and global political risk (Ian, “China vs. American: Fight of the Century,” March 22, Prospect, <http://www.prospectmagazine.co.uk/magazine/china-vs-america-fight-of-the-century/>)

So how should America mutually assured economic destruction,” a dependence that can force some degree of co-operation even as political, economic and security disputes simmer. America still needs China to help finance its debt. For the moment, China needs access to US consumers to keep unemployment in check and for continuing foreign investment. Even if the Chinese economy becomes more driven by domestic demand, consumers will still want access to foreign-made products. The two sides will be doing business for decades to come.

#### Chinese leaders don’t want war

Goldstein 11—professor emeritus of IR, American U. PhD in pol sci from MIT. Former visiting professor emeritus at Yale (Sept 2011, Joshua, Think Again: War, http://www.foreignpolicy.com/articles/2011/08/15/think\_again\_war)

What about China, the most ballyhooed rising military threat of the current era? Beijing is indeed modernizing its armed forces, racking up double-digit rates of growth in military spending, now about $100 billion a year. That is second only to the United States, but it is a distant second: The Pentagon spends nearly $700 billion. Not only is China a very long way from being able to go toe-to-toe with the United States; it's not clear why it would want to. A military conflict (particularly with its biggest customer and debtor) would impede China's global trading posture and endanger its prosperity. Since Chairman Mao's death, China has been hands down the most peaceful great power of its time. For all the recent concern about a newly assertive Chinese navy in disputed international waters, China's military hasn't fired a single shot in battle in 25 years.¶ "A More Democratic World Will Be a More Peaceful One."¶ Not necessarily. The well-worn observation that real democracies almost never fight each other is historically correct, but it's also true that democracies have always been perfectly willing to fight non-democracies. In fact, democracy can heighten conflict by amplifying ethnic and nationalist forces, pushing leaders to appease belligerent sentiment in order to stay in power. Thomas Paine and Immanuel Kant both believed that selfish autocrats caused wars, whereas the common people, who bear the costs, would be loath to fight. But try telling that to the leaders of authoritarian China, who are struggling to hold in check, not inflame, a popular undercurrent of nationalism against Japanese and American historical enemies. Public opinion in tentatively democratic Egypt is far more hostile toward Israel than the authoritarian government of Hosni Mubarak ever was (though being hostile and actually going to war are quite different things).

# Fusion Adv

#### No risk of resource wars---historical evidence all concludes neg---cooperation is way more likely and solves

Jeremy Allouche 11 is currently a Research Fellow at the Institute of Development Studies at the University of Sussex. "The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade" Food PolicyVolume 36, Supplement 1, January 2011, Pages S3-S8 Accessed via: Science Direct Sciverse

Water/food resources, war and conflict

The question of resource scarcity has led to many debates on whether scarcity (whether of food or water) will lead to conflict and war. The underlining reasoning behind most of these discourses over food and water wars comes from the Malthusian belief that there is an imbalance between the economic availability of natural resources and population growth since while food production grows linearly, population increases exponentially. Following this reasoning, neo-Malthusians claim that finite natural resources place a strict limit on the growth of human population and aggregate consumption; if these limits are exceeded, social breakdown, conflict and wars result. Nonetheless, it seems that most empirical studies do not support any of these neo-Malthusian arguments. Technological change **and greater inputs of capital** have **dramatically increased labour productivity in agriculture.** More generally, the neo-Malthusian view has suffered because during the last two centuries **humankind has breached many resource barriers that seemed unchallengeable**.

Lessons from history: alarmist scenarios, resource wars and international relations

In a so-called age of uncertainty, a number of alarmist scenarios have linked the increasing use of water resources and food insecurity with wars. The idea of water wars (perhaps more than food wars) is a dominant discourse in the media (see for example Smith, 2009), NGOs (International Alert, 2007) and within international organizations (UNEP, 2007). In 2007, UN Secretary General Ban Ki-moon declared that ‘water scarcity threatens economic and social gains and is a potent fuel for wars and conflict’ (Lewis, 2007). Of course, this type of discourse has an **instrumental purpose**; security and conflict are here used for raising water/food as key policy priorities at the international level.

In the Middle East, presidents, prime ministers and foreign ministers have also used this bellicose rhetoric. Boutrous Boutros-Gali said; ‘the next war in the Middle East will be over water, not politics’ (Boutros Boutros-Gali in Butts, 1997, p. 65). The question is not whether the sharing of transboundary water sparks political tension and alarmist declaration, but rather to what extent water has been a principal factor in international conflicts. The evidence seems quite weak. Whether by president Sadat in Egypt or King Hussein in Jordan, none **of these declarations have been followed up by military action**.

The governance of transboundary water has gained increased attention these last decades. This has a direct impact on the global food system as water allocation agreements determine the amount of water that can used for irrigated agriculture. The likelihood of conflicts over water is an important parameter to consider in assessing the stability, sustainability and resilience of global food systems.

None **of the** various and extensive databases on the causes of war show water as a casus belli. Using the International Crisis Behavior (ICB) data set and supplementary data from the University of Alabama on water conflicts, Hewitt, Wolf and Hammer found only seven disputes where water seems to have been at least a partial cause for conflict (Wolf, 1998, p. 251). In fact, about 80% of the incidents relating to water were limited purely to governmental rhetoric intended for the electorate (Otchet, 2001, p. 18).

As shown in The Basins At Risk (BAR) water event database, **more than two-thirds of over 1800 water-related ‘events’ fall on the ‘cooperative’ scale** (Yoffe et al., 2003). Indeed, if one takes into account a much longer period, the following figures clearly demonstrate this argument. According to studies by the United Nations Food and Agriculture Organization (FAO), organized political bodies signed between the year 805 and 1984 more than 3600 water-related treaties, and approximately 300 treaties dealing with water management or allocations in international basins have been negotiated since 1945 ([FAO, 1978] and [FAO, 1984]).

The fear around water wars have been driven by a Malthusian outlook which equates scarcity with violence, conflict and war. There is however **no direct correlation between water scarcity and transboundary conflict**. Most specialists now tend to agree that the major issue is not scarcity per se but rather the allocation of water resources between the different riparian states (see for example [Allouche, 2005], [Allouche, 2007] and [Rouyer, 2000]). Water rich countries have been involved in a number of disputes with other relatively water rich countries (see for example India/Pakistan or Brazil/Argentina). The perception of each state’s estimated water needs really constitutes the core issue in transboundary water relations. Indeed, whether this scarcity exists or not in reality, perceptions of the amount of available water shapes people’s attitude towards the environment (Ohlsson, 1999). In fact, some water experts have argued that scarcity drives the process of co-operation among riparians ([Dinar and Dinar, 2005] and [Brochmann and Gleditsch, 2006]).

In terms of international relations, the threat of water wars due to increasing scarcity **does not make much sense in the light of the recent** historical record. Overall, the water war rationale expects conflict to occur over water, and appears to suggest that violence is a viable means of securing national water supplies, an argument which is highly contestable.

The debates over the likely impacts of climate change have again popularised the idea of water wars. The argument runs that climate change will precipitate worsening ecological conditions contributing to resource scarcities, social breakdown, institutional failure, mass migrations and in turn cause greater political instability and conflict ([Brauch, 2002] and [Pervis and Busby, 2004]). In a report for the US Department of Defense, Schwartz and Randall (2003) speculate about the consequences of a worst-case climate change scenario arguing that water shortages will lead to aggressive wars (Schwartz and Randall, 2003, p. 15). Despite growing concern that climate change will lead to instability and violent conflict, **the evidence base to substantiate the connections is thin** ([Barnett and Adger, 2007] and [Kevane and Gray, 2008]).

#### NIF will be funded even without fusion – weapons work

Global Security Newswire, 10-1-2012, “Future of Giant U.S. Laser in Doubt Absent Fusion Success,” NTI, http://www.nti.org/gsn/article/future-giant-us-laser-doubt-absent-fusion-success/

Still, a number of researchers believe the NIF project will continue to be funded due to its uses in maintaining a safe and effective nuclear stockpile, which has cross-aisle backing. "Contrary to what some people say, this has been a spectacular success," insisted NIF project head Edward Moses. He acknowledged, however, that "science on schedule is a hard thing to do."

#### NIF won’t be shut down even if fusion fails – dual use for nuclear weapons

Jeff Hecht, 10-2-2012, “World’s largest laser misses nuclear fusion deadline,” New Scientist, http://www.newscientist.com/article/dn22325-worlds-largest-laser-misses-nuclear-fusion-deadline.html

Even without ignition, though, the lab is unlikely to shut down because of its ability to double up as a nuclear weapon simulator. The implosion of hydrogen pellets is similar to the way a hydrogen bomb works. That means NIF can be used to update knowledge about nuclear weapons and simulate how the US nuclear weapons stockpile might be affected by its age.

#### NASA actively and effectively tracking space debris now

UPI 11 (100 year running publisher and authority on science news) <<http://www.upi.com/Science_News/2011/07/11/Space-debris-no-threat-to-shuttle-station/UPI-99951310423744/>>

Debris from a dead Soviet-era satellite poses no threat to the International Space Station and the shuttle Atlantis currently docked with it, NASA says. The Space Surveillance Network operated by the U.S. military informed notified NASA of the orbiting piece of space junk Sunday. NASA began tracking the object's path to determine how close it might come to the station and the shuttle, SPACE.com reported Monday. "Mission Control has verified that the track of a piece of orbital debris will not be a threat to the International Space Station and space shuttle Atlantis," NASA officials in Houston said in a statement. "No adjustments to the docked spacecraft's orbit will be necessary to avoid the debris."More than 500,000 pieces of space junk, including the chunk of the defunct Soviet Cosmos 375 satellite currently being tracked, are cataloged and monitored in Earth's orbit, NASA officials said.

#### No impact to debris – Shielding and maneuvering

**Postnote** works for the British Parliament **10**

Parliamentary Office of Science and Technology “Space Debris” Number 355 3/2010 <http://www.parliament.uk/documents/documents/upload/postpn355.pdf> [Lockwood]

Protecting Satellites from Debris Satellites can be shielded against smaller pieces of debris and they can attempt to actively avoid larger tracked debris. It is also important to reduce the „gap‟ between these two regimes by improving shielding and tracking. Shielding The main problem with shielding satellites from debris is that it adds considerable mass to the satellite. Launch costs, at several thousand pounds per kilogram, are highly dependent on mass. Shielding is essential for manned missions such as the ISS, which would lose pressure if there were a leak in its surface. Research continues on light but strong materials for shielding. Collision Avoidance Tracking information can be used to predict a collision in time for a satellite to manoeuvre out of the way. For example, the ISS performs around one avoidance manoeuvre each year. However, the relatively crude information available from the SSN makes it difficult to predict collisions accurately and there are so many close approaches that most cannot be acted on.

#### The government has been mitigating space debris since the 90’s

Jesusa **Cruz**, JD from Barry School of Law, **2003**, “Wanted: A collective effort towards space debris mitigation,” Panton Law, www.pantonlaw.com/uploads/5/2/6/4/526435/space\_debris\_mitigation.doc+federal+government+space+debris

The government updated its orbital debris report in 1995, issuing the following recommendations: (1) to continue and enhance debris measurement, modeling, and monitoring capabilities; (2) conduct a focused study on debris and emerging low earth orbit (LEO) systems; (3) develop government/industry design guidelines on orbital debris; (4) develop a strategy for international discussion; and (5) review and update U.S. policy on debris. A year after the issuance of this report, President Clinton reaffirmed the earlier policy by calling for U.S. government agencies to minimize space debris. The 1996 policy required NASA, DoD, the intelligence community and the private sector to develop design guidelines for U.S. government space hardware procurements and stressed a United States leadership role in urging other nations to adopt debris mitigation practices and policies.

#### No war

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

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

#### US early warning systems work fine

NTRC 08 (Nuclear Threat Reductions Campaign “U.S.-Russian Ballistic-Missile Early-Warming Cooperation” http://www.veteransforamerica.org/wp-content/uploads/2008/01/22-early-warning-final.pdf)

The United States’ combination of space-based sensors and land-based radars provides reliable assurance that a missile attack from Russia would be detected, verified, and tracked with a high degree of confidence. Consequently, Russia is assured that the U.S. will not perceive an attack erroneously and launch a retaliatory blow by mistake. Russia’s early-warning (E-W) network as originally constructed by the Soviet Union was similarly designed to provide notice of a missile attack from multiple sources providing overlapping verification. Today, more than a decade after the Soviet collapse, that now-Russian E-W system is so riddled with gaps and potential defects that a May 2003 RAND study described it as being “in tatters.”2

#### Russia is fixing its early warning

Podvig 11—Center for Arms Control Studies at the Moscow Institute of Physics and Tech. PhD in political science, Moscow Institute of World Economy and International Relations (Spring 2011, Pavel, Russia’s Nuclear Forces: Between Disarmament and Modernization, http://iis-db.stanford.edu/pubs/23256/IFRI\_pp37podvig.pdf)

The modernization program is not limited to the offensive strategic triad. Russia is also carrying out a number of programs that would strengthen the infrastructure that supports operations of its nuclear forces. As part of this effort, Russia is undertaking a major upgrade of its network of early-warning radars, which suffered substantial losses as a result of the breakup of the Soviet Union. In 2002 it brought into operation a radar in Baranovichi, Belarus, and in subsequent years it completed the construction of two new-generation radars – in Lekhtusi, near St-Petersburg and Armavir. These radars are expected to begin combat service in the near future. Two more new-generation radars are being built in the Kaliningrad region and near Irkutsk, and one more is planned in Barnaul. The Space Forces, which operate the early-warning system, announced the plan to eventually replace all early-warning radars built in the Soviet Union by radars of new generations.

#### No food shortages

Goklany 9**—**Worked with federal and state governments, think tanks, and the private sector for over 35 years. Worked with IPCC before its inception as an author, delegate and reviewer. Negotiated UN Framework Convention on Climate Change. Managed the emissions trading program for the EPA. Julian Simon Fellow at the Property and Environment Research Center, visiting fellow at AEI, winner of the Julian Simon Prize and Award. PhD, MS, electrical engineering, MSU. B.Tech in electrical engineering, Indian Institute of Tech. (Indur, “Have increases in population, affluence and technology worsened human and environmental well-being?” 2009, http://www.ejsd.org/docs/HAVE\_INCREASES\_IN\_POPULATION\_AFFLUENCE\_AND\_TECHNOLOGY\_WORSENED\_HUMAN\_AND\_ENVIRONMENTAL\_WELL-BEING.pdf, AMiles)

Although global population is no longer growing exponentially, it has quadrupled since 1900. Concurrently, affluence (or GDP per capita) has sextupled, global economic product (a measure of aggregate consumption) has increased 23-fold and carbon dioxide has increased over 15-fold (Maddison 2003; GGDC 2008; World Bank 2008a; Marland et al. 2007).4 But contrary to Neo- Malthusian fears, average human well-being, measured by any objective indicator, has never been higher. Food supplies, Malthus’ original concern, are up worldwide. Global food supplies per capita increased from 2,254 Cals/day in 1961 to 2,810 in 2003 (FAOSTAT 2008). This helped reduce hunger and malnutrition worldwide. The proportion of the population in the developing world, suffering from chronic hunger declined from 37 percent to 17 percent between 1969–71 and 2001–2003 despite an 87 percent population increase (Goklany 2007a; FAO 2006).

# ITER Adv

## 1NC

#### takes 20 years and way more action than just research

#### CCAS 9, Coalition for the Commercial Application of Superconductors, Superconductivity Present and Future Applications, http://www.ccas-web.org/pdf/ccas\_brochure\_web.pdf

Recent progress in superconductivity follows a pattern that marked previous developments in new materials - for example, in transistors, semiconductors and optical fibers. Materials-based technology development entails high risk and uncertainty compared to more incremental innovations. It typically takes 20 years to move new materials from the laboratory to the commercial arena. Yet products using new materials often yield the most dramatic benefits for society in the long run.¶ The long lead times inherent in HTS technology development necessitates a sustained government role, and government-industry partnerships play a pivotal role in this process. These partnerships require stable and consistent funding and a tolerance for risk. Careful planning is required to ensure parallel progress in related fields, such as cryogenics, to assure broad commercial acceptance of new LTS and of HTS technology. Prospective customers such as electric utilities require a stable and symmetrical climate for investment in research, development and demonstration projects.

**Their internals are super slow**

**Leshner 2008** (Alan, Chief Executive Officer at the American Association for the Advancement of Science,” Written Testimony Before the Committee on Science and Technology, Subcommittee on Research and Science Education”, <http://democrats.science.house.gov/Media/File/Commdocs/hearings/2008/Research/15july/Leshner_Testimony.pdf>, 7/15)

AAAS faces the same dilemmas that the U.S. government faces: how best to balance domestic versus international interests, and how best to balance short-term versus long-term goals. International cooperation takes time to develop and nurture, particularly if it requires infrastructure development in one of the cooperating countries. **The impacts of science diplomacy** also can **take a long time to be realized, since the scientific work must be done and trust must be nurtured over time.**

## 2NC

#### Relations are high – shared interests make future cooperation inevitable

Hormats10/1/10 Robert, Under Secretary for Economic, Energy, and Agricultural Affairs “The US European Relationship: Past Perspectives and Future Prospects” http://www.state.gov/e/rls/rmk/2010/150032.htm

The United States seek to build a network of alliances and partnerships, regional organizations and global institutions that is durable and dynamic enough to help us meet today’s challenges. We worked after the Second World War to construct the pillars of US-European cooperation that rebuilt destroyed lands and lifted millions of people out of poverty, and worked with Europe to build the GATT, IMF, World Bank. Now we must work together to build a global architecture that reflects and harnesses the realities of the 21st century, including helping to integrate emerging powers into an international community with clear obligations and expectations. Both Europe and the United States recognize this priority. We have consistently turned to our closest allies in Europe, the nations that share our fundamental values and interests: democracy, pluralism, respect for different opinions, religious tolerance, a free press, a concern for those less fortunate than ourselves, and our commitment to solving common problems. We need to renew and deepen these alliances that are the cornerstone of global security and prosperity. As Secretary Clinton recently affirmed, “The bonds between Europe and America were forged through war and watchful peace, but they are rooted in our shared commitment to freedom, democracy and human dignity. Today, we are working with our allies to deal with all these issues and global challenges.”

#### the military has already accrued the R&D benefits they isolate from ITER

Gsponer Their Evidence 8 (Dr. Andre, Director and Senior Researcher – Independent Scientific Research Institute, “ITER: The International Thermonuclear Experimental Reactor and the NuclearWeapons Proliferation Implications of ThermonuclearFusion Energy Systems”, 2-2, <http://arxiv.org/pdf/physics/0401110v3.pdf>)

3 Examples of spinoff¶ technologies expected from ITER¶ To conclude this section, we quote in extenso the examples given in section 5.13¶ devoted to the spinoff¶ benefits of fusion technologies in the summary of the report¶ of the Special Committee on the ITER Project of the Japanese Atomic Energy¶ Commission. This is not to imply that the examples given by the Committee are¶ necessarily relevant to the proliferation of nuclear weapons, but an illustration that¶ they are indeed mostly dual purpose¶ technologies of great military significance:¶ “Driving force of spinoff¶ technologies¶ Since fusion development requires gathering knowledge from a myriad¶ of advanced technologies, it is now making significant progress as¶ 48¶ a seed of these technologies. The fusion device is based on diverse¶ research fields and fashioned from advanced technologies, such as¶ physics, mechanical engineering, electric and electronic engineering,¶ materials engineering, thermodynamics, heat transfer flow and thermal¶ engineering, nuclear engineering, cryogenic engineering, electromagnetic¶ dynamics, chemical engineering, and control engineering¶ and instrumentation. Therefore, the development of this compound¶ technology not only advances individual fusion technology but also¶ raises the potential capability of all science and technology by mutual¶ stimulation between different fields of science. The resultant spinoff¶ benefits are seen in commercial technologies, such as the semiconductor¶ industry and the large, precision machine tool¶ industry. Fusion¶ research also contributes to the development of advanced technology¶ and basic science of other fields, such as physics, space science, materials¶ science, medicine, communications, and environmental science.¶ These applied sciences include accelerator technology, superconductor¶ technology, diagnosing techniques, plasma application technology,¶ heatproof and heavy irradiation proof¶ materials technology, impurity¶ removal techniques, and computer simulation techniques.¶ Examples of spinoff¶ technologies¶ Examples of spinoff¶ technologies include the development of large¶ superconducting coils for ITER, which reduced the cost by 75% of¶ niobium/tin superconducting wire material necessary of the generation¶ of the high magnetic¶ fields. This has allowed the high magnetic¶ field MRI used for medical diagnostics to become relatively commonplace.¶ At the same time, the AC loss has been reduced by 80% of¶ that for conventional superconductors, even at the strong magnetic¶ field of 13 tesla. This makes it feasible to increase the stored energy¶ in a superconducting power storage system by a factor of 5–7 when¶ compared with a system designed with conventional technology and¶ operating at 5–6 tesla. In addition, vacuum pumps for high thermal¶ efficiency refrigerating machines, which operate below4 K, have been¶ developed and have been adopted at the Fermi National Accelerator¶ Laboratory in the US and CERN in Europe. This also demonstrates¶ the enormous contribution of fusion research to the frontiers of science.¶ The technology of producing large positiveionbeam¶ currents,¶ originally developed for the heating of fusion plasmas, has already¶ pervaded into the technologies for products used in daily life, such¶ the semiconductors used in the home electric appliances. In addition,¶ the large negative ion beam¶ current technology developed for ITER¶ 49¶ is expected to give birth to completely new research fields, such as the¶ creation of previously unknown materials. The negative ion¶ beam,¶ which has monochromatic energy, is also suitable for manufacture of¶ intricate semiconductor devices. This allows the realization of low cost,¶ mass produced¶ single crystal silicon thin films for solar cells.¶ Furthermore, high power¶ radiofrequency¶ sources used for plasma¶ heating are already applied to the manufacture of high performance¶ ceramics. Potential applications of these sources extend from solving¶ environmental problems to the radar used in outer space. The integration¶ of component technology for the fusion reactor also advances the¶ systematic development of technologies addressing integration, such¶ as system engineering, control engineering, and safety engineering.¶ Additionally, an exploratory investigation related to the processing¶ of radioactive waste by utilizing a fusion reactor itself as an intense¶ neutron source is also being carried out and seems promising” [6,¶ p.274275].

ITER inevitable – the US will remain committed to fusion.

Jones, 11/14/08 - Media and Government Relations Division American Institute of Physics (Richard, “Outlook for DOE's Fusion Energy Sciences Program,” FYI: The AIP Bulletin of Science Policy News, http://www.aip.org/fyi/2008/107.html)

Gene Nardella, DOE Acting Associate Director of Science for Fusion Energy Sciences told the Fusion Energy Sciences Advisory Committee that he would be discussing the program's "highlights and low lights" during his November 6 presentation. The highlight: Congress is "still very supportive" of the fusion program. The low light: the United States "cannot live up to our commitments" to the ITER project with the amount of money Congress has previously appropriated. Nardella was succinct: “the key thing for us is the appropriation." Given the lack of an FY 2009 DOE appropriations bill, the program is being funded under a stop-gap continuing resolution funding bill that provides, when combined with additional supplemental funding, $20.5 million for the first five months of FY 2009. The Administration requested $493.1 million for the entire year. The resulting shortfall has required the Department of Energy to back off its commitments to ITER for equipment, staffing, and the central reserve fund. DOE is now running, a "very tight, very effective" fusion program while it awaits the outcome of the FY 2009 appropriations cycle. An exhibit stated “Despite the funding problems, the U.S. has remained fully engaged in ITER activities at the international level, including those subsidiary bodies associated with its governance.” Nardella is hopeful that Congress will settle on a final funding bill before the continuing resolution runs its full course into early March. DOE is looking ahead to the incoming Obama Administration and the new Congress. Nardella told the advisory committee, chaired by Martin J. Greenwald of MIT, that ITER "will be high on the list" for Congress when it reconvenes. The fusion community must now work to demonstrate to President-Elect Obama’s transition team the value of the ITER program. In doing so, the community should explain that ITER is the largest part of the fusion program, but not the only part.

Other nations investment in ITER makes fusion research inevitable.

ITER website, No Date Given (https://www.usiter.org/US\_ITER\_fact.pdf)

ITER (Latin for “the way”) is a major international research project with the goal of demonstrating the scientific and technological feasibility of fusion energy. The fusion power will be up to 10 times greater than the external power delivered to heat the plasma. ITER is designed to be the premier scientific tool for exploring and testing expectations for plasma behavior in the fusion burning plasma regime, wherein the fusion process itself provides the dominant heat source to sustain the plasma temperature. It will provide the scientific basis and plasma control tools needed to move toward the fusion energy goal. The ITER project confronts the grand challenge of creating and understanding a sustained burning plasma for the first time. Distinguishing characteristics of a burning plasma are the high level of interaction between the fusion heating, the resulting energetic particles, and the confinement and stability properties of the plasma. Achieving this strongly interacting burning state requires resolving complex physics issues and integrating new and improved technologies. A clear and comprehensive scientific understanding of the burning plasma state is needed to confidently extrapolate plasma behavior and related technology beyond ITER to a fusion power plant. The project is being designed and built by the ITER partners: the European Union, India, Japan, the People’s Republic of China, the Republic of Korea, the Russian Federation, and the United States. The device will be built at Cadarache in southeastern France, with the European Union being the host party. First plasma is scheduled for 2016.