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#### Energy production is extraction or capture for consumption

DOCC 8 (Australian Government’s Department of Climate Change, “National Greenhouse and Energy Reporting Guidelines,” http://www.climatechange.gov.au/government/initiatives/~/media/publications/greenhouse-report/nger-reporting-guidelines.ashx)

Energy Production

‘Energy production’ is defined in r. 2.23:

Production of energy, in relation to a facility, means any one of the following:

a. the extraction or capture of energy from natural sources for **final consumption** by or from the operation of the facility or for use other than in operation of the facility; 11

b. the manufacture of energy by the conversion of energy from one form to another form for final consumption by

or from the operation of the facility or for use other than in the operation of the facility.

Energy consumption

‘Energy consumption’ is defined in r. 2.23:

Consumption of energy, in relation to a facility, means the use or disposal of energy from the operation of the

facility including own-use and losses in extraction, production and transmission.

#### The plan does not target fusion power production.

Energy Information Administration, **1992** (Federal Energy Subsidies: Direct and Indirect Interventions in Energy Markets, p. <ftp://tonto.eia.doe.gov/service/emeu9202.pdf>)

Research and development. The budgetary cost of Government-funded research and development (R&D) is easy to measure. Determining the extent to which Government energy R&D is a subsidy is more problematic: often it takes the form of a direct payment to producers or consumers, but the payment is not tied to the production or consumption of energy in the present. If successful, Federal-applied R&D will affect future energy prices and costs, and so could be considered an indirect subsidy.

#### Voting Issue –

#### 1. Limits – their interpretation allows for a variety of indirect incentives that have the potential to boost energy production but don’t mandate it. Renewable fuel standard, feed-in-tariffs would all be topical.

#### 2. Ground – kills our topic ground --- we will be forced to mechanism generics instead of production-based DAs like oil prices, electricity prices, and renewables.

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#### Hagel will get confirmed but Obama will need to spend capital.

Washington Post, **1/7**/2013 (President Obama picks a confirmation fight. Can he win it?, p. <http://www.washingtonpost.com/blogs/the-fix/wp/2013/01/07/president-obama-picks-a-confirmation-fight-can-he-win-it/>)

Added the source: ”For these Democrats, the only reason to support Hagel is out of pure loyalty to the President. That is a major consideration, obviously, but Hagel will have some explaining to do on his past statements. A path certainly exists for him to be confirmed, but the administration can’t simply take it for granted that there are 50 Democratic votes for him. They will need to work it.” (If you need a gauge on whether Hagel is going to make it, keep an eye on Senator Chuck Schumer. Schumer has been lukewarm — at best — toward the prospect of Hagel at the Defense Department and the New York Senator is a major player and pivot point in this fight.) Other Democrats expressed wonderment at Obama’s decision to pick Hagel when the president backed off in a similar situation with Susan Rice, his preferred choice at the State Department. “Everyone is scratching their heads, wondering why this is the one time that the President has drawn a line in the sand and actually intends to stick to it,” said one Democratic Senate operative. Added another Capitol Hill Democrat: “The choice is confounding…I think they can ultimately get through this fight, but the White House has to get ahead of this thing quickly.” The White House is, of course, aware of both the opposition (in both parties) to Hagel and the blemish it would leave on the start of Obama’s second term to see his pick at Defense stumble in the confirmation process. This, like much of politics, is a calculated risk by the White House designed, at least in part, to show that Obama won’t back down from the prospect of a fight — even one in which members of his own party may throw a punch or two his way. Now, all he has to do is win.

#### Fusion kills capital --- massively unpopular.

New York Times, 9/29/**2012** (So Far Unfruitful, Fusion Project Faces a Frugal Congress, p. Lexis-Nexis)

For more than 50 years, physicists have been eager to achieve controlled fusion, an elusive goal that could potentially offer a boundless and inexpensive source of energy. To do so, American scientists have built a giant laser, now the size of a football stadium, that takes target practice on specks of fuel smaller than peppercorns. The device has so far cost taxpayers more than $5 billion, making it one of the most expensive federally financed science projects ever. But so far, it has not worked. Unfortunately, the due date is Sunday, the last day of the fiscal year. And Congress, which would need to allocate more money to keep the project alive, is going to want some explanations. “We didn’t achieve the goal,” said Donald L. Cook, an official at the National Nuclear Security Administration who oversees the laser project. Rather than predicting when it might succeed, he added in an interview, “we’re going to settle into a serious investigation” of what caused the unforeseen snags. The failure could have broad repercussions not only for the big laser, which is based at the Lawrence Livermore National Laboratory in California, but also for federally financed science projects in general. On one hand, the laser’s defenders point out, hard science is by definition risky, and no serious progress is possible without occasional failures. On the other, federal science initiatives seldom disappoint on such a gargantuan scale, and the setback comes in an era of tough fiscal choices and skepticism about science among some lawmakers. The laser team will have to produce a report for Congress about what might have gone wrong and how to fix it if given more time.

#### Capital is key to get the confirmation through.

**Politico**, **1/6**/2013 (Chuck Hagel takes fire from Capitol Hill, p. <http://www.politico.com/story/2013/01/chuck-hagel-takes-fire-from-capitol-hill-85805.html>)

Senate Democrats and Republicans are far from sold on President Barack Obama’s expected nomination of Chuck Hagel as secretary of defense. In fact, Obama’s decision to tap the Vietnam veteran and outspoken former Republican senator is likely to spark another nasty fight with Congress right on the heels of the fiscal cliff showdown and just before another likely battle royal over the debt ceiling. Republicans on Sunday unleashed a fresh barrage of attacks amid reports Obama would nominate Hagel on Monday for the top job at the Pentagon. The new Senate minority whip, Texas Republican John Cornyn, said he’s firmly against Hagel’s nomination. Sen. Lindsey Graham (R-S.C.), an Air Force reservist who serves on the Armed Services Committee that will consider the nod, said Hagel would hold the “most antagonistic” views toward Israel of any defense secretary in U.S. history. And despite heaping praise on Hagel when he retired from the Senate after the 2008 elections, Minority Leader Mitch McConnell (R-Ky.) on Sunday failed to extend an olive branch to the Nebraska Republican, instead suggesting there would be “tough questions” ahead. Even Senate Democrats are privately signaling they‘re not yet on board with the Hagel pick, and that the White House has a lot of work to do to get him across the finish line. The nomination comes at a tricky time for the administration — just as the fights over raising the debt ceiling and government appropriations are set to begin. And it could put a number of at-risk or pro-Israel Democrats in tough political spots — especially if the nomination fight grows even more contentious. Democrats are also scratching their heads over why Obama appears willing to go to the mat for Hagel, while abandoning his push for a close friend and member of his inner circle, U.N. Ambassador Susan Rice, to become secretary of state. Rice, an unabashed Democrat, abandoned her bid after withering GOP criticism over the deadly attacks on the U.S. Consulate in Libya. Though different in substance, the controversy over Rice’s remarks is not unlike the current pushback over Hagel’s past foreign policy positions and controversial remarks. But Hagel lacks a natural constituency in the Senate, given that he’s grown alienated from the GOP, yet Democrats are suspicious of his record. “It is a strange signal for the White House to send that they are willing to fight for Hagel but not Rice,” one Senate Democratic aide said Sunday. “Democrats are not currently unified behind Hagel, and it will take some real work by the administration to get them there, if it’s even possible.” Senior Republicans agreed, noting that after Hagel infuriated Republicans and Democrats alike over the years, there isn’t a natural base for him. “I can’t imagine why [Obama] would choose to burn his political capital on this nomination. For what? There is no constituency for Chuck Hagel,” one senior GOP aide said. “Obama will expend every ounce of political capital he has to get him across the finish line. Dems will hate this.”

#### Hagel bolsters Obama’s foreign policy --- prevents war with Iran.

**McGovern**, **1/2**/2013 (Ray – former Army officer and veteran of the CIA’s analysis division, Obama needs Hagel in the Pentagon, Baltimore Sun, p. http://articles.baltimoresun.com/2013-01-02/news/bs-ed-hagel-20130102\_1\_pentagon-generals-robert-mcnamara)

During his first year in office, President Barack Obama encountered similar insubordination when the Pentagon pigeonholed his order to serve up options (plural) on Afghanistan. In the end, they came up with one singularly ineffective and costly option, namely, the "surge" of 40,000 (or "only" 30,000, if that's all they could get) additional troops — that was the brainchild of generals David Petraeus and Stanley McChrystal. Mr. Obama had tasked then-Secretary of Defense Robert Gates to give him options (plural). But Mr. Gates' assessment of the relative power of the generals vis-à-vis the president persuaded him that Mr. Obama didn't even have to be "slow rolled." He could be simply ignored. The contrast between Robert McNamara and Robert Gates raises a key question with respect to what role Mr. Hagel would play, if our trial-balloon-fan president were to summon the courage to actually nominate him to head the Pentagon. Chuck Hagel is his own man. There is even some chance his example might prompt Mr. Obama to be more his own man. Clearly, the president needs all the backbone strengthening he can get, if he is to stick to his plan to exit Afghanistan and face down supporters of hard-right Israelis itching for war on Iran. Mr. Obama's better-late-than-never, Kennedy-like decision to pull almost all U.S. troops from Afghanistan by 2014 has already drawn fire from neocon pundits like Max Boot, who argue for keeping major U.S. bases near key cities like Kandahar, the birthplace of the Taliban and the most populous Afghan city after Kabul. Who remembers General McChrystal's cringe-worthy promise to pacify Marja, some 100 miles from Kandahar, as a dress rehearsal for taking Kandahar itself? In early February 2010, he proudly told The New York Times, "We've got a government in a box, ready to roll in." Right. Mr. Obama will be offered more hare-brained schemes like that. Mr. Hagel would likely recognize them for what they are. He has "been there, done that," having volunteered for Vietnam, with two purple hearts to prove it.

#### Iran strikes escalates to a nuclear world war.

**Chossudovsky**, 12/26/**2011** (Michel, Preparing to attack Iran with Nuclear Weapons, Global Research, p. http://globalresearch.ca/index.php?context=va&aid=28355)

An attack on Iran would have devastating consequences, It would unleash an all out regional war from the Eastern Mediterranean to Central Asia, potentially leading humanity into a World War III Scenario. The Obama Administration constitutes a nuclear threat. NATO constitutes a nuclear threat Five European "non-nuclear states" (Germany, Italy, Belgium, Netherlands, Turkey) with tactical nuclear weapons deployed under national command, to be used against Iran constitute a nuclear threat. The Israeli government of Prime Minister Benjamin Netanyahu not only constitutes a nuclear threat, but also a threat to the security of people of Israel, who are misled regarding the implications of an US-Israeli attack on Iran. The complacency of Western public opinion --including segments of the US anti-war movement-- is disturbing. No concern has been expressed at the political level as to the likely consequences of a US-NATO-Israel attack on Iran, using nuclear weapons against a non-nuclear state. Such an action would result in "the unthinkable": a nuclear holocaust over a large part of the Middle East.

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#### The United States Federal Government should:

#### --provide necessary funding for the National Ignition Facility, and

#### --establish openness and public confidence measures to ensure that the National Ignition Facility and any other government branch do not develop fusion weapons. This policy should include requirements for funding and approval of development of fusion weapons by the Executive and Congress.

#### Competes --- “For” requires primary purpose.

**Arterton 3** – US District Judge (Janet, Applera Corporation and Roche Molecular Systems, Inc., plaintiffs, v. MJ Research Inc. and Michael and John Finney, 3:98cv1201 (JBA), UNITED STATES DISTRICT COURT FOR THE DISTRICT OF CONNECTICUT, 292 F. Supp. 2d 348; 2003 U.S. Dist. LEXIS 20903, Lexis)

The ordinary meaning of the preposition "for," see Webster's New World Dictionary of the American Language 544 ("with the aim or purpose of; suitable to; appropriate for"), demonstrates the intended use of the well is that it be capable of holding a tube, and does not require that the tube actually be seated in the well, even though "one embodiment" requires the tubes be "seated in the sample block," '610 Patent, col. 8, l. 65 and col. 9, ll. 31-32, at least while performing PCR.

#### NIF is not energy production --- solves revitalization of the fusion industry.

**Clery**, October **2011** (Daniel – Deputy News Editor at Science Magazine, Inertial Confinement Fusion: Fusion Power’s Road Not Yet Taken, Science 28, Vol. 334, No. 6055, p. Highwire Press American Association for the Advancement of Science)

Fusion, the melding together of nuclei as opposed to the splitting apart that occurs in fission, sounds like the perfect energy source: Its fuel is cheap and plentiful (it comes from seawater), and it emits no carbon and minimal radioactive waste. What it does have is a credibility gap. Despite the enormous progress in understanding fusion and proving its viability, a genuine fusion power station always seems tantalizingly out of reach. Although researchers can cause fusion reactions in the lab, it takes more energy to make them happen than is produced. A major proof-of-principle step would be ignition: a self-sustaining fusion reaction that produces an excess of energy. As the name implies, Livermore's $3.5 billion laser center, the National Ignition Facility (NIF), has that goal in its sights (p. 449). NIF's main goal is not energy production but stockpile stewardship: validating computer simulations of nuclear explosions. Nevertheless, fusion researchers are hoping that that small explosion will be a huge boost to their field. “A sea change could come after ignition at NIF,” says Robert McCrory, director of the Laboratory for Laser Energetics (LLE) at the University of Rochester in New York state. Fusion energy research in the United States has been starved of funds over the past couple of decades, leading to the cancellation of many projects. And those involved in inertial confinement fusion (ICF), crushing pellets of fuel to cause small explosions, have been the poor relations compared with their colleagues in magnetic confinement fusion, who aim to confine much larger and less dense plasma using powerful magnets. Magnetic fusion researchers have pinned their hopes on ITER, a huge international reactor currently being built in France, which aims to prove the feasibility of magnetic fusion energy. The United States is committed to spend more than $1 billion on ITER, which is putting a severe strain on the Department of Energy's fusion budget (Science, 16 September, p. 1556). In contrast, ICF hasn't been treated as energy research at all. It gets most of its funding through the National Nuclear Security Administration because of its ability to mimic nuclear weapons. But with the twin threats of climate change and declining oil stocks, interest in alternative sources of energy is growing. So ICF researchers across the country have been drawing up plans for research that would be needed to take their techniques out of the lab and into prototype power plants. They want to be ready in the event that ignition at NIF leads to a surge of interest in ICF and new money. “The whole field is on the brink of some amazing physics,” says Michael Cuneo of Sandia National Laboratories in Albuquerque, New Mexico. Others are skeptical about the pace. McCrory says he won't believe that's possible “until they make a prototype beamline and do many shots.” Nevertheless, they admire Livermore's ambition. “Livermore is in the vanguard of getting industry involved,” McCrory says. “They're way ahead, the leading candidate.”

#### The CP solves the entirety of the case --- restores U.S. fusion leadership and results in commercialization.

**Holland**, 10/17/**2012** (Andrew – senior fellow for energy and climate at the American Security Project, Why the New York Times is Wrong on the National Ignition Facility, AOL Energy, p. <http://energy.aol.com/2012/10/17/why-the-new-york-times-is-wrong-on-the-national-ignition-facilit/>)

Finally, the Times made a budgetary argument, saying that "we suspect the money would be better spent on renewable sources of energy" and that, even if experiments are successful, a demonstration plant "will cost billions and may ultimately show that fusion is not a practical source of power." Each of these arguments is a mere assertion, unsupported by facts. I am not going to argue against funding for basic research into renewable sources of energy, but I would argue that the government's role in basic research and development, like the NIF, is much clearer and more cost effective than support to commercialize a technology. "Picking winners" is more difficult than supporting research. Fusion is a technology that, once it is scientifically proven and its engineering perfected, could quickly be commercialized. The NIF's leadership has already convened an advisory board of industry and utilities that is eager to move forward with a demonstration plant and commercial deployment, once fusion is proven and deemed feasible. When we talk about budgets, we need to remember that the American economy spends over $1 trillion every year on its energy system. The built infrastructure supporting this system represents many trillions worth of investment by the private and public sector alike over decades. Even in a time of budget scrutiny, the cost-benefit analysis should come down in favor of continued research. Ultimately, the important question is not whether the NIF failed to meet its goal by the end of the fiscal year. The more important question is whether or not the facility's research is worth the investment. The goal of achieving fusion ignition would be the culmination of more than six decades of scientific research and development. Fusion is often called the "holy grail" of energy. It promises to be a virtually limitless source of energy that is clean, safe, and sustainable. Ignition would lead the way to true "energy independence" - in every sense. We would no longer have to import energy from the far corners of the world. Our economy would no longer suffer at the whims of unpredictable price fluctuations. We would no longer have to fight about where to put our nuclear waste. Surely, this is a prize worth investing in? Successfully commercializing fusion would initiate a new industry, under American leadership. If we do not seize this opportunity, we can be sure that other countries will try to move into the lead: already Russia, China, and France are building facilities that could outclass the NIF. The prize here is so great that we must continue research into fusion of all sorts. While NIF has received the most attention, it is not the only entity conducting research on fusion. Sandia National Lab, Princeton, MIT, General Atomics, and others around the world are working on experiments to prove fusion is a viable source of future energy. These all deserve continued support from the government. The NIF, in particular, is one of the crown jewels of American science, and we cannot allow its considerable achievements to be lost at the altar of false budgetary prudence.

#### CP avoids the ITER DA.

**Chu and Feinstein**, 3/14/**2012** (Steven – Secretary of Energy, and Diane – Senator from California, Hearing on FY 2013 Budget Request for the Dept. of Energy, Committee on Appropriations, Subcommittee on Energy and Water Development, p. <http://www.fusionfuture.org/wp-content/uploads/2012/03/Feinstein-Tester-Reed_Chu_testimony_Senate_Energy_Water_14_03_2012_v3.pdf>)

Feinstein: ...Let’s go to fusion and ITER and the 150 million this year with the United States’ contribution to ITER subject to grow to 300 million. Now, this is going to take money away from domestic fusion programs. They’re already concerned at NIF and also other scientific priorities, such as materials and biology research. Here’s the question. Should the United States consider withdrawing from ITER, or at least reducing the United States’ contribution and if we continue to fund it, where will $300M come from? Chu: Well, Senator, you’re asking a very important question that we ask ourselves, but first, let me assure you that the program at NIF is not actually competing with ITER. NIF is supported by the NNSA budget and we want to make sure that that new program goes forward.

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#### ITER funding is coming now --- cuts in domestic fusion research are key to fund the contribution.

**Washington Post**, **6/25**/2012 (Budget cuts threaten pursuit of nuclear fusion as a clean energy source, p. <http://www.washingtonpost.com/national/health-science/budget-cuts-threaten-pursuit-of-nuclear-fusion-as-a-clean-energy-source/2012/06/25/gJQAKlpS2V_story.html>)

President Obama’s budget request for next year cuts domestic fusion research by 16 percent, to $248 million. It would shutter a fusion lab at MIT, one of four funded by the Department of Energy. It would slash 50 to 100 jobs from the 450 at the Princeton lab. And it would use the $48 million in total savings to boost the U.S. contribution to an international fusion mega-project now under construction in the south of France, called ITER, a project whose estimated costs have grown to $23 billion and whose start date has been pushed back to the next decade. In a time of flat federal spending, the president has made a choice to fund the international project — whose costs to the United States will grow in coming years, according to Energy Department projections, to as much as $300 million a year — at the expense of the domestic program. (The United States pledged funding to ITER in 2003, joining the European Union, Russia, China, India, South Korea and Japan.)

#### ITER commitment solidifies science diplomacy --- prevents great power conflict and spurs international cooperation.

**Fedoroff**, 4/2/**2008** (Nina – Ph.D., Science and Technology Adviser to the Secretary of State and the Administration of USAID, Making Science Diplomacy More Effective, Testimony Before the House Science on Research and Science Education, Hearing on Science Diplomacy, p. <http://2001-2009.state.gov/g/stas/2008/105286.htm>)

Science by its nature facilitates diplomacy because it strengthens political relationships, embodies powerful ideals, and creates opportunities for all. The global scientific community embraces principles Americans cherish: transparency, meritocracy, accountability, the objective evaluation of evidence, and broad and frequently democratic participation. Science is inherently democratic, respecting evidence and truth above all. Science is also a common global language, able to bridge deep political and religious divides. Scientists share a common language. Scientific interactions serve to keep open lines of communication and cultural understanding. As scientists everywhere have a common evidentiary external reference system, members of ideologically divergent societies can use the common language of science to cooperatively address both domestic and the increasingly trans-national and global problems confronting humanity in the 21st century. There is a growing recognition that science and technology will increasingly drive the successful economies of the 21st century. Science and technology provide an immeasurable benefit to the U.S. by bringing scientists and students here, especially from developing countries, where they see democracy in action, make friends in the international scientific community, become familiar with American technology, and contribute to the U.S. and global economy. For example, in 2005, over 50% of physical science and engineering graduate students and postdoctoral researchers trained in the U.S. have been foreign nationals. Moreover, many foreign-born scientists who were educated and have worked in the U.S. eventually progress in their careers to hold influential positions in ministries and institutions both in this country and in their home countries. They also contribute to U.S. scientific and technologic development: According to the National Science Board’s 2008 Science and Engineering Indicators, 47% of full-time doctoral science and engineering faculty in U.S. research institutions were foreign-born. Finally, some types of science – particularly those that address the grand challenges in science and technology – are inherently international in scope and collaborative by necessity. The ITER Project, an international fusion research and development collaboration, is a product of the thaw in superpower relations between Soviet President Mikhail Gorbachev and U.S. President Ronald Reagan. This reactor will harness the power of nuclear fusion as a possible new and viable energy source by bringing a star to earth. ITER serves as a symbol of international scientific cooperation among key scientific leaders in the developed and developing world – Japan, Korea, China, E.U., India, Russia, and United States – representing 70% of the world’s current population. The recent elimination of funding for FY08 U.S. contributions to the ITER project comes at an inopportune time as the Agreement on the Establishment of the ITER International Fusion Energy Organization for the Joint Implementation of the ITER Project had entered into force only on October 2007. The elimination of the promised U.S. contribution drew our allies to question our commitment and credibility in international cooperative ventures. More problematically, it jeopardizes a platform for reaffirming U.S. relations with key states. It should be noted that even at the height of the cold war, the United States used science diplomacy as a means to maintain communications and avoid misunderstanding between the world’s two nuclear powers – the Soviet Union and the United States. In a complex multi-polar world, relations are more challenging, the threats perhaps greater, and the need for engagement more paramount.

#### Global cooperation prevents multiple scenarios of nuclear war and conflict

**Zakaria**, 11/29/**2008** (Fareed - editor of Newsweek International, Wanted: A New Grand Strategy, Newsweek, p. lexis)

The "Global Trends" report identifies several worrying aspects of the new international order—competition for resources like oil, food, commodities and water; climate change; continued terrorist threats; and demographic shifts. But the most significant point it makes is that these changes are taking place at every level and at great speed in the global system. Nations with differing political and economic systems are flourishing. Subnational groups, with varied and contradictory agendas, are on the rise. Technology is increasing the pace of change. Such ferment is usually a **recipe for instability**. Sudden shifts can trigger sudden actions—terrorist attacks, secessionist outbreaks, **nuclear brinksmanship**. The likelihood of instability might increase because of the economic crisis. Despite some booms and busts—as well as 9/11 and the wars in Afghanistan and Iraq—the world has been living through an economic golden age. Global growth has been stronger for the past five years than in any comparable period for almost five decades. Average per capita income has risen faster than in any such period in recorded history. But that era is over. The next five years are likely to be marked by slow growth, perhaps even stagnation and retreat, in certain important areas. What will be the political effects of this slowdown? Historically, economic turmoil has been accompanied by social unrest, nationalism and protectionism. We might avoid these dangers, but it is worth being acutely aware of them. At the broadest level, the objective of the United States should be to **stabilize the current global order** and to create mechanisms through which change—the rise of new powers, economic turmoil, the challenge of subnational groups like Al Qaeda—can be **accommodated without overturning the international order**. Why? The world as it is organized today powerfully serves America's interests and ideals. The greater the openness of the global system, the better the prospects for trade, commerce, contact, pluralism and liberty. Any strategy that is likely to succeed in today's world will be one that has the active support and participation of many countries. Consider the financial crisis, which several Western governments initially tried to handle on their own. They seemed to forget about globalization—and nothing is more globalized than capital. Belatedly recognizing this, leaders held the G20 meeting in Washington. This was a good first step (though just a first step). Without a coordinated approach, efforts to patch up the system will fail. The same applies not just to "soft" problems of the future—pandemics, climate change—but to current security challenges as well. The problem of multilateralism in Afghanistan—a place where everyone claims to be united in the struggle—is a sad test case for the future. Thirty-seven nations, operating with the blessing of the United Nations and attacking an organization that has brutally killed civilians in dozens of countries, are still unable to succeed. Why? There are many reasons, but it does not help that few countries involved—from our European allies to Pakistan—are genuinely willing to put aside their narrow parochial interests for a broader common one. Terrorism in South Asia generally requires effective multinational cooperation. Business as usual will produce terrorism that will become usual. National rivalries, some will say, are in the nature of international politics. But that's no longer good enough. Without better and more sustained cooperation, it is difficult to see how we will solve most of the major problems of the 21st century. The real crisis we face is not one of capitalism or American decline, but of globalization itself. As the problems spill over borders, the demand for common action has gone up. But the institutions and mechanisms to make it happen are in decline. The United Nations, NATO and the European Union are all functioning less effectively than they should be. I hold no brief for any specific institution. The United Nations, especially the Security Council, is flawed and dysfunctional. But we need some institutions for global problem-solving, some mechanisms to coordinate policy. Unless we can find ways to achieve this, we should expect more crises and less success at solving them. In a world characterized by change, more and more countries—especially great powers like Russia and China and India—will begin to chart their own course. That in turn will produce **greater instability**. America cannot forever protect every sea lane, broker every deal and fight every terrorist group. Without some mechanisms to solve common problems, the world as we have come to know it, with an open economy and all the social and political benefits of this openness, will flounder and perhaps reverse. Now, these gloomy forecasts are not inevitable. Worst-case scenarios are developed so that they can be prevented. And there are many good signs in the world today. The most significant rising power—China—does not seem to seek to overturn the established order (as have many newly rising powers in the past) but rather to succeed within it. Considerable cooperation takes place every day at the ground level, among a large number of countries, on issues from nuclear nonproliferation to trade policy. Sometimes a crisis provides an opportunity. The Washington G20 meeting, for instance, was an interesting portent of a future "post-American" world. Every previous financial crisis had been handled by the IMF, the World Bank or the G7 (or G8). This time, the emerging nations were fully represented. At the same time, the meeting was held in Washington, and George W. Bush presided. The United States retains a unique role in the emerging world order. It remains the single global power. It has enormous convening, agenda-setting and leadership powers, although they must be properly managed and shared with all the world's major players, old and new, in order to be effective. President-elect Obama has powers of his own, too. I will not exaggerate the importance of a single personality, but Obama has become a global symbol like none I can recall in my lifetime. Were he to go to Tehran, for example, he would probably draw a crowd of millions, far larger than any mullah could dream of. Were his administration to demonstrate in its day-to-day conduct a genuine understanding of other countries' perspectives and an empathy for the aspirations of people around the world, it could change America's reputation in lasting ways. This is a rare moment in history. A more responsive America, **better attuned to the rest of the world**, could help create a new set of ideas and institutions—an architecture of peace for the 21st century that would bring stability, prosperity and dignity to the lives of billions of people. Ten years from now, the world will have moved on; the rising powers will have become unwilling to accept an agenda conceived in Washington or London or Brussels. But at this time and for this man, there is a unique opportunity to use American power to reshape the world. This is his moment. He should seize it.

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#### The United States Federal Government should craft and implement a P-12 and higher education Science, Technology, Engineering and Math strategy, increase funding for STEM education in colleges and universities in the United States, provide incentives for STEM-capable teachers, increase public-private partnerships to stimulate interest in STEM education, and increase research and development funding in Science, Engineering and Math careers. The United States Federal Government should maintain its current investment in fusion energy research.

#### The CP solves STEM shortage.

Business-Higher Education Forum **2010** (Increasing the Number of STEM Graduates: Insights from the U.S. STEM Education & Modeling Project, p. http://www.bhef.com/solutions/documents/BHEF\_STEM\_Report.pdf)

Recommendations • The federal government, states and other funders should craft a carefully integrated and mutually reinforcing P-12 and higher education STEM strategy. Focusing on improvements to pre-school through high school or to higher education, alone, will not result in sufficiently large increases to double the number of STEM graduates. • Colleges and universities, with support from federal agencies like National Science Foundation (NSF), states and other funders, and employers, should focus on implementing strategies that increase persistence and student success in STEM undergraduate majors. The Model highlights the near-term importance of strengthening STEM undergraduate education as the highest leverage strategy to meet employers’ critical STEM workforce needs in the short-term. It also points to the importance of scaling up strategies such as cohort programs as a highly effective way to increase student persistence in STEM majors. • The federal government and stakeholders from higher education and schools must work together to increase the number of STEM-capable teachers. Modeling simulations suggest that increasing the number of teachers who are “STEM-capable” can result in increased numbers of students going into STEM fields. • All stakeholders must work together to increase students’ interest in STEM majors and careers. A focus on increasing the pool of students who demonstrate high proficiency in math but low interest in STEM provides fertile opportunity to enlarge the pool of students who choose and succeed in STEM majors. Interventions should be targeted to help maintain student interest in early grades and ensure that students take key gateway courses such as algebra early enough, so that they complete high school with adequate preparation for STEM undergraduate programs.

#### Solves the aff

**Olynyk**, 3/6/**2012** (Geoff – graduate student in the Department of Nuclear Science and Engineering at the Massachusettes Institute of Technology, Fusion research is a wise investment, The Tech, p. <http://tech.mit.edu/V132/N9/olynyk.html>)

The proposed budget ramps down the U.S. fusion program at a time when other countries are scaling up their efforts. In China, a new long-pulse tokamak called EAST is now producing scientific results, and the government has announced plans to train 2,000 fusion PhDs this decade. In Korea, fusion funding is guaranteed by law until 2040. Germany has a new stellarator (another type of magnetic fusion device) coming online next year. A consortium of six nations plus the EU is constructing the world’s first burning-plasma device, the ITER tokamak in France, which will produce 10 times more fusion power than external power put in to heat the plasma. The rest of the world sees the tremendous potential of magnetic fusion energy. Meanwhile, in the United States, despite the recommendations of the National Academies of Science and Engineering and energy-aware think tanks like the American Security Project, the government is eviscerating the domestic research program, starting with Alcator C-Mod, to pay for its nine percent share of ITER construction. In effect, the United States will be subsidizing tomorrow’s foreign fusion industry using its fusion research budget. The U.S. won’t be able to reap the benefits of its ITER investment — research results and skills development ­— without a strong domestic program to capture those gains. It’s also important to note how modest the fusion research budget is: Alcator C-Mod employs 120 skilled staff and supports the jobs of 200 more, and trains 30 graduate students at a time, on an annual budget of $28 million. The entire domestic magnetic fusion program costs the taxpayer $298 million per year. This is a mere 0.03% of the U.S. defense budget, or about the cost of buying two of the new F-35 fighter jets. Magnetic fusion research suffers from numerous misconceptions, dating back to the early years of the research program when, buoyed by the spectacular first results from the tokamak in the late 1960s, a few pundits made optimistic predictions about how long it would take to build an economical fusion reactor. Later, in the 1970s and ’80s, new phenomena were discovered that at first were mostly bad news, like turbulence that caused heat to leak out of the plasma much faster than originally predicted. But more recent discoveries have been hugely beneficial, and have propelled fusion research toward the goal of an economical reactor. The past few decades have seen spectacular increases in fusion performance, due to discoveries like a region of parameter space called H-mode, which halves the energy leak rate for tokamaks and led to experiments in the U.S. and the U.K. that produced more than 16 MW of fusion power. A more recent development is the I-mode, which promises to keep the plasma clean and hot without edge instabilities that act like solar flares and damage wall components. It was discovered right here at MIT, on Alcator C-Mod, and is being actively studied as an operating scenario for ITER. Furthermore, every time something new is discovered to better control fusion plasmas, our designs for fusion reactors drop in cost and size. The state-of-the-art ARIES-AT reactor study concludes that a fusion reactor is cost-competitive with a fission reactor, and has none of the proliferation or high-level waste issues. Further advances will continue this trend, but these advances will only come about with a strong experimental program in place. The U.S. will only be poised to take advantage of the results from ITER and take the next step to build a real prototype electricity-producing magnetic fusion reactor if fusion researchers exist in the U.S. We do not know exactly how long it will take to reach an economical reactor — indeed, this uncertainty defines scientific research. But the progress that fusion research has made, as demonstrated by the ability to simulate and then build tokamaks like EAST and ITER, shows that this is one research risk that the U.S. would be foolish not to take. The potential reward is far too great to ignore. The United States should fully fund the domestic fusion research program for fiscal 2013, including Alcator C-Mod at MIT, while simultaneously fulfilling its ITER obligation. The U.S. should support a fusion future.

## STEM Advantage

### STEM 1NC

#### No STEM shortage.

**Benderly**, January/February **2012** (Beryl Lieff – writer for Science Magazine and Prism, What Scientist Shortage, Columbia Journalism Review, p. http://www.cjr.org/reports/what\_scientist\_shortage.php?page=all&print=true)

The senators’ comments echo the conventional wisdom about America’s scientific labor force, repeated in countless media articles and broadcasts, and by business and political leaders all the way up to and including President Obama: we are failing to produce a sufficient quantity of scientists and engineers and therefore must import large numbers of foreigners to remain innovative and competitive. Just a pair of recent examples: a Washington Post op-ed on August 4, 2011, that explained how to “curb our engineering shortage” and a New York Times story on November 4, 2011, headlined “Why Science Majors Change Their Minds (It’s Just so Darn Hard),” that highlighted a call by “the president and industry groups” for “colleges to graduate 10,000 more engineers a year.” But what “we all know,” as Senator Cornyn put it, turns out not to be true—and the perpetuation of this myth is discouraging Americans from pursuing scientific careers. Leading experts on the STEM workforce, including Richard Freeman of Harvard, Michael Teitelbaum of the Alfred P. Sloan Foundation, Paula Stephan of Georgia State University, Hal Salzman of Rutgers, Lindsay Lowell of Georgetown, and Norman Matloff of the University of California-Davis, have said for years that the US produces ample numbers of excellent science students. In fact, according to the National Science Board’s authoritative publication Science and Engineering Indicators 2008, the country turns out three times as many STEM degrees as the economy can absorb into jobs related to their majors.

#### Alternate causality --- visas

**Beckerman**, 9/20/**2012** (Michael – President and CEO of the Internet Association, a new policy lobby representing Google, Amazon and Facebook, Congress Must Allow More STEM Visas Today, Tech Crunch, p. <http://techcrunch.com/2012/09/20/congress-must-allow-more-stem-visas-today/>)

Even after graduating from top U.S. institutions with degrees in science, math, or technology, too many skilled foreign graduates do not have the opportunity to make significant contributions to the U.S. market. Unable to remain in the United States to work, they are forced to leave the U.S. and transfer their skills and knowledge base to a foreign market. As the United States loses this talent we risk losing in the global marketplace as these graduates move on to work for our competitors. One major obstacle preventing many of these talented individuals from entering into the American workforce is their inability to secure H1-B work visas. These three- to six-year work visas are reserved for specialty occupations (requiring a Bachelor’s degree or higher) where no qualified U.S. worker is available to fill. For those seeking an employment start date in fiscal year 2013, which begins October 1, 2012, U.S. Citizenship and Immigration Services reached its 65,000 cap on H1-B visas this past June, less than three months after it opened.

#### Current cuts don’t hamper domestic capacity --- duplication solves.

**Hand**, 7/24/**2012** (Eric, US fusion in budget vice, Nature, p. http://www.nature.com/news/us-fusion-in-budget-vice-1.11061)

For years, US researchers have been steadfast in their support of ITER, the world’s largest fusion-energy experiment, which is under construction near Cadarache, France. But with funding commitments to ITER now putting the squeeze on three existing facilities in the United States, enthusiasm for the international project is becoming as difficult to sustain as a fusion reaction. “I think we should ask whether this is the right path,” Earl Marmar, head of the Alcator C-Mod fusion experiment run by the Massachusetts Institute of Technology in Cambridge, told colleagues on 18 July. The venue was a meeting of a US Department of Energy (DOE) group tasked with setting priorities for the non-ITER portion of the US fusion programme. At the meeting, in Bethesda, Maryland, Marmar pointed out that when US fusion researchers signed on to ITER in 2003, the project’s total construction cost was projected to be about US$5 billion, of which the United States would provide 9% over ten years. Now, the construction costs are projected to be roughly four times as much. Furthermore, the funds to support ITER were not supposed to be siphoned from existing facilities — yet if the total budget for US fusion science remains flat, as is expected, that is precisely what will happen (see ‘Death by ITER’). Marmar’s facility houses one of three US tokamaks — doughnut-shaped vessels in which physicists magnetically confine hydrogen nuclei in a plasma and heat them until they fuse and liberate energy. Alcator received $29 million in federal funding this year. But as ITER payments increase, US President Barack Obama’s 2013 budget proposal for the DOE would chop Alcator’s allocation back to $16 million, shutting down operations and forcing the experiment to lay off more than half of its 120 staff members. Stephen Dean, president of Fusion Power Associates, an advocacy group in Gaithersburg, Maryland, says that DOE officials have little choice but to cut Alcator, the smallest of the three US experiments, to afford an overall US ITER commitment that has grown to about $2.2 billion. “Why can’t we get by with two?” asks Dean. “It’s not an insubstantial argument.”

### 1NC US Econ Resilient

#### Economy’s resilient – can survive shocks

Bloomberg 12 (“Fed’s Plosser Says U.S. Economy Proving Resilient to Shocks,” 5-9, http://www.bloomberg.com/news/2012-05-09/fed-s-plosser-says-u-s-economy-proving-resilient-to-shocks.html)

Philadelphia Federal Reserve Bank President Charles Plosser said the U.S. economy has proven “remarkably resilient” to shocks that can damage growth, including surging oil prices and natural disasters. “The economy has now grown for 11 consecutive quarters,” Plosser said today according to remarks prepared for a speech at the Philadelphia Fed. “Growth is not robust. But growth in the past year has continued despite significant risks and external and internal headwinds.” Plosser, who did not discuss his economic outlook or the future for monetary policy, cited shocks to the economy last year, including the tsunami in Japan that disrupted global supply chains, Europe’s credit crisis that has damaged the continent’s banking system and political unrest in the Middle East and North Africa. “The U.S. economy has a history of being remarkably resilient,” said Plosser, who doesn’t have a vote on policy this year. “These shocks held GDP growth to less than 1 percent in the first half of 2011, and many analysts were concerned that the economy was heading toward a double dip. Yet, the economy proved resilient and growth picked up in the second half of the year.” Plosser spoke at a conference at the Philadelphia Fed titled, “Reinventing Older Communities: Building Resilient Cities.” Urban Resilience His regional bank’s research department is working on a project to measure the resilience of different cities, to learn more about the reasons that some urban areas suffer more than others in downturns, Plosser said. He mentioned one early finding of the study: Industrial diversity increases a city’s resilience. “I do want to caution you that resilient and vibrant communities are not just about government programs or directed industrial planning by community leaders,” Plosser said. “The economic strength of our country is deeply rooted in our market- based economy and the dynamism and resilience of its citizenry.”

### 1NC Global Econ Resilient

#### -- Economy is resilient

Behravesh 06 (Nariman, most accurate economist tracked by USA Today and chief global economist and executive vice president for Global Insight, Newsweek, “The Great Shock Absorber; Good macroeconomic policies and improved microeconomic flexibility have strengthened the global economy's 'immune system.'” 10-15-2006, www.newsweek.com/id/47483)

The U.S. and global economies were able to withstand three body blows in 2005--one of the worst tsunamis on record (which struck at the very end of 2004), one of the worst hurricanes on record and the highest energy prices after Hurricane Katrina--without missing a beat. This resilience was especially remarkable in the case of the United States, which since 2000 has been able to shrug off the biggest stock-market drop since the 1930s, a major terrorist attack, corporate scandals and war. Does this mean that recessions are a relic of the past? No, but recent events do suggest that the global economy's "immune system" is now strong enough to absorb shocks that 25 years ago would probably have triggered a downturn. In fact, over the past two decades, recessions have not disappeared, but have become considerably milder in many parts of the world. What explains this enhanced recession resistance? The answer: a combination of good macroeconomic policies and improved microeconomic flexibility. Since the mid-1980s, central banks worldwide have had great success in taming inflation. This has meant that long-term interest rates are at levels not seen in more than 40 years. A low-inflation and low-interest-rate environment is especially conducive to sustained, robust growth. Moreover, central bankers have avoided some of the policy mistakes of the earlier oil shocks (in the mid-1970s and early 1980s), during which they typically did too much too late, and exacerbated the ensuing recessions. Even more important, in recent years the Fed has been particularly adept at crisis management, aggressively cutting interest rates in response to stock-market crashes, terrorist attacks and weakness in the economy. The benign inflationary picture has also benefited from increasing competitive pressures, both worldwide (thanks to globalization and the rise of Asia as a manufacturing juggernaut) and domestically (thanks to technology and deregulation). Since the late 1970s, the United States, the United Kingdom and a handful of other countries have been especially aggressive in deregulating their financial and industrial sectors. This has greatly increased the flexibility of their economies and reduced their vulnerability to inflationary shocks. Looking ahead, what all this means is that a global or U.S. recession will likely be avoided in 2006, and probably in 2007 as well. Whether the current expansion will be able to break the record set in the 1990s for longevity will depend on the ability of central banks to keep the inflation dragon at bay and to avoid policy mistakes. The prospects look good. Inflation is likely to remain a low-level threat for some time, and Ben Bernanke, the incoming chairman of the Federal Reserve Board, spent much of his academic career studying the past mistakes of the Fed and has vowed not to repeat them. At the same time, no single shock will likely be big enough to derail the expansion. What if oil prices rise to $80 or $90 a barrel? Most estimates suggest that growth would be cut by about 1 percent--not good, but no recession. What if U.S. house prices fall by 5 percent in 2006 (an extreme assumption, given that house prices haven't fallen nationally in any given year during the past four decades)? Economic growth would slow by about 0.5 percent to 1 percent. What about another terrorist attack? Here the scenarios can be pretty scary, but an attack on the order of 9/11 or the Madrid or London bombings would probably have an even smaller impact on overall GDP growth.

### 2ac Eurozone Econ Thumper

#### Eurozone crisis thumps the global economy – existing reforms haven’t addressed structural problems

Europolitics 1/3/13 ("Echoes of the crisis," http://www.europolitics.info/economy-monetary-affairs/echoes-of-the-crisis-art346706-29.html)

Europe “biggest risk for global economy” in 2013, according to Stiglitz: "In the outlook for 2013, the biggest risks for the global economy are in the US and in Europe," Nobel Prize-winning US economist Joseph Stiglitz wrote in a column for the business daily Handelsblatt, published on 2 January. But "the real risk for the global economy lies in Europe," he warned, making specific reference to economic difficulties in Spain and Greece. "Spain and Greece are in an economic depression with no hope for a recovery,” he noted. The eurozone's 'fiscal pact' is no solution, and the European Central Bank's bond purchase is a temporary palliative at best," Stiglitz wrote. The European Central Bank (ECB) must not impose further conditions for financial aid to countries, he continued. "Otherwise, the medicine will lead to a deterioration in the patient's condition," Stiglitz argued. European policy makers have not until now been able to put in place a real growth pact for peripheral eurozone nations, he wrote. Stiglitz did not rule out further turbulence in the eurozone in 2013.

### 1NC China

#### No impact to the Chinese economy and the CCP solves econ collapse

Coonan ‘8 (10/25, Clifford, IrishTimes.com, “China's stalling boom has globe worried,” http://www.irishtimes.com/newspaper/opinion/2008/1025/1224838827729.html)

All of this downbeat news feeds into a growing suspicion that China has had its cake and eaten for way too long, and that there is simply no precedent for a country growing and growing without some kind of respite. Establishing what that pause will look like and what it means to the rest of the world is the latest challenge facing global analysts. A hangover is considered inevitable and the Olympics, while meaningless economically, are widely considered the psychological trigger for China to face a slowdown. Despite all this gloom, however, writing China off is premature. The Beijing government is well placed to help protect the economy from the worst ravages of a global downturn. It has spent the last two years trying to fight inflation and cool the overheating economy, so it's a lot easier for it to take the foot off the brakes than it is to put them on in the first place. The central bank has lowered its benchmark interest rate twice in the past two months, the first time in six years. The State Council is increasing spending on infrastructure, offering tax rebates for exporters and allowing state-controlled prices for agricultural products to rise. Expect significant measures to kick-start the property market to avoid house prices falling too drastically. China has a lot of plus points to help out. Chinese banks did not issue subprime loans as a rule, and the country's €1.43 trillion in hard-currency reserves is a useful war chest to call on in a downturn. The currency is stable and there are high liquidity levels, all of which give China the most flexibility in the world to fend off the impact of the global financial crisis, says JP Morgan economist Frank Gong. China is now a globalised economy, but its domestic market is still massively underexploited, and it is to this market that the government will most likely turn. While it is a globalised economy committed to the WTO, China is also a centralised economy run by the Communist Party, and it has no real political opposition at home to stop it acting however it sees fit to stop sliding growth. Should the economy start to worsen significantly, public anger will increase, but China has been so successful in keeping a tight leash on the internet and the media that it is difficult for opposition to organise itself in a meaningful way. Recent years of surging growth in China have certainly done a lot to keep global economic data looking rosy, but perhaps China's influence has been somewhat oversold. It is not a big enough economy by itself to keep the global economy ticking over, accounting for 5 per cent of the world economy, compared to the United States with a muscular 28 per cent. And whatever about slowing growth, 9 per cent is still an admirable rate, one that European leaders gathered this weekend in Beijing for the Asian-Europe Meeting would give their eye teeth to be able to present to their constituencies.

### 1NC CCP Instability

#### No CCP collapse—the government represses instability

Pei 9(Minxin, Senior Associate in the China Program at the Carnegie Endowment for International Peace, 3/12. “Will the Chinese Communist Party Survive the Crisis?” Foreign Affairs. http://www.foreignaffairs.com/articles/64862/minxin-pei/will-the-chinese-communist-party-survive-the-crisis)

It might seem reasonable to expect that challenges from the disaffected urban middle class, frustrated college graduates, and unemployed migrants will constitute the principal threat to the party's rule. If those groups were in fact to band together in a powerful coalition, then the world's longest-ruling party would indeed be in deep trouble. But that is not going to happen. Such a revolutionary scenario overlooks two critical forces blocking political change in China and similar authoritarian political systems: the regime's capacity for repression and the unity among the elite. Economic crisis and social unrest may make it tougher for the CCP to govern, but they will not loosen the party's hold on power. A glance at countries such as Zimbabwe, North Korea, Cuba, and Burma shows that a relatively unified elite in control of the military and police can cling to power through brutal force, even in the face of abysmal economic failure. Disunity within the ruling elite, on the other hand, weakens the regime's repressive capacity and usually spells the rulers' doom. The CCP has already demonstrated its remarkable ability to contain and suppress chronic social protest and small-scale dissident movements. The regime maintains the People's Armed Police, a well-trained and well-equipped anti-riot force of 250,000. In addition, China's secret police are among the most capable in the world and are augmented by a vast network of informers. And although the Internet may have made control of information more difficult, Chinese censors can still react quickly and thoroughly to end the dissemination of dangerous news. Since the Tiananmen crackdown, the Chinese government has greatly refined its repressive capabilities. Responding to tens of thousands of riots each year has made Chinese law enforcement the most experienced in the world at crowd control and dispersion. Chinese state security services have applied the tactic of "political decapitation" to great effect, quickly arresting protest leaders and leaving their followers disorganized, demoralized, and impotent. If worsening economic conditions lead to a potentially explosive political situation, the party will stick to these tried-and-true practices to ward off any organized movement against the regime.

## Fusion Advantage

### Status Quo Solves 1NC

#### General Fusion solves --- will commercialize fusion soon.

**Cunningham**, 9/17/**2012** (Nicholas, Startup Company Hopes to do Fusion Energy Cheaper and Faster, American Security Project, p. http://americansecurityproject.org/blog/2012/startup-company-hopes-to-do-fusion-energy-cheaper-and-faster/)

However, one small company, backed by venture capital, hopes to make fusion energy a reality in much shorter time frame. General Fusion, a company based in Canada, is seeking to achieve “net energy gain” – more energy out than is put in – by the end of next year. This is an ambitious goal. In comparison, an internationally-supported fusion reactor is under construction in the south of France, with major fusion labs around the world contributing their expertise, and they hope to achieve net energy gain sometime in the 2020’s. General Fusion also calculates that it can do it at a fraction of the cost. It is backed by $32.5 million in venture capital, notably from Chrysalix, a cleantech venture capital firm. It also received about $14 million in grant money from the Canadian government. When compared to the billions in funding for large fusion labs, it is easy to understand the excitement surrounding General Fusion. So how do they plan on proving fusion is possible cheaper and faster than the big labs? General Fusion is combining the two main approaches to fusion energy (magnetic confinement fusion and inertial confinement fusion) into a technique called “Magnetized Target Fusion.” According to their website: “Magnetized target fusion first traps a relatively low-temperature and low-density plasma of deuterium and tritium in a magnetic field (similar to magnetic fusion) and then compresses the plasma to high-temperature and high-density fusion conditions (much like inertial confinement fusion). This hybrid approach compresses the target more slowly than inertial confinement fusion, allowing the energy for compression to be delivered by much less expensive technology than lasers. Magnetized target fusion also creates higher density conditions than magnetic fusion, reducing the required containment time. Together, this combination of a slower compression rate and shorter containment time results in a simpler, cheaper and less power-intensive fusion generator design.” General Fusion believes it will prove net energy gain by the end of 2013. After that, the next step will be to build a full-scale demonstration plant, estimated to be complete by 2016 at a cost of about $1 billion. If successful, General Fusion believes it can have commercial reactors on the grid by the end of the decade.

#### Other countries are getting fusion.

**Prager**, 5/12/**2011** (Stewart – Director of the U.S. Department of Energy’s Princeton Plasma Physics Laboratory, PPL: Great Story, Bright Future, p. <http://www.pppl.gov/polPressReleases.cfm?doc_id=772>)

What kind of fusion research programs are being pursued in other countries? There has been a surge of interest in Asia. South Korea has blasted onto the fusion scene and recently begun operating a new experiment. This type of new experiment was designed to be built at PPPL, but it was cancelled by the Department of Energy because of lack of funds. Korean researchers picked up the idea and built it. They also are now discussing moving forward to a demonstration fusion power plant. Exactly the same can be said about China. Chinese researchers also have built a similar kind of new experiment and recently begun operations. The Chinese fusion program is growing in leaps and bounds. The same can be said for the European Union. Parts of it have always been strongly supportive of fusion research. Germany is constructing a new facility. And, of course, the E.U. is hosting ITER (which is being built in France.) The Indian government is increasing its fusion program; it is presently constructing a new facility similar in type to the Chinese and Korean facilities but not quite as powerful. The Japanese government also is refurbishing the country’s large tokamak to such an extent that it is also going to be a new, major facility. So those countries are really outbuilding the United States in fusion.

### 1NC No Econ War

#### Economic decline doesn’t cause war

Tir 10 [Jaroslav Tir - Ph.D. in Political Science, University of Illinois at Urbana-Champaign and is an Associate Professor in the Department of International Affairs at the University of Georgia, “Territorial Diversion: Diversionary Theory of War and Territorial Conflict”, The Journal of Politics, 2010, Volume 72: 413-425)]

Empirical support for the economic growth rate is much weaker. The finding that poor economic performance is associated with a higher likelihood of territorial conflict initiation is significant only in Models 3–4.14 The weak results are not altogether surprising given the findings from prior literature. In accordance with the insignificant relationships of Models 1–2 and 5–6, Ostrom and Job (1986), for example, note that the likelihood that a U.S. President will use force is uncertain, as the bad economy might create incentives both to divert the public’s attention with a foreign adventure and to focus on solving the economic problem, thus reducing the inclination to act abroad. Similarly, Fordham (1998a, 1998b), DeRouen (1995), and Gowa (1998) find no relation between a poor economy and U.S. use of force. Furthermore, Leeds and Davis (1997) conclude that the conflict-initiating behavior of 18 industrialized democracies is unrelated to economic conditions as do Pickering and Kisangani (2005) and Russett and Oneal (2001) in global studies. In contrast and more in line with my findings of a significant relationship (in Models 3–4), Hess and Orphanides (1995), for example, argue that economic recessions are linked with forceful action by an incumbent U.S. president. Furthermore, Fordham’s (2002) revision of Gowa’s (1998) analysis shows some effect of a bad economy and DeRouen and Peake (2002) report that U.S. use of force diverts the public’s attention from a poor economy. Among cross-national studies, Oneal and Russett (1997) report that slow growth increases the incidence of militarized disputes, as does Russett (1990)—but only for the United States; slow growth does not affect the behavior of other countries. Kisangani and Pickering (2007) report some significant associations, but they are sensitive to model specification, while Tir and Jasinski (2008) find a clearer link between economic underperformance and increased attacks on domestic ethnic minorities. While none of these works has focused on territorial diversions, my own inconsistent findings for economic growth fit well with the mixed results reported in the literature.15 Hypothesis 1 thus receives strong support via the unpopularity variable but only weak support via the economic growth variable. These results suggest that embattled leaders are much more likely to respond with territorial diversions to direct signs of their unpopularity (e.g., strikes, protests, riots) than to general background conditions such as economic malaise. Presumably, protesters can be distracted via territorial diversions while fixing the economy would take a more concerted and prolonged policy effort. Bad economic conditions seem to motivate only the most serious, fatal territorial confrontations. This implies that leaders may be reserving the most high-profile and risky diversions for the times when they are the most desperate, that is when their power is threatened both by signs of discontent with their rule and by more systemic problems plaguing the country (i.e., an underperforming economy).

### No Grid Collapse 1NC

#### Grid is resilient and sustainable

Clark 12, MA candidate – Intelligence Studies @ American Military University, senior analyst – Chenega Federal Systems, 4/28/’12

(Paul, “The Risk of Disruption or Destruction of Critical U.S. Infrastructure by an Offensive Cyber Attack,” American Military University)

In 2003, a simple physical breakdown occurred – trees shorted a power line and caused a fault – that had a cascading effect and caused a power blackout across the Northeast (Lewis 2010). This singular occurrence has been used as evidence that the electrical grid is fragile and subject to severe disruption through cyber-attack, a disruption that could cost billions of dollars, brings business to a halt, and could even endanger lives – if compounded by other catastrophic events (Brennan 2012). A power disruption the size of the 2003 blackout, the worst in American¶ history at that time (Minkel 2008), is a worst case scenario and used as an example of the¶ fragility of the U.S. energy grid. This perceived fragility is not real when viewed in the context¶ of the robustness of the electrical grid.¶ When asked about cyber-attacks against the electrical grid in April of 2012, the¶ intelligence chief of U.S. Cyber Command Rear Admiral Samuel Cox stated that an attack was¶ unlikely to succeed because of the “huge amounts of resiliency built into the [electrical] system¶ that makes that kind of catastrophic thing very difficult” (Capaccio 2012). This optimistic view¶ is supported by an electrical grid that has **proven to be robust in the face of large natural¶ catastrophes.** Complex systems like the electrical grid in the U.S. are prone to failures and the¶ U.S. grid fails frequently. Despite efforts to reduce the risk out power outages, the risk is always¶ present. Power outages that affect more than 50,000 people have occurred steadily over the last¶ 20 years at a rate of 12% annually and the frequency of large catastrophes remains relatively¶ high and outages the size of the 2003 blackout are predicted to occur every 25 years (Minkel¶ 2008). In a complex system that is always at risk of disruption, the effect is mitigated by policies¶ and procedures that are meant to restore services as quickly as possible. The most visible of these policies is the interstate Emergency Management Assistance Compact, a legally binding¶ agreement allowing combined resources to be quickly deployed in response to a catastrophic¶ disaster such as power outages following a severe hurricane (Kapucu, Augustin and Garayev¶ 2009).¶ The electrical grid suffers service interruptions regularly, it is a large and complex system¶ supporting the largest economy in the world, and yet commerce does not collapse (Lewis 2010).¶ **Despite blizzards, earthquakes, fires, and hurricanes** that cause blackouts, the economy is¶ affected but does not collapse and even after massive damage like that caused by Hurricane¶ Katrina, national security is not affected because U.S. military capability is not degraded (Lewis¶ 2010).¶ Cyber-security is an ever-increasing concern in an increasingly electronic and¶ interconnected world. Cyber-security is a high priority “economic and national security¶ challenge” (National Security Council n.d.) because cyber-attacks are expected to become the¶ top national security threat (Robert S. Mueller 2012). In response to the threat Congress is¶ crafting legislation to enhance cyber-security (Brito and Watkins 2012) and the Department of¶ Homeland Security budget for cyber-security has been significantly increased (U.S. Senate¶ Committee on Homeland Security and Governmental Affairs 2012).

#### New upgrades prevent grid collapse

Kemp 12 -- Reuters market analyst (John, 4/5/12, "COLUMN-Phasors and blackouts on the U.S. power grid: John Kemp," http://www.reuters.com/article/2012/04/05/column-smart-grid-idUSL6E8F59W120120405)

The hoped-for solution to grid instability is something called the North American SynchroPhasor Initiative (NASPI), which sounds like something out of Star Trek but is in fact a collaboration between the federal government and industry to improve grid monitoring and control by using modern communications technology. More than 500 phasor monitoring units have so far been installed across the transmission network to take precise measurements of frequency, voltage and other aspects of power quality on the grid up to 30 times per second (compared with once every four seconds using conventional technology). Units are synchronised using GPS to enable users to build up a comprehensive real-time picture of how power is flowing across the grid (www.naspi.org/Home.aspx and). It is a scaled-up version of the monitoring system developed by the University of Tennessee's Power Information Technology Laboratory using inexpensive frequency monitors that plug into ordinary wall sockets. Tennessee's FNET project provides highly aggregated data to the public via its website. The systems being developed under NASPI provide a much finer level of detail that will reveal congestion and disturbances on individual transmission lines and particular zones so that grid managers can act quickly to restore balance or isolate failures ().

### AT Food / Famine Wars

#### Famine doesn’t cause war ---- it makes people too hungry to fight

Barnett in ’00 (Jon, Australian Research Council fellow and Senior Lecturer in Development Studies @ Melbourne U. School of Social and Environmental Enquiry, Review of International Studies, “Destabilizing the environment-conflict Thesis”, 26:271-288, Cambridge Journals Online)

Considerable attention has been paid to the links between population, the environment and conflict. The standard argument is that population growth will overextend the natural resources of the immediate environs, leading to deprivation which, it is assumed, will lead to conflict and instability either directly through competition for scarce resources, or indirectly through the generation of ‘environmental refugees’. For example, according to Myers: ‘so great are the stresses generated by too many people making too many demands on their natural-resource stocks and their institutional support systems, that the pressures often create first-rate breeding grounds for conflict’.37 The ways in which population growth leads to environmental degradation are reasonably well known. However, the particular ways in which this leads to conflict are difficult to prove. In the absence of proof there is a negative style of argumentation, and there are blanket assertions and abrogations; for example: ‘the relationship is rarely causative in a direct fashion’, but ‘we may surmise that conflict would not arise so readily, nor would it prove so acute, if the associated factor of population growth were occurring at a more manageable rate’.38 It is possible though, that rather than inducing warfare, overpopulation and famine reduce the capacity of a people to wage war. Indeed, it is less the case that famines in Africa in recent decades have produced ‘first rate breeding grounds for conflict’; the more important, pressing, and avoidable product is widespread malnutrition and large loss of life.

## Energy Leadership

### Solvency 1NC

#### Despite progress, fusion is still decades away.

**Bullis**, 5/1/**2012** (Kevin – senior editor on energy at MIT’s Technology Review, Physicists Crack Fusion Mystery, Technology Review, p. http://www.technologyreview.com/news/427798/physicists-crack-fusion-mystery/)

Researchers have made a lot of progress on fusion technology—since 1970, the energy produced in experimental fusion reactors has increased by about 12 orders of magnitude, greater than the improvement in processing power in microchips over the same period, says Martin Greenwald, a fusion researcher at MIT. But for all the improvements in fusion research reactors, they still aren't useful—they don't produce more energy than they consume, and they can't be run continuously, both of which would be necessary for a power plant. The new work, like so much in the realm of fusion research, is a step toward practical fusion power, but by no means does it solve all the problems. Based on experiments, there is a practical limit to how dense the plasma in a reactor can be. Beyond a certain density, the plasma becomes unstable, dissipates its energy, and disappears. Because researchers don't understand exactly what causes this, it's difficult to predict exactly when the collapse will happen, so researchers avoid getting close to that limit in experimental reactors. The Princeton work allows engineers to better predict what will happen in the reactor, potentially allowing them to design reactors that get closer to a theoretically optimum density for the plasma. That, in turn, could increase the amount of power a fusion power plant could generate. According to the researchers' theory, islands develop within the plasma that cool off and cause the plasma to disappear. These islands—which are easily identified—could be selectively heated with microwaves, the researchers think, which could keep the plasma stable. David Gates, a principal research scientist at PPPL and one of the key researchers on the project, says he expects they will be able to test the theory in research reactors this year. While the theory is plausible, Greenwald says, it doesn't solve all the problems for reactors. It only explains part of the mechanisms involved in limiting the density of the plasma. And researchers still need to solve many practical problems before optimizing energy density is even an issue, he says. Solving these problems will require a combination of better theories, more computing power, better algorithms, and big experiments. That's why researchers still say practical fusion power plants remain decades away.

#### Long tf

#### Oil alt cause

Marketwire 10 (“The Fraser Institute: Reducing Barriers to Crude Oil Investment Will Foster Job Creation and Energy Security for United States, Canada, and Mexico,” 9-27-10, <http://www.andhranews.net/Business/2010/September/27-Fraser-Institute-Reducing-Barriers-42763.asp>)

CALGARY, ALBERTA -- (Marketwire) -- 09/27/10 -- A hodgepodge of misguided government policies, costly and time-consuming regulatory processes, and environmental restrictions have resulted in multiple barriers to investment in North American crude oil production and transportation, concludes a new study released today by the Fraser Institute, Canada's leading public policy think-tank. The study, Towards North American Energy Security: Removing Barriers to Oil Industry Development, recommends nine policy changes that would reduce barriers to investment in the crude oil sector, and ultimately lead to additional job creation and reduced reliance on foreign oil imports for the United States, Canada, and Mexico. "Crude oil is an important element of North America's energy mix and will not be supplanted by other energy forms in the foreseeable future," said Gerry Angevine, Fraser Institute senior economist in the Global Resource Centre and author of the report. "Although Canada has more than 81 percent of the continent's proven oil reserves and is the major single-country supplier of oil to the United States, the U.S. still relies heavily on oil imports from OPEC countries, leaving it vulnerable to supply disruptions."

# 2NC/1NR

## ITER

### Turns Fusion Adv

#### U.S. cannot develop fusion technology without ITER --- international cooperation is necessary.

**Kanter**, 4/29/**2009** (James, A Clean Energy Machine That Works Like the Sun, The New York Times, p. <http://www.nytimes.com/2009/04/30/business/energy-environment/30fusion.html>)

China, the United States, Japan and the European Union have committed billions of dollars to construction of the International Thermonuclear Experimental Reactor, or ITER, in a heavily forested corner of Provence called Cadarache that is a center for atomic research. The goal is to prove that energy can be generated through nuclear fusion — a process akin to how light and heat are produced by the sun. The promise is virtually unlimited amounts of energy from abundantly available sources. Fusion creates no greenhouse gases and produces far less hazardous waste than fission, the current nuclear process, although fusion reactors do become radioactive and waste would still require special disposal. If successful, the concept is not expected to be commercially viable until midcentury. There has already been a two-year delay because of difficulties setting up an international organization for the project. Rising costs for equipment could further complicate relations among the participants, which include South Korea, India and Russia. Even so, scientists say an international approach is critical. “No one nation can develop fusion alone,” said Pascal Garin, the project leader at the International Fusion Material Irradiation Facility in Japan, which is helping to develop materials for the reactor. “The technical and economic challenges are enormous compared with other low-emissions technologies like solar power or conventional nuclear power.” The original budget, set in 2001, was about $10 billion, to be spent over 30 years. About half that amount was to be spent by participating governments on national projects to build components for the reactor.

#### Participation in ITER is the only way to access essential fusion technology.

**Stacey**, Summer **1997** (Weston – Callaway Regents’ Professor of Nuclear Engineering at the Georgia Institute of Technology, The ITER Decision and U.S. Fusion R&D, Issues, Vol. 3, Issue 4, p. <http://www.issues.org/13.4/stacey.htm>)

Scientific and technical. The primary objective of the U.S. fusion program is to study the science that underlies fusion energy development. ITER offers the United States a way of participating in the investigation of the leading plasma science issues of the next two decades for a fraction of the cost of doing it alone. ITER will provide the first opportunity to study the plasma regime found in a commercial fusion energy reactor, the last major frontier of fusion plasma science. Under the present budget, participation in ITER would seem to be the only way in which the United States can maintain significant participation in the worldwide Tokamak experimental program, which is far advanced by comparison with other confinement configurations. In short, participation in ITER is actually the only opportunity for the United States to remain at the forefront of experimental fusion plasma science over the next few decades. Fusion energy also requires the development of plasma technology and fusion nuclear science and technology. ITER will demonstrate plasma and nuclear technologies that are essential to a fusion reactor in an integrated system, and it will provide a facility for fusion nuclear and materials science investigations. Participation in ITER not only allows the United States to share the costs of these activities but is the only opportunity for the United States to be involved in essential fusion energy technology development. These ITER studies of the physics of burning plasmas and nuclear and materials science, plus the technology demonstrations, are relevant not just to the Tokamak but also to alternate concepts of magnetic confinement.

### Turns Case – Timeframe

#### ITER will be ready in eight years—turns the aff faster

**Burgess**, 9/25/**2012** (James – Deputy Editor of Oil Price, A Giant Step Forward in Nuclear Fusion, Oil Price, p. http://oilprice.com/Alternative-Energy/Nuclear-Power/A-Giant-Step-Forward-in-Nuclear-Fusion.html)

ITER will be ready to test its fusion reactor in about 2019 or 2020, and will trigger the reaction by containing the plasma fuel in powerful magnetic fields, and then heating it with particle beams and radio waves.

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### Turns Case – Naval Power (Technology Spin-Off)

#### Their authors concede that ITER turns spinoff advantages.

**Gsponder and Hurni**, 2/2/**2008** (Andre – Independent Scientific Research Institute, and Jean-Pierre – Independent Scientific Research Institute, ITER: The International Thermonuclear Experimental Reactor and the Nuclear Weapons Proliferation Implications of Thermonuclear-Fusion Energy Systems, p. 48-50)

[**Their card starts]**

2.7.2 Military spinoffs of MCF technology In a compilation of several surveys, it was found that the most numerous technology transfers from magnetic fusion research to other areas of science and technology were in the domains of magnet technology, power supplies, materials technology, particle beams, power supplies and vacuum technology [73]. These types of spinoffs are similar to those found for high-energy particle accelerator physics research, a domain which like MCF produces relatively few spinoffs of direct importance to industrial development. Superconductive magnet are of great importance for strategic military developments in outer space and ballistic missile defense, as well as for tactical developments such as electromagnetic-pulse generators and electromagnetic guns. The use of cryogenic and superconductive magnets in space is been investigated for pulsed-power generation, power conditioning and energy storage, and was expected to play a major role in the Strategic Defense Initiative (SDI) program [74]. Superconductive magnets are also of great interest for the “plasma separation process” [59] which is potentially the most attractive technique for very high throughput isotope separation [75, 76]. Large scale isotope enrichment is important for the production of 235U as well as for the enrichment of various types of medium weight nuclear species if “isotopic tailoring” becomes an important feature of new materials. Such materials are expected to be necessary for making the first wall of MCF fusion vessels (in order to minimize their erosion and radioactivation due to the intense neutron bombardment from the burning plasma) as well for a number

**[Their card ends --- no text removed]**

2.7.3 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 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 positive-ion-beam 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 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 Good – Semiconductors 2NC

#### ITER contributions are key to the manufacturing industry and semiconductor innovation.

**Greenwald**, 7/10/**2012** (John, New Jersey firm creates jobs and vital component for world-leading experiment, Princeton Plasma Physics Laboratory, p. http://www.pppl.gov/webonly.cfm?doc\_id=1278)

The U.S. ITER project office has thus far awarded funding and subcontracts with a total value, including options, of up to $767 million to U.S. companies, universities and DOE laboratories. Funding for the U.S. portion of the ITER project comes from the DOE’s Office of Science through U.S. ITER at the DOE’s Oak Ridge National Laboratory in Oak Ridge, Tenn. “These funds support manufacturing, engineering, and other high tech jobs in the United States,” said Ned Sauthoff, who leads the team executing the U.S. contributions to ITER. “U.S. companies are also winning contracts from other ITER members—about $75 million so far, with more opportunities in the near future.” Oxford Superconducting is among those suppliers with contracts from both the United States and other ITER partner nations. The company has completed an $11.6 million order that came directly from the U.S. ITER office, and is halfway through a $47.3 million contract from the European Union. When measured by the type of wire that ITER requires, Oxford Superconducting has expanded from producing a few tons a year before the orders to 30 tons a year at present. This wire will be a key component of the ten-story tall ITER reactor vessel. When woven into giant electromagnetic coils, the strands from Oxford Superconducting and six other suppliers will produce powerful magnetic fields to confine and shape the hot charged gas called plasma that fuels fusion reactions. Superconducting wire is essential because electric current flows through it without resistance when the wire has been cooled to temperatures far below zero degrees centigrade. This free-flowing current permits superconducting electromagnets to run with relatively little electric input for extended periods of time that would cause conventional wire to overheat and burn out. Filling the ITER orders has strengthened Oxford Superconducting’s design and manufacturing process. “The ITER quality requirements are quite rigorous, so we’ve had to increase our expertise in that area,” said Jeffrey Parrell, Oxford Superconducting vice president and general manager. “These improved skills will be with us after the project is over, and we’ve already applied them to other areas of the business as well.” Such areas include producing the next generation of superconducting wire for particle accelerators so that scientists at DOE national laboratories such as Fermilab in Batavia, Ill., and Brookhaven National Laboratory in Upton, N.Y., can study the basic nature of matter. “We work very closely with the laboratories to make conductor wire, which they use to make better magnets, which feeds back into our conductor design,” Parrell said.

#### Weak semiconductor technology undermines military effectiveness.

**Lieberman**, 6/5/**2003** (Joe – US Senator, The National Security Aspects of the Global Migration of the U.S. Semiconductor Industry, p. http://www.fas.org/irp/congress/2003\_cr/s060503.html)

The Pentagon's Advisory Group on Electron Devices (AGED) has warned that the Department of Defense (DoD) faces shrinking advantages across all technology areas due to the rapid decline of the U.S. semiconductor industry, and that the off-shore movement of intellectual capital and industrial capability, particularly in microelectronics, has impacted the ability of the U.S. to research and produce the best technologies and products for the nation and the war-fighter. This global migration has also been discussed in a recently released National Research Council/National Academy of Sciences report on the U.S. semiconductor industry, which details the significant growth in foreign programs that support national and regional semiconductor industries. This support is fueling the structural changes in the global industry, and encouraging a shift of U.S. industry abroad. critical national security applications Studies have shown that numerous advanced defense applications now under consideration will require high-end components with performance levels beyond that which is currently available. These cutting-edge devices will be required for critical defense capabilities in areas such as synthetic aperture radar, electronic warfare, and image compression and processing. Defense needs in the near future will also be focused on very high performance for missile guidance ("fire and forget"), signal processing, and radiation-hardened chips to withstand the extreme environments of space-based communications and tactical environments. There are profound needs for much more advanced onboard processing capabilities for unmanned aerial vehicles undertaking both reconnaissance and attack missions, for cruise missiles and ballistic missile defense, and for [[Page S7469]] the infrastructure that connects these systems. As the military transforms to a "network-centric" force in the future, the DoD's Global Information Grid will demand extremely high-performance computation to overcome the technical barriers to a seamless communication network between terrestrial 24 and 48 color optical fiber and satellite platforms transmitting in 100+Mbps wireless. Such performance will also be necessary for "last-mile" extremely high-speed connectivity to platforms and to the soldier in the field, as well as for the high-speed encryption requirements for a secure communication system. Intelligence agencies will increasingly need the most advanced chips for very high-speed signal processing and data analysis, for real-time data evaluation, for sensor input and analysis, and for encryption and decryption. As studies for DARPA have indicated, the next several generations of integrated circuits, which emerge at roughly eighteen-month intervals as predicted by Moore's Law, offer the potential for exponential gains in defense war-fighting capability. It is erroneous to believe that future U.S. war fighting capability will be derived from chips one or two generations behind current state-of-the-art technology. Many of the integrated circuits and processing platforms that are coming in to use, and which are at the heart of DoD defense strategies, are clearly at the cutting edge in their capabilities. With the dramatic new capabilities enabled by rapidly evolving chip technologies, DoD and the intelligence agencies will need to be first adopters of the most advanced integrated circuits, and will be increasingly dependent on such chips for a defense and intelligence edge. If the ongoing migration of the chip manufacturing sector continues to East Asia, DoD and our intelligence services will lose both first access and assured access to secure advanced chip making capability, at the same time that these components are becoming a crucial defense technology advantage. Informed elements of the intelligence community therefore have made clear that relying on integrated circuits fabricated outside the U.S. (e.g. in China, Taiwan and Singapore) is not an acceptable national security option.

### U 2NC

#### ITER funding will increase --- the new FY 2013 budget projection proves. That’s the 1NC Washington Post evidence.

#### ITER will get the necessary budget.

**Munger**, **7/16**/2012 (Frank, Thom Mason talks about U.s. ITER: ‘When you’re running a project, you’ve got to go full steam ahead’, Atomic City Underground, p. Lexis-Nexis)

The Obama administration's request for U.S. ITER in FY 2013 was $105 million, and Mason said that's the figure that the U.S. Senate put forward in its appropriation. The House, he said, actually increased the President's budget request to about $140 million -- the same as this year -- for 2013. "So, in terms of the normal appropriations proess, that means the minimum we would expect is the President's request of $105 (million), and depending on what would happen in negotiations (between the House and Senate) it could be a little above that, which would be helpful." Mason said ITER is still subject to the "wildcard of (budget) sequestration" and "that could result in a shortfall, depending on how things play out." The lab, however, can't afford to get into the guessing games, so it is proceeding on the assumption that the ITER funding will be at least at the President's request level. "That's our plan, and everything is lining up behind that in terms of procurement actions and design and so forth," Mason said. Asked if the U.S. ITER team had delayed any procurements in anticipation of problems, Mason said there were some adjustments made early this year when the President's budget request for FY '13 was released. But since then, the work has moved forward, he said.

#### Political support for ITER funding.

**Hand**, **7/24**/2012 (Eric – staff writer at Nature, US fusion in budget vice, Nature, p. http://www.nature.com/news/us-fusion-in-budget-vice-1.11061)

It seems that some members of the US Congress are listening. On 6 June, the House of Representatives voted to boost ITER funding and to support the domestic programme at almost 2012 levels. The Senate’s version of the bill, which has not yet been voted on, currently agrees with the cuts in the Obama administration’s budget request — but directs the DOE to explore the impact of simply withdrawing from ITER. US fusion researchers do not want that — yet. But if the 2014 budget looks at all like the 2013 one, Dean predicts, the knives will be out for ITER. “They’re not trying to kill ITER just yet,” he says. “If this happens again in 2014, I’m not so sure.”

### AT: Budget Sequestration

#### Sequestration cuts are weakened --- they won’t affect major programs.

**O’Connell**, 1/2/**2013** (Michael, Analysis: Sequestration postponed? What's does that mean?, Federal News Radio, p. <http://www.federalnewsradio.com/1007/3178452/Analysis-Sequestration-postponed-Whats-does-that-mean>)

Brian Friel, a federal business intelligence analyst with Bloomberg Government, told The Federal Drive with Tom Temin and Emily Kopp today that the new legislation both delayed sequestration and reduced its potential effect. "We were looking at $109 billion in potential sequestration prior to the passage of this bill," he said. "Now we're looking at $85 billion as the ceiling, because Congress took $24 billion of the original $109 billion and shifted it. So, $12 billion of that cut has now been taken care of through a change in the tax code. The other $12 billion is being dealt with by changes in the budget caps for 2013 and 2014, so kind of pushing out the potential effect of the cuts so that they can be dealt with later. It's basically a 22 percent reduction in the potential threat of sequestration, which will potentially take place in March unless Congress and the White House can agree on further reducing the potential impact of it." Currently, the government is operating under a 2012 countinuing resolution, which runs out in March. "The way they structured those cuts is they reduced what they called the discretionary spending caps for non-security and security spending both for 2013 and 2014," Friel said. "So, $8 billion of that $12 billion has been shifted out into 2014 in the form of lower overall caps for that year." That leaves only $4 billion in potential cuts for 2013, split 50-50 between defense and non-defense spending. New Congress must resolve sequestration Friel said those cuts would occur in an after-session sequestration, which the new law says will occur on March 27, the day the CR expires. "Essentially, that $4 billion would have to come through a second sort of follow-on sequestration order from the administration," he said. "One thing to keep in mind is that $2 billion on the non-defense side, the reduction in the cap, still leaves the overall cap higher than what the current spending level is for non-defense. Essentially, that's something of a phantom cut. It can be made without actually affecting any programs."

#### No risk of sequestration

**Thompson**, **1/2**/2013 (Loren – contributor to Forbes, Sequestration Threat To Defense Sector Begins To Recede, Forbes, p. http://www.forbes.com/sites/lorenthompson/2013/01/02/sequestration-threat-to-defense-sector-begins-to-recede/)

Thus, the euphoria that stock traders are exhibiting today may be a bit premature. However, what traders see is that America’s seemingly dysfunctional political system is still capable of dealing with challenges if the stakes are really high. So there is reason to suspect that when the next round of fiscal crises looms in March, more compromises will be made to avert the danger. That has to be good news for the defense sector, which has been facing the prospect of “across-the-board” spending cuts in the Pentagon budget pursuant to the Budget Control Act of 2011. The cuts, called sequestration in their first year, would lower the baseline for defense spending through 2021 in a manner certain to eventually squeeze defense-industry profits. The cuts would total $55 billion every year beginning in fiscal 2013. What makes them draconian is that they come on top of similarly-sized cuts over the same period that were implemented last year as part of the same law. So whereas the Obama Administration was projecting two years ago that the Pentagon’s base budget would total nearly $600 billion in 2013 — not counting spending on overseas wars — the amount after both waves of cuts are implemented would be more like $490 billion. That’s a mighty big drop if you were planning your programs on the basis of the original number, as the defense industry was. And it was made worse when President Obama announced last summer that he would exercise his authority under the budget law to exempt military personnel from the cuts. In other words, the $55 billion in cuts mandated for 2013 on top of similar cuts already implemented would end up coming mainly out of the accounts on which contractors count for most of their revenues — research, procurement and maintenance. So sequestration as currently defined doesn’t really involve “across the board” cuts for the Pentagon, because the quarter of its budget allocated to military pay and benefits wouldn’t be reduced at all. But the rest of its budget would see a reduction of about 13% in one year, on top of previous cuts, and the reduced spending baseline would then remain in place for the rest of the decade. Defense companies have good reason to think they are being disproportionately targeted by budgeteers, since the Obama Administration had already spent two years slashing weapons accounts even before the Budget Control Act became law in August of 2011. Against this backdrop, the increases that most of the biggest defense contractors experienced in their share prices during 2012 might be viewed as the triumph of hope over actual news. As the Silverline Group noted in its monthly review of the sector on New Year’s Day, military-system integrators such as Exelis, L-3, Lockheed Martin, Northrop Grumman and Raytheon saw their shares rise 20% or more during the year despite the media drumbeat of impending doom. Granted, the rise was due in large part to strong financial performance as the companies outperformed expectations quarter after quarter. Analysts who took the negative news coverage at face value and predicted weakening results for the defense sector last year turned out to be dead wrong. However, it wasn’t just the numbers that led investors to stay engaged with defense shares in 2012, it was also a widespread conviction that in the end the political system would not go through with destructive cuts to the nation’s defense posture. Now we have some empirical evidence that the optimists were right. Despite dissatisfaction in both parties about the details of the new fiscal package, history will record the outcome of negotiations as a bipartisan compromise that averted a recession. When the chips were down, the parties proved to be flexible. So it seems a safe bet that the same thing will happen when more crises come along in March. The debt limit will be raised, the stopgap spending measure currently funding government operations will be replaced by something that avoids a shutdown, and the sequestration provisions of the Budget Control Act will be diluted.

### ITER Link 2NC

#### The plan trades off with funding for ITER --- Obama will use low domestic fusion investment to meet our ITER commitments. That’s the 1NC Washington Post evidence.

Their hooland ev says one cannot go without the other

#### Increasing domestic fusion kills ITER.

**Cho**, 2/13/**2012** (Adrian, At DOE, Body Blows to Fusion, Nuclear Physics, and Particle Physics, Science Magazine, American Association for the Advancement of Science, p. http://news.sciencemag.org/scienceinsider/2012/02/at-doe-body-blows-to-fusion-nucl.html)

In the single most dramatic shift, DOE would pay for an increased contribution to the ITER international fusion project by diverting funds from its domestic fusion programs, including shuttering a fusion experiment known as the Alcator C-Mod at the Massachusetts Institute of Technology (MIT) in Cambridge. Overall, the fusion energy sciences budget falls by 0.8% to $398 million, but increases the U.S. contribution to ITER to $150 million, up from $105 million this year. That shift forced officials to throw some things overboard, including MIT's $18 million budget for C-Mod. That machine is a donut-shaped device known as a tokamak that uses magnetic fields to trap an ionized gas or plasma and hold it at very high temperature and pressure. C-Mod is one of three tokamaks in the United States and a cousin of the gigantic $23 billion ITER that researchers are planning to build in Cadarache, France. "I'm dismayed, but not surprised," says Raymond Fonck, a fusion physicist at the University of Wisconsin, Madison. C-Mod had not yet been mined out scientifically, Fonck says, but there were arguments for keeping up the United States' two other tokamaks—at the Princeton Plasma Physics Laboratory in New Jersey and General Atomics in San Diego, California. Fusion physicists have long worried that the U.S. contributions to ITER would starve the domestic fusion program, and that appears to be happening. In the new budget, fusion research would receive 45% of the money, ITER would receive 45% of the money, and operations of the U.S. facilities would receive just 10% of the resources, a far cry from the roughly 50% considered optimal. "To have a 10% operating budget is kind of insane," Fonck says. "I understand where it's coming from, but we're already under utilizing our facilities."

#### Domestic and ITER funding is zero-sum.

**Cunningham**, **8/15**/2012 (Nicholas – policy analyst in energy and competitiveness at the American Security Project, Fusion Budget on Hold, American Security Project, p. <http://americansecurityproject.org/blog/2012/fusion-budget-on-hold/>)

However, U.S. funding for both ITER and the American domestic fusion program comes out of the same pie, pitting the two against each other. Congressional efforts to cut government spending have put appropriators in a bind. In order to meet its international commitments, President Obama has proposed to take $45 million out of the domestic program (a 16% cut), and reallocate that money to ITER. The cut to the domestic program would essentially shut down MIT’s Alcator C-MOD fusion project, a facility that is researching smaller and cheaper ways of doing fusion. Scrapping the MIT program would be a huge setback.

### AT: Others Fill-In (Fonck 2009)

#### This arg proves the link --- if other nations fill-in, that locks out the U.S. from international fusion research. That’s undermines science diplomacy – that’s Fedoroff 2008.

#### Domino effect --- U.S. withdrawal collapses international support.

**Fairley**, February **2008** (Peter – reporter for IEEE Spectrum, Does Fusion Have a Future?, IEEE Spectrum, p. http://spectrum.ieee.org/energy/nuclear/does-fusion-have-a-future)

If the United States does drop out of ITER, that could weaken support among other ITER players. Britain pulled its funding for another international R&D megaproject, the $6.7 billion International Linear Collider, after Congress effectively froze U.S. participation in the project. The International Linear Collider is the successor to the CERN (European Organization for Nuclear Research) Large Hadron Collider, which is to begin operations this year.

## Politics

### 2NC Iran Aggression

#### Iran is not focused on pursuing hard power.

**Eisenstadt**, August **2011** (Michael - director of the Military & Security Studies Program at the Washington Institute for Near East Policy, The Strategic Culture of the Islamic Republic of Iran, MES Monographs, No. 1, p. 6)

It may seem surprising that the IRI has not built a large, capable conventional military commensurate with the image of itself as a regional power. While U.S. pressure on potential suppliers and economic constraints may account partly for that, Iran could have afforded to build a larger conventional military, given the size of its foreign currency reserves and the amount of money spent annually on food and gas subsidies. That it has not done so probably reflects not only its concerns about domestic stability, but the fact that its approach to national security places greater emphasis on guile than on brute force,20 and on ‘soft power’ than on ‘hard power.’21

#### -- Iran won’t be aggressive – too many checks in the system

Boroujerdi 7 (Mehrzad, Associate Professor of Political Science and Director of the Middle Eastern Studies Program, “Iranian Nuclear Miasma”, Syracuse Law Review, 57 Syracuse L. Rev. 619, Lexis)

The potential for groupthink miscalculations is also thwarted by the existence of multiple consensus-based decision bodies within the overall multilayered structure. 18 While this complex process can sometimes make Iranian policy confusing and contradictory, it does not necessarily lend itself to high risk behavior. Even if one agent makes a hasty decision or issues an aggressive policy statement, it may be immediately contradicted by another authority. 19 Individual leaders also have difficulty muting [\*623] criticism within the regime and forcing all agents to agree on one course of action. While miscalculations and hasty behavior may be the rule at the micro-level, at the macro-level hasty action is checked by the competing nodes of power. While this structure could admittedly be problematic with regard to the nuclear program depending on what form of command and control system to control accidents and illicit transfer is established, it makes the prospect of Iran engaging in a boldly offensive or miscalculated action less realistic.

### 2NC No Econ War

#### AND - even if wars occur, they won’t escalate.

Bennett & Nordstrom 2k [Department of Political Science Professors @ Penn state U, D. Scott and Timothy, “Foreign Policy Substitutability and Internal Economic problems in Enduring Rivalries” Journal of Conflict Resolution, Feb., p33-61]

When engaging in diversionary actions in response to economic problems, leaders will be most interested in a cheap, quick victory that gives them the benefit of a rally effect without suffering the long-term costs (in both economic and popularity terms) of an extended confrontation or war. This makes weak states particularly inviting targets for diversionary action since they may be less likely to respond than strong states and because any response they make will be less costly to the initiator. Following Blainey (1973), a state facing poor economic conditions may in fact be the target of an attack rather than the initiator. This may be even more likely in the context of a rivalry because rival states are likely to be looking for any advantage over their rivals. Leaders may hope to catch an economically challenged rival looking inward in response to a slowing economy. Following the strategic application of diversionary conflict theory and states’ desire to engage in only cheap conflicts for diversionary purposes, states should avoid conflict initiation against target states experiencing economic problems.

#### 93 examples are on our side

Miller 2k [Morris Miller, Winter 2K. economist and adjunct professor in the University of Ottawa’s Faculty of Administration and former Executive Director and Senior Economist at the World Bank. Interdisciplinary Science Reviews, 25.4]

The question may be reformulated. Do wars spring from a popular reaction to a sudden economic crisis that exacerbates poverty and growing disparities in wealth and incomes? Perhaps one could argue, as some scholars do, that it is some dramatic event or sequence of such events leading to the exacerbation of poverty that, in turn, leads to this deplorable denouement. This exogenous factor might act as a catalyst for a violent reaction on the part of the people or on the part of the political leadership who would then possibly be tempted to seek a diversion by finding or, if need be, fabricating an enemy and setting in train the process leading to war. According to a study undertaken by Minxin Pei and Ariel Adesnik of the Carnegie Endowment for International Peace, there would not appear to be any merit in this hypothesis. After studying ninety-three episodes of economic crisis in twenty-two countries in Latin America and Asia in the years since the Second World War they concluded that:19 Much of the conventional wisdom about the political impact of economic crises may be wrong ... The severity of economic crisis - as measured in terms of inflation and negative growth - bore no relationship to the collapse of regimes ... (or, in democratic states, rarely) to an outbreak of violence ... In the cases of dictatorships and semidemocracies, the ruling elites responded to crises by increasing repression (thereby using one form of violence to abort another).

#### Their chain of causation is backwards

Ferguson 6 (Niall, prof. of history, Foreign Affairs, “The Next War of the World”, lexis)

Nor can economic crises explain the bloodshed. What may be the most familiar causal chain in modern historiography links the Great Depression to the rise of fascism and the outbreak of World War II. But that simple story leaves too much out. Nazi Germany started the war in Europe only after its economy had recovered. Not all the countries affected by the Great Depression were taken over by fascist regimes, nor did all such regimes start wars of aggression. In fact, no general relationship between economics and conflict is discernible for the century as a whole. Some wars came after periods of growth, others were the causes rather than the consequences of economic catastrophe, and some severe economic crises were not followed by wars.

### STEM Alt Causes 2NC

#### Plan’s necessary not sufficient

Their Olynky ev says the problem is lack of training – plan doesn’t make students smarter

Derose ev is someone with a MA in journalism

#### Too many problems – other lucrative options

Gaddis 12 (Michael, “The STEM Shortage and Educational Accountability Policy Solutions,” Century Foundation, October, http://tcf.org/blogs/botc/2012/10/the-stem-shortage-and-educational-accountability-policy-solutions)

Explaining the Shortage Some researchers and policymakers point to a number of problems that arise both during and after college that have created the STEM shortage. The percentage of students who choose a STEM major is quite low and more students switch out of than into STEM majors during their college career. Those college graduates who do obtain a STEM degree often do not stay in these fields after graduation. Lucrative opportunities outside STEM fields, such as consulting in financial fields, await some of the top graduates and pull them away from STEM employment. Another area of concern is foreign-born students, particularly in graduate STEM education. These students often want to stay in the U.S. to work in STEM fields but are faced with immigration road-blocks. With the Startup Act 2.0, the Senate is working on one part of the problem by attempting to give visas to foreign-born students with graduate STEM degrees.

#### K-12 fails – students too dumb, even if they want to do STEM

Gaddis 12 (Michael, “The STEM Shortage and Educational Accountability Policy Solutions,” Century Foundation, October, http://tcf.org/blogs/botc/2012/10/the-stem-shortage-and-educational-accountability-policy-solutions)

The Failure of K-12 in Preparing Future STEM Majors Data from NAEP tests and other research on achievement suggest that nearly all students simply are not prepared to enter the difficult sequences of science and math courses required of STEM majors. The NAEP patterns in science and math show that, since 1990, a larger percentage of 4th and 8th graders are proficient or advanced than 12th graders. In other words, despite a high school dropout problem that should eliminate the most severely struggling students from these calculations, still woefully few high school seniors are prepared for college-level science and math courses. Due to gifted programs, tracking, and the eventual high school prerequisites, students essentially move through a funneled system of science and math courses. Once a student falls behind, they are unlikely to catch up and be prepared to pursue a STEM major in college. Overall, science scores are dreadful. In the most recent years of testing, only 1 in 5 twelfth graders (2009) and 1 in 3 eighth graders (2011) met the level of proficiency in science. Just 1-2 percent of students are at the advanced level in science. But not all of the NAEP data portends doom and gloom for STEM. The percentage of students in all tested grade levels who are proficient or advanced in math has been steadily increasing, particularly during the past decade. Moreover, the percentage of students who are at the advanced level in math has increased to 7-8 percent for younger students, although it remains much lower, at 3 percent, for 12th graders. Often the questions at the proficient and advanced levels for the 12th grade tests are clearly topics that students need to understand before arriving at college to be in a position to succeed in STEM courses. For instance, a proficient level science multiple choice question asks students to order the levels of organization in living systems from simple to complex (i.e. from elements to organs). A similar example of an advanced level math question asks students to solve a relatively simple algebra equation to calculate an annual rate of population increase. Seemingly, students who miss these questions stand no chance of excelling in college biology or calculus, at least not without significant help from the very beginning of their college careers. Even college students who are already STEM majors think the K-12 system is lacking. In a 2011 survey commissioned by Microsoft of then-current STEM majors, only 1 in 5 students thought their K-12 education prepared them “extremely well” for college STEM courses. Nearly 2/3rds of the STEM majors thought the U.S. education system is doing a poor job of teaching STEM compared to education in other countries. Still, 51 percent of males and 68 percent of females said that a teacher or class got them interested in STEM before college. Thus, there's still hope that K-12 education can spark an interest in STEM under the right circumstances.

#### No chance at reform – kids are too dumb – plan can’t change minds because they already made up their mind

Henderson 12 (Maureen, “Why Aren't America's Students Smart Enough to Handle Science?” Forbes, 6-21, http://www.forbes.com/sites/jmaureenhenderson/2012/06/21/why-arent-americas-students-smart-enough-to-handle-science/)

The results are in and America’s elementary, middle and high school students are stumped by science. The National Center for Education Statistics released the findings of their National Assessment of Educational Progress science exam this week and it doesn’t bode well for the state of STEM (Science, Technology, Engineering and Mathematics) education. While the majority of students at the fourth, eighth and twelfth grade levels could successfully complete straightforward hands-on or computer-based tasks and arrive at the correct conclusions, once additional variables or more complex calculations were introduced, their performance declined dramatically. For example, 75% of high school seniors could successfully use test strips to test water samples for the levels of four pollutants, record the data and interpret whether the results exceeded EPA standards, but only 25% of students were able to design and conduct an investigation using a simulated calorimeter and related patterns in temperature changes in two different metals to determine which metal has the higher specific heat capacity. Results were the same at the lower grade levels, where only 24% and 35% of eighth and fourth graders respectively were able to handle the more difficult experiments. Students also had difficulty in explaining how they arrived at a correct conclusion, with only 27% of twelfth graders able to both select a correct answer and explain why they did so in one section of the test. And in another section, only 11% were able to make a final recommendation that was supported by the data they had worked with in the experiment. These results are particularly worrisome in light of the fact that four out of five students tend to make up their minds about whether or not to pursue college-level STEM studies during high school or earlier. Currently, only about a third of bachelor’s degrees awarded in the US are in the STEM fields – by contrast, over half of Chinese and Japanese college students are specializing in STEM subjects. The economic and career benefits of STEM education are well-documented. STEM occupations are forecasted to grow faster than non-STEM occupations through to 2020. Over the course of the recession, unemployment in STEM fields has been almost half that of non-STEM fields. And STEM professionals earn, on average, approximately 26% more than non-STEM counterparts. The need for beefed-up STEM education is already a hot political issue. In 2011, President Obama promised that 100 000 new STEM teachers would be trained over the next decade and in January 2012, he called on Congress to pass legislation to fund the retraining of two million unemployed workers for more technical careers. As of 2010, the total federal investment in STEM education across all agencies was $3.4B, which represents approximately 0.3% of the US’s total education budget of $1.1T. According to the National Center for Educational Statistics, only 53% of high school seniors reported that they are currently enrolled in a science class.

### UAE = Dumb

#### Patel ev doesn’t draw a line – it says UAE is doing nuclear now/end paragraph/stem could be important for NATIONAL programs, not INTERNATIONAL programs

AME evidence isn’t about US shortage – it’s about UK

#### Can’t solve – UAE’s moving away from

World Nuclear News 12-18 (Bilateral secures UAE fuel supply, http://www.world-nuclear-news.org/ENF-Bilateral\_secures\_UAE\_fuel\_supply-1812128.html)

Russia will legally be able to supply uranium as well as conversion and enrichment services to the United Arab Emirates' (UAE's) first nuclear power plant under a newly signed cooperation agreement.

The cooperation agreement on the peaceful uses of nuclear energy was signed by Rosatom general director Sergei Kiryenko and UAE energy minister Mohammed Bin Dhaen Al Hamli at a ceremony in Abu Dhabi. Specifically, it creates the necessary legal basis for long-term uranium supply contracts signed earlier in the year by Rosatom and the Emirates Nuclear Energy Corporation (Enec) to be implemented. The contract signed in August would see Russia's Techsnabexport (Tenex) supply about half of the enriched uranium to fuel the UAE's first nuclear power plant. It covers Russian natural uranium, conversion and enrichment services but not fuel fabrication: the enriched uranium is to be supplied to Kepco Nuclear Fuels, which will manufacture the fuel assemblies for use in the Barakah plant. First deliveries under the 15-year contract are scheduled for 2014. As well as the contract with Russia, Enec also has contracts in place for uranium concentrates, conversion and enrichment services with Areva of France, for natural uranium with Canada-based Uranium One and UK-based Rio Tinto, conversion services with Converdyn of the USA and with UK-headquartered Urenco for enrichment services. Al Hamli noted that the latest cooperation agreement is consistent with UAE policy on developing its national nuclear program. Construction formally began on the first of four Korean-designed APR-1400 pressurised water reactors at Barakah in July. The first unit is scheduled to enter service in 2017.

### General Fusion Solves 2NC

#### They are getting private investment.

**The Globe and Mail**, 8/24/**2012** (Fusion lightweight gets a boost from heavyweight investors, p. <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/fusion-lightweight-gets-a-boost-from-heavyweight-investors/article2011947/?service=mobile>)

One of Canada's leading purveyors of fossil fuels, oil sands company Cenovus Energy Inc. , is placing a bet on a sci-fi energy source in hopes that nuclear fusion can one day help squeeze bitumen out of Fort McMurray. The company is making a $4-million investment in General Fusion, a Burnaby, B.C.-based startup that on Thursday announced $19.5-million in new development capital, including some from Bezos Expeditions, the personal investment company of Amazon.com founder Jeff Bezos. General Fusion ranks among Canada's most ambitious small companies, with a goal to create a new energy source that could have global application. "This is the holy grail of energy," said founder Michel Laberge. "In 100 years, the whole planet will run on fusion." Over the course of the last decade, Mr. Laberge has worked on a barebones budget to develop this technology, knowing he is attempting something that has eluded throngs of scientists around the world. The billions of dollars spent on similar attempts have, so far, failed. Mr. Laberge, meanwhile, started building his own fusion prototype in an old gas station. General Fusion has since grown to 45 employees, including 10 with doctorates in plasma physics, and there are plans to add 20 more staff this year. Yet the company's ambition remains a very long shot - even if the potential prize, the development of a mass energy source that could compete with coal on cost without any greenhouse emissions or nuclear waste, is enormous. For Cenovus, the investment is tiny by corporate standards: It represents roughly a half-day's cash flow, and pales in comparison to the billions it is pouring into building its oil sands projects. But it carries some symbolic significance for a small company attempting to differentiate itself as a technical innovator in an industry criticized for not doing more to protect the environment. And if fusion works, it could help displace natural gas as the primary energy source for the extraction of bitumen (that process has been compared to burning gold to make lead). "If it works, it could potentially be applied in the oil sands operation," said Dave Hassan, team lead of environmental technology investments for Cenovus, which has also poured money into diesel emission reductions and well-abandonment technology. "And it may be something where we would actually want to become a fusion energy producer." For General Fusion, it's much-needed new capital - the company has raised a total of $30-million to put toward developing the highly complex systems needed to make fusion power. Venture capitalists such as Chrysalix, GrowthWorks, Braemer Energy Ventures, Entrepreneurs Fund and SET Venture Partners has also contributed.

#### That’s a game-changer for fusion.

**Harris**, 11/9/**2011** (Richard, Power for the Plant: Company Bets Big on Fusion, National Public Radio, p. <http://www.npr.org/2011/11/09/141931203/-power-for-the-planet-company-bets-big-on-fusion>)

And the physics concept isn't the only big idea here: Laberge is also pioneering the idea that venture capital firms, which are used to taking big gambles but expect a quick payback, can sometimes have the patience to invest in a project they can't just flip in three years. Private funding could change the game for fusion energy. Richard Siemon used to run the fusion program at Los Alamos National Laboratory, which is part of the multibillion-dollar federal research effort. He says radical ideas like this get dreamed up at the big labs, but they get starved for money, which flows mostly to the industrial-sized projects. Sure, he says, those big projects are exploring important physics, "but when they are working on a concept and somebody says, 'Yeah, but it's going to cost too much for the customer in the end,' that's sort of like a non-issue for a government researcher." But private investors are only interested in projects that could become commercially viable power sources. That's why Siemon is happy to see private investors taking an interest in fusion energy. "I really think that venture capital might just come in at this point and pick the best fruits off the tree and run with them," says the retired physicist.

#### Here’s the kicker – it does magnetic fusion

Harris 11 (http://www.npr.org/2011/11/09/141931203/-power-for-the-planet-company-bets-big-on-fusion)

"Other fusion uses a very complex way of producing energy — superconducting magnets, laser beams, all sorts of expensive and complicated and pricey stuff," he says. "It costs them billions and billions of dollars, so it's not so practical in my opinion. Here, what the energy source is, is compressed air. Compressed air is dirt cheap." Think of his idea as a one-two punch. His big electrical gizmo starts to heat up the atoms. Those get injected into a 10-foot-wide sphere full of swirling molten lead. "The liquid will be circulated with a pump, so it spins around and makes a vortex in the center. You know, like your toilet with a hole in the center," Laberge says. And just as the heated atoms get into the center, Laberge fires 200 pistons, powered with compressed air, which surround the sphere. "Those are compressed air guns ... that send a big compression wave, squash the thing, and away you go!" Enlarge image Banks of capacitors are a key part of General Fusion's machine. The capacitors, which charge up and release bursts of electricity, will be used to heat gases to 1 million degrees Celsius in preparation for a fusion reaction. Brett Beadle for NPR If all goes as planned, squashing the mixture heats it up enough to fuse the atoms and ignite nuclear reactions. The concept is called magnetized target fusion. Laberge didn't invent the idea, but he re-imagined it, and, more to the point, he raised $30 million from Amazon.com founder Jeff Bezos and several venture capital firms to see if he can get it off the ground. Ask Laberge if he thinks it will work, and you'll get an indignant reply: "Of course I think it's going to work! Do you think I'm going to spend 10 years of my life doing something I think won't work? I think it [has] a good shot of working."

### 2NC Blackouts – Grid Safe Now

#### Back-up generators and detection solve black-outs

Wood 12 -- Senior Communications Advisor at Business Roundtable (Carter, 8/2/12, "The grid: After India, America? No, but still…" http://businessroundtable.org/blog/the-grid-after-india-america-no-but-still/)

A blackout of such scale could not happen in the United States. For one thing, we don't have 600 million people. And America's electrical grid is certainly much more resilient than the one in India, a still-developing country with ineffective governments. Still, as The Washington Post reports today, "Aging power grid on overload as U.S. demands more electricity." At CNBC, Jim Cramer asked Thomas F. Farrell II, Chairman, President & CEO of Dominion Resources, about India. Could the same thing happen in the United States? Farrell responded: Our system has a lot more rigor to it and partly because we have reserve margins, meaning we have more power stations than we need to run at any particular moment in time, so that if a power station goes out, there's a back-up to help keep the grid stable. They don't have that much excess power in India, and when they get to the root cause, they'll probably find that was somewhere in there.

### Food Wars

#### -- Food wars are a myth – there’s zero empirical evidence

Salehyan 7 (Idean, Professor of Political Science – University of North Texas, “The New Myth About Climate Change”, Foreign Policy, Summer, http://www.foreignpolicy.com/story/cms.php?story\_id=3922)

First, aside from a few anecdotes, there is little systematic empirical evidence that resource scarcity and changing environmental conditions lead to conflict. In fact, several studies have shown that an abundance of natural resources is more likely to contribute to conflict. Moreover, even as the planet has warmed, the number of civil wars and insurgencies has decreased dramatically. Data collected by researchers at Uppsala University and the International Peace Research Institute, Oslo shows a steep decline in the number of armed conflicts around the world. Between 1989 and 2002, some 100 armed conflicts came to an end, including the wars in Mozambique, Nicaragua, and Cambodia. If global warming causes conflict, we should not be witnessing this downward trend.

Furthermore, if famine and drought led to the crisis in Darfur, why have scores of environmental catastrophes failed to set off armed conflict elsewhere? For instance, the U.N. World Food Programme warns that 5 million people in Malawi have been experiencing chronic food shortages for several years. But famine-wracked Malawi has yet to experience a major civil war. Similarly, the Asian tsunami in 2004 killed hundreds of thousands of people, generated millions of environmental refugees, and led to severe shortages of shelter, food, clean water, and electricity. Yet the tsunami, one of the most extreme catastrophes in recent history, did not lead to an outbreak of resource wars. Clearly then, there is much more to armed conflict than resource scarcity and natural disasters.

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#### No impact to meltdowns – empirically proven by fukushima

### Yucca Mountain

#### Says extinction would happen only if the amount of radioactive waste under Yucca gets released somehow. It will stay under the mountain – no evidence that says it will actually be released

#### Yucca mountain is no longer used

Keith Johnson, Senior Environmental Analyst @ WSJ, 2/26/**’**9

(http://blogs.wsj.com/environmentalcapital/2009/02/26/nuclear-waste-yucca-mountains-scrapped-so-what-now/)

The Obama budget had a wink for Colombian novelist Gabriel Garcia Marquez and his “Chronicle of a Death Foretold”—Yucca Mountain is now officially dead, after agonizing on its deathbed for years.

The draft budget removes funding for the planned nuclear-waste storage facility in Nevada, which has been 20 years and more than $9 billion in the making. A Department of Energy spokeswoman told Bloomberg that President Obama and Energy Secretary Steven Chu “have been emphatic that nuclear waste storage at Yucca Mountain is not an option, period.”

What does that mean for the future of nuclear power? In the short term, nothing. Yucca Mountain never opened, and spent fuel from the country’s 104 reactors are kept in pools on site. Big nuclear countries like France don’t have deep geological storage, either. Even if it did open, there’s already a big enough backlog to fill it, so the administration was going to have to find a bigger solution to the waste-storage issue anyway.

#### -- Radiation doesn’t cause cancer

Cravens 7 (Gwyneth, Atomic Energy Commission – New York, Radiologist, MA – Harvard University, The Power to Save the World, p. 101-102)

According to a paper plucked from a high shelf UNSCEAR's Sources and Effects of Ionizing Radiation and found a graph of cancer rates in the area in the six years prior to the accident. "You see that the rate of all cancers was steadily going up and that the slope stayed the same after Chernobyl in 1986. It hasn't changed. Except for leukemia and thyroid cancers, which appear relatively quickly, most cancers from radiation occur twenty years after the exposure. Officials from Belarus and Ukraine were saying that Chernobvl caused the increase. We replied, 'Yes, cancer rates were going up, especially in cities. Your reporting system is no good.' In villages, there are no autopsies and there's less medical care than in cities. Cancer rates are higher in Poland than around Chernobyl. Is it just more corn­mon there? Or is there some protective effect in the Ukraine? World­wide, about thirty percent of the population gets cancer. The reported rates in the Ukraine are fifteen percent. But how do you know what peo­ple have died of? Suppose a man dies of lung cancer. The Ukrainian vil­lager doing the report could write down 'pneumonia' for lung cancer.”According to Mettler, statistical predictions of leukemia based on doses did not pan out. Even with thyroid cancer, there was no clear, documented evidence of an increase during the time the IAEA study took place. “And the Soviets,” he added, “used to include thyroid cancer data in the category of “all other” and that category included prostate cancer, which isn’t caused by radiation. But we couldn’t exclude twenty-four thyroid cancers, mainly in children . Now, when you screen children more for thyroid cancer in a normal population, you’ll find more. But it’s clear that the magnitude of the number of cases – about two thousand – was not simply due to screening. We got a lot of crap for projecting thyroid cancers and leukemia when, as some critics said, “You didn’t find any increase!’ So we got shot at from both sides. I figured we must be doing something right.”

#### -- Nature will adapt

Bosselman 7 (Professor of Law Emeritus – Chicago-Kent College of Law, “The New Power Generation: Environmental Law and Electricity Innovation”, New York University Environmental Law Journal, 15 N.Y.U. Envtl. L.J. 1, Lexis)

Ecologists today recognize that disturbance is a natural part of ecological processes. Ecological change caused by disturbance is not only inevitable but, within limits, **necessary** if ecological processes are to be maintained. This current view is a departure from much of the earlier ecological thinking, which assumed that each part of the world had a "climax" condition that in the aggregate created a static "balance of nature." [266](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n266) University of Illinois wildlife law expert Eric Freyfogle summarizes the importance of this change: "Ecologists now realize that the whole concept of community climax is misleading, for climaxes are always tentative and subject to being upset by a wide variety of natural forces, including fire, disease, and weather." [267](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n267) My colleague, Dan Tarlock, has chronicled how the science of "nonequilibrium" ecology emphasizes the important role that disturbance, such as wildfire, flood, or epidemic, plays in ecological processes. [268](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n268) **Things our society has called "disasters" are not external to the ecological system but a vital part of it.** [269](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n269) Disturbance can be seen as an inevitable ecological process and a  [\*50]  stabilizing factor that needs to be understood, [270](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n270) and "efforts to freeze or restore a static, pristine state" of nature are inappropriate "irrespective of whether the motive is to conserve nature, to exploit a resource for economic gain, to sustain recreation, or to facilitate development." [271](http://www.lexis.com/research/retrieve?_m=4a9f74e9d68358dde5b1da7c76fcc08d&docnum=49&_fmtstr=FULL&_startdoc=1&wchp=dGLbVlz-zSkAB&_md5=b940f69f179ebb657dc94d1baf8c0fbd#n271)

### Navy

#### Naval force readiness high – new ship acquisitions solve

**O'Rourke 12** (Ronald, Specialist in Naval Affairs, “Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress,” 8-9-12, http://www.fas.org/sgp/crs/weapons/RL32665.pdf)

In February 2006, the Navy presented to Congress a goal of achieving and maintaining a fleet of **313 ships**, consisting of certain types and quantities of ships. On March 28, 2012, the Department of Defense (DOD) submitted to Congress an FY2013 30-year (FY2013-FY2042) **shipbuilding plan** that includes a new goal for a fleet of about 310-316 ships. The Navy is conducting a force structure assessment, to be completed later this year, that could lead to a refinement of this 310316-ship plan. The Navy’s proposed FY2013 budget requests funding for the procurement of **10 new battle force** ships (i.e., ships that count against the 310-316 ship goal). The 10 ships include one Gerald R. Ford (CVN-78) class aircraft carrier, two Virginia-class attack submarines, two DDG-51 class Aegis destroyers, four Littoral Combat Ships (LCSs), and one Joint High Speed Vessel (JHSV). These ships are all funded through the Shipbuilding and Conversion, Navy (SCN) account.

#### Naval power is good for nothing

**Reed 8** [John T. Reed, West Point Graduate and platoon leader in the 82nd Airborne Division., June, 2008.<"Are U.S. Navy surface ships sitting ducks to enemies with modern weapons?"http://www.johntreed.com/sittingducks.html]

I have read media stories that said whenever the U.S. Navy did computer war games against the Soviet Union, all significant U.S. Navy surface ships were destroyed by the Soviets within about **20 minutes** of the start of the computerized war. How? Nukes. A reader says that the Soviet submarines in the Cuban missile crisis had nuclear torpedoes which they would have used if we did an amphibious landing. I have no way to confirm that. Although the Navy ships and their carrier-based planes perform spectacularly well against third-rate enemies like Afghanistan and Iraq, I wonder how they would do against Argentina or any other enemy equipped with modern weapons. In short, I wonder if **U.S. Navy surface vessels are obsolete.** Think about it. They are large, slow-moving, metal objects that float on the surface of the ocean—in the Twenty-First Century! Ocean liners were the main way to get across the oceans for civilian passengers until the second half of the Twentieth Century. Since then, most people have used planes because they are much faster and cheaper. Except the U.S. military. Civilians essentially got rid of their “navy” around 1950. Only the hidebound military would still have a Navy in the Twenty-First Century. Nowadays, civilians only ride passenger ships for pleasure cruises. An argument can be made that the Navy does the same. Only maybe the old line, “you can tell the men from the boys by the size of their toys” is a more accurate way to put it. Navy brass want to grow up to captain a ship. A big ship. The bigger the better. Before WW II, they wanted to be captains of battleships. After WW II, British historian B.H. Liddell Hart said, “A battleship had long been to an admiral what a cathedral is to a bishop.” Now Navy officers want to captain aircraft carriers. Very exciting. Very romantic. Great fun. But obsolete. WW II in the Pacific last time they were not obsolete The last time we used them to fight worthy opponents was in the Pacific during World War II. At that time, warring navies had to send out slow-moving patrol planes to search for the enemy’s ships. The motion picture Midway does an excellent job of showing both the Japanese and the Americans doing this. Low-visibility weather would often hide ships back then. Easily detected- Those days are long gone. Surface ships are not only easily seen by the human eye absent fog or clouds, they are also easily detected, pinpointed, and tracked by such technologies as radar, sonar, infrared detectors, motion detectors, noise detectors, magnetic field detectors, and so forth. Nowadays, you can probably create an Exocet-type, anti-ship missile from stuff you could buy at Radio Shack. Surface ships can no longer hide from the enemy like they did in World War II. Satellites- Satellites and spy planes obviate the need for World War II-type patrol planes and blimps, unless someone shoots them down, in which case planes can accomplish the same thing.. Too slow- Anti-ship missiles can travel at speeds up to, what, 20,000 miles an hour in the case of an ICBM aimed at a carrier task force. Carriers move at 30 knots or so which is 34.6 miles per hour. Too thin-skinned- Can you armor the ships so anti-ship missiles do not damage them? Nope. They have to stay relatively light so they can float and go 34.6 miles per hour. Cannot defend themselves-Can you arm them with anti-missile defenses? They are trying. They have electronic Gatling guns that automatically shoot down the incoming missiles. But no doubt those Gatling guns have a certain capacity as to number of targets they can hit at a time and range and ammunition limitations. They also, like any mechanical device, would malfunction at times. Generally, one would expect that if the enemy fired enough missiles at a Gatling-gun-equipped ship, one or more would eventually get through. How many? Let’s say the capacity of an aircraft carrier and its entourage body-guard ships to stop simultaneous Exocet-type anti-ship missiles is X. The enemy then need only simultaneously fire X + 1 such missiles to damage or sink the carrier. In the alternative, the enemy could fire one Exocet-type missile at a time at the carrier. Unless they are programmed otherwise, having only one such target, all the relevant guns would fire at it, thereby exhausting the carrier task force’s anti- missile ammunition more quickly, in which case fewer than X +1 Exocet-type missiles might be enough to put the carrier out of action. As Japan’s top WW II Admiral Yamamoto said, There is no such thing as an unsinkable ship. The fiercest serpent may be overcome by a swarm of ants. U.S. warships also have electronic warfare jamming devices that screw up the guidance systems of some types of incoming missiles. These, of course, are ineffective against nuclear-tipped missiles that need little guidance. Furthermore, if the enemy uses 20,000-miles-per-hour nuclear missiles, there is no known anti-missile defense. They move too fast for the electronic Gatling guns and do not need to ever get within the Gatling guns’ range to destroy the ships. Our enemy certainly would use nukes if they had enough of them and were in an all-out war against us. Cannot hide, run, or defend themselves In summary, Navy surface ships cannot hide from a modern enemy. They cannot run from a modern enemy. And they cannot defend themselves against a modern enemy. Accordingly, they are only useful for action against backward enemies like Afghanistan and Iraq or drug smugglers.

### Solvency 2NC

#### C) Plant construction ---

**Perlman**, 1/29/**2010** (David - Chronicle science editor, Focusing 192 lasers on one little target, San Francisco Chronicle, p. http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/01/29/MN5K1BOF4V.DTL&tsp=1)

The National Ignition Facility is a 10-story building that was dedicated in May on the heavily guarded and highly classified Livermore site. But for many decades, Livermore scientists foresaw the need for increasingly **powerful lasers to reach ignition**. Lasers called Janus, Cyclops, Argus and the 20-beam laser named Shiva were used to conduct crucial experiments that led to the 10-year development of the laser array. Thermonuclear reactions The new laser array will be used to **trigger thermonuclear reactions mimicking in miniature the** deadly **energy of thermonuclear weapons**, and those efforts are the principal aim of the project. It is largely funded by the National Nuclear Security Agency, which oversees America's arsenal of nuclear weapons and seeks to maintain their safety and reliability as the weapons age. But many scientists foresee that experiments like the ones at the ignition facility could **lead the way to the eventual construction of large-scale fusion reactor power plants** capable of generating countless megawatts of electricity using the hydrogen isotopes from ocean water as **endless fuel**. B. Grant Logan, director of a separate and unclassified attempt to achieve ignition based at the Lawrence Berkeley National Laboratory, said the new report is highly encouraging. The report, he said in an e-mail, shows "remarkable progress toward the scientific demonstration of fusion ignition and energy gain in the laboratory for the **first time in the world**. **At the rate they are going**," he said, "it does appear to me that **fusion ignition will be demonstrated soon**."

#### Only the CP solves --- the aff’s technology is impossible.

**Physics Central**, 3/21/**2012** (Fusion Finally on the Horizon?, p. http://www.physicscentral.com/buzz/blog/index.cfm?postid=8345643131457194461)

Because we can't rely on gravity to squeeze fusion fuel together down here on Earth, physicists have been working on a number of alternatives. For the past half century or so most of the focus has been on using magnetic fields to confine gas-like plasmas of super hot hydrogen. Unfortunately, plasmas are slippery and holding onto them for long is very, very difficult. So difficult, in fact, that the approach has been the butt of a longstanding joke that goes something like this, "Practical plasma fusion is only twenty years away, and always will be." It's funny, 'cause it's true. When I was a physics student in the 1980's, the plasma physicists I was working for told me we'd have magnetic fusion reactors in twenty years, and they are saying the same thing today. (Some are even saying it may take thirty years, essentially indicating that the field is making anti-progress towards its lofty goal.) In the meantime, an entirely different approach appears to be moving ahead at leaps and bounds. The National Ignition Facility (NIF) seems to be on track to burn a bit of fusion fuel within the year, and produce megawatts of power for the electrical grid in about ten years, using Inertial Confinement Fusion. Most ICF designs rely on heating a capsule of fuel with a whole mess of high power lasers. That causes the outer shell of the capsule to explode and compress a tiny bit of fuel inside. Once compressed, the hot fuel tends to rapidly expand, but before it can do that it has to overcome inertia, as described by Newton's first law. That doesn't give us a lot of time, but it's enough to create a minuscule version of the sun, even without massive amounts of gravity. All you need to do at that point is harness the energy from the tiny, fleeting sun to heat water and use the resulting steam to turn a few turbines. Yeah, yeah, it's clearly not so easy. Still 60 years of work has proven magnetically confined fusion to be durn near impossible. That's why I'd consider doubling down on the ICF folks, while taking my chips off the magnetic fusion hand.

#### NIF results in the construction and commercialization of fusion technology --- solves U.S. fusion leadership.

**Pomeroy**, 6/21/**2012** (Ross – assistant editor of Real Clear Science, Fusion: The Energy of Tomorrow, Today, Real Clear Science, p. http://www.realclearscience.com/articles/2012/06/21/fusion\_the\_energy\_of\_tomorrow\_today\_106303.html)

Believe it or not, America is nearing the threshold of a fusion future. By the end of 2012, scientists at the National Ignition Facility in Livermore, California plan to fire the most powerful laser ever constructed into a small chamber with pea-sized fuel pellets inside. The fusion fuel contained within the pellets, two isotopes of hydrogen -- deuterium and tritium -- will fuse together, producing helium, a free neutron, and massive amounts of energy in the form of heat. If all goes to plan, about ten to one hundred times more energy than the amount used to ignite the fuel will be unleashed. With this monumental breakthrough achieved, construction could begin on a fusion power plant capable of producing 400 megawatts of base-load power, with a target completion date in the early 2020s. Capital costs would roughly be the same as a current nuclear fission power plant, between $6 and $7 billion. It's a daunting cost to be sure, but one well worth funding. Besides providing a blueprint for future fusion plants, investment in such a facility will drive innovation in multitudes of fields ranging from optics to materials science. After the completion of the fusion test plant, construction of commercial facilities producing between 1,000 and 1,500 megawatts of fusion power can get underway. These power plants will produce electricity that's hard to find fault with. The energy will be base-load -- always available. It will be clean -- there will be no carbon dioxide emissions or hazardous waste. It will be cheap -- early estimates show fusion power to be cost-competitive with coal, even without a carbon tax. It will be nearly limitless -- up to 30 million years of fusion fuel exists on Earth. And most importantly, it will be made in America -- Laser Inertial Fusion Energy (LIFE) has been produced entirely within the United States.

### 1NC Environmental Degradation

#### -- No extinction

Easterbrook 3 (Gregg, Senior Fellow – New Republic, “We’re All Gonna Die!”, Wired Magazine, July, http://www.wired.com/wired/archive/11.07/doomsday.html?pg=1&topic=&topic\_set=)

If we're talking about doomsday - the end of human civilization - many scenarios simply don't measure up. A single nuclear bomb ignited by terrorists, for example, would be awful beyond words, but life would go on. People and machines might converge in ways that you and I would find ghastly, but from the standpoint of the future, they would probably represent an adaptation. Environmental collapse might make parts of the globe unpleasant, but considering that the biosphere has survived ice ages, it wouldn't be the final curtain. Depression, which has become 10 times more prevalent in Western nations in the postwar era, might grow so widespread that vast numbers of people would refuse to get out of bed, a possibility that Petranek suggested in a doomsday talk at the Technology Entertainment Design conference in 2002. But Marcel Proust, as miserable as he was, wrote Remembrance of Things Past while lying in bed.

#### -- Long time-frame

Kay 1 (Jane, “Study Takes Historical Peek at Plight of Ocean Ecosystems”, San Francisco Chronicle, 7-26, Lexis)

The collapse of ecosystems often occur over a long period. In one example, when Aleut hunters killed the Alaskan sea otter about 2,500 years ago, the population of their natural prey, the sea urchin, grew larger than its normal size. In turn, the urchins grazed down the kelp forests, important habitat for a whole host of ocean life. Then, when fur traders in the 1800s hunted the otters and sea cows almost to extinction, the kelp forests disappeared and didn't start to regenerate until the federal government protected the sea otters in the 20th century. In California, the diversity of spiny lobsters, sheephead fish and abalone kept down the urchin numbers. At present in Alaska, the kelp beds are declining again in areas where killer whales are preying on sea otters. Biologists think the killer whales switched to otters for food because there are fewer seals and sea lions to eat.

### 2NC Environment – Resilient

#### No brink to environmental collapse

Lomborg 12 -- director of the Copenhagen Consensus Center and author of Smart Solutions to Climate Change (Bjorn, July/August, "Environmental Alarmism, Then and Now," http://www.foreignaffairs.com/articles/137681/bjorn-lomborg/environmental-alarmism-then-and-now?page=show)

As for its pollution predictions, The Limits to Growth was simultaneously scary and vague. Pollution's increase was supposed to trigger a global collapse if the decrease of food or resources didn't do so first, but how exactly pollution was defined was left unclear. Individual pollutants, such as DDT, lead, mercury, and pesticides, were mentioned, but how those could kill any significant number of people was unspecified, making it a bit tricky to test the prediction. Air pollution might be considered a good proxy for overall pollution, since it was the biggest environmental killer in the twentieth century and since the Environmental Protection Agency estimates that its regulation produces 86-96 percent of all the social benefits from environmental regulation more generally. In the developing world, outdoor air pollution is indeed rising and killing more people, currently perhaps over 650,000 per year. Indoor air pollution (from using dirty fuels for cooking and heating) kills even more, almost two million per year (although that number has been decreasing slightly).

#### -- Environment is resilient

Easterbrook 95 (Gregg, Distinguished Fellow – Fullbright Foundation, A Moment on Earth, p. 25)

In the aftermath of events such as Love Canal or the Exxon Valdez oil spill, every reference to the environment is prefaced with the adjective "fragile." "Fragile environment" has become a welded phrase of the modern lexicon, like "aging hippie" or "fugitive financier." But the notion of a fragile environment is profoundly wrong. Individual animals, plants, and people are distressingly fragile. The environment that contains them is close to indestructible. The living environment of Earth has survived ice ages; bombardments of cosmic radiation more deadly than atomic fallout; solar radiation more powerful than the worst-case projection for ozone depletion; thousand-year periods of intense volcanism releasing global air pollution far worse than that made by any factory; reversals of the planet's magnetic poles; the rearrangement of continents; transformation of plains into mountain ranges and of seas into plains; fluctuations of ocean currents and the jet stream; 300-foot vacillations in sea levels; shortening and lengthening of the seasons caused by shifts in the planetary axis; collisions of asteroids and comets bearing far more force than man's nuclear arsenals; and the years without summer that followed these impacts. Yet hearts beat on, and petals unfold still. Were the environment fragile it would have expired many eons before the advent of the industrial affronts of the dreaming ape. Human assaults on the environment, though mischievous, are pinpricks compared to forces of the magnitude nature is accustomed to resisting.

### AT: Perm – Do the CP

#### NIF is not energy production.

**D’Agostino and Albright**, 10/10/**2012** (Thomas – administrator of the National Nuclear Security Administration, and Penrose C. – director of the Lawrence Livermore National Laboratory, A Nuclear Research Facility, Letter to the Editor, The New York Times, p. http://www.nytimes.com/2012/10/19/opinion/a-nuclear-research-facility.html)

While the editorial does refer to the role the National Ignition Facility plays as a nuclear weapons facility, the fact is that it was conceived, designed, built and funded to conduct experiments that help replicate the conditions found inside nuclear weapons, and has already answered important questions about the United States’ aging stockpile. Fusion energy — while an important area of study — has never been its primary purpose.

#### Severs increase –

#### A) “Substantial” means real

**Words and Phrases 2** (Volume 40A) p. 460

Ala. 1909. “Substantial” means “belonging to substance; actually existing; real; \*\*\* not seeming or imaginary; not elusive; real; solid; true; veritable

#### B) “Increase” requires a net increase over the status quo.

Judge **Rogers**, June 24, **2005**, US Court of Appeals for the DC Circuit, State of New York, et al., Petitioners v. US Environmental Protection Agency, 367 U.S. App. D.C. 3; 413 F.3d 3, 2005 U.S. App. LEXIS 12378, \*\*; 60 ERC (BNA) 1791, p. Lexis

[\*\*48] Statutory Interpretation. HN16Go to the description of this Headnote.While the CAA defines a "modification" as any physical or operational change that "increases" emissions, it is silent on how to calculate such "increases" in emissions. 42 U.S.C. § 7411(a)(4). According to government petitioners, the lack of a statutory definition does not render the term "increases" ambiguous, but merely compels the court to give the term its "ordinary meaning." See Engine Mfrs.Ass'nv.S.Coast AirQualityMgmt.Dist., 541 U.S. 246, 124 S. Ct. 1756, 1761, 158 L. Ed. 2d 529(2004); Bluewater Network, 370 F.3d at 13; Am. Fed'n of Gov't Employees v. Glickman, 342 U.S. App. D.C. 7, 215 F.3d 7, 10 [\*23] (D.C. Cir. 2000). Relying on two "real world" analogies, government petitioners contend that the ordinary meaning of "increases" requires the baseline to be calculated from a period immediately preceding the change. They maintain, for example, that in determining whether a high-pressure weather system "increases" the local temperature, the relevant baseline is the temperature immediately preceding the arrival of the weather system, not the temperature five or ten years ago. Similarly, [\*\*49] in determining whether a new engine "increases" the value of a car, the relevant baseline is the value of the car immediately preceding the replacement of the engine, not the value of the car five or ten years ago when the engine was in perfect condition.

#### NIF will be funded now

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

The NIF project is mainly intended to help assess the reliability and safety of U.S. nuclear weapons through the creation of controlled blasts like those of a hydrogen bomb, though it is also seen as having uses in the creation of a limitless and cheap energy supply. "The question is whether you continue to pour money into it or start over," said Stephen Bodner, who used to direct a competitor laser program at the Washington-based Naval Research Laboratory. "I think they're in real trouble and that continuing the funding at the current level makes no sense." The project's current operating budget is approximately $290 million annually. 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.

### Solvency – Funding

#### CP results in the plan --- ignition builds political support for domestic programs.

**khijani and Zerriffi**, **2003** (Arjun - Ph.D, and Hisham, Dangerous thermonuclear quest, Report for Institute for Energy and Environmental Research, Orig. July 1998, Edited 2003, p. http://www.ieer.org/reports/fusion/dtq.pdf)

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.

#### Turns the case --- proof of technological progress is the only way to sustain fusion funding. Plan gets rolled back.

**Gibson**, **2007** (Lauren Kate - Elliot School of International Affairs at George Washington University, Developing fusion as an energy source, p. 15-16)

There are several policy challenges that stand in the way of achieving the ultimate goal of commercially run fusion power plants. First and foremost is inadequate funding. Fusion research has suffered from the ebbs of flows of public and political opinion that affect its funding level, especially in the United States. All countries must consider how international collaboration now is affecting their future stance in the market. This is assuming, of course, that there will be a market. Technology transfer is yet another political concern. At some point commercial entities need to take over to make the public good of fusion generated electricity available and thus validate the massive investments that several governments have made. Policy makers must act to address these three major policy challenges. Fusion is now at a critical point where funding is increasingly necessary. As the machines that will take us past our current modest energy gain to a high energy gain are being constructed, this sector is being transformed from basic science with a vague end goal into applied science with the end of a demonstration prototype. The predicted level of funding necessary for the United States to create their DEMO plant, the demonstration prototype that is intended to persuade industry to take over the reins, is $24 billion 2002 dollars. While it is highly unlikely that all funding would be cut off, it is critical that funding levels remain constant so that the research can be productive. fusion stands at a critical point. . . **The decisions that have to be taken will determine if fusion is to progress as an energy technology** or to take a slower course as a basic scientific research program. For fusion to pass from the research stage into reactor development undoubtedly requires a **substantial increase** in funding and this will certainly not become available without strong pressure from within societies.33 In the past, the level of funding has fluctuated in the United States. When energy independence or availability is an acute political issue, then fusion becomes **significantly funded**. When it is not, however, funding falls and the timeline for completion stretches further into the future.