## 1NC

**DoD Spec**

***DOD affs need to specify their incentive—key to DA and CP ground—vagueness uniquely kills education about core aff mechanisms and prevents in-depth clash --- voting issue***

**IRTC**, Intuitive Research & Technology Corporation, 8/25/**’5**

(“Department of Defense Energy Manager’s Handbook,” Prepared for the Office of Deputy Under Secretary of Defense (ODUSD), Installations and Environment (I&E))

14.1. Key Points 􀂾 **Meeting** energy- and water- reduction **goals will require implementation of capital-intensive projects** that are life cycle cost effective. 􀂾 **Government funding sources will be insufficient to implement all cost-effective energy measures**, requiring energy managers to seek outside sources of funding. **Alternate financing** **mechanisms** such as DSM, ESPC and UESC programs **should be considered.** 􀂾 For projects with higher SIR, UESC and/or ESPC should be pursued prior to ECIP funding. 14.2. Sources of Funding **There are many different funding sources available to support energy** conservation **projects.** **The budgeting procedures to be followed** to obtain funds **are different for each funding source.** Detailed explanations of how to build the budget and how to do project programming for all funding sources are beyond the scope of this Handbook. The most common funding sources for energy conservation projects are described in the paragraphs below. **These funding sources give energy managers some idea about when and how to use a funding source given the nature of the project**, e.g., **scope, type of building, work classification, and payback potential.** Funding sources may be categorized into four basic groups: Government funding sources, utility funding sources, Energy Savings Performance Contracts (ESPCs), and Utility Energy Services Contracts (UESCs).

**T – SPS**

***A. Interpretation:***

***Production is the process of capturing wind or solar resources***

**Conservation Measures Partnership** [no date]

<http://www.conservationmeasures.org/initiatives/threats-actions-taxonomies/threats-taxonomy/3-energy-production-mining>, jj

3 **Energy Production** & Mining

**Definition:** Threats from **production of** non-biological **resources**

Exposition: Various forms of water use (for example, dams for hydro power) could also be put in this class, but these threats seemed more related to other threats that involve alterations to hydrologic regimes. As a result, they should go in 7.2 Dams & Water Management/Use.

3.1 Oil & Gas Drilling

Definition: Exploring for, developing, and producing petroleum and other liquid hydrocarbons

Exposition: Oil and gas pipelines go into 4.2 Utility & Service Lines. Oil spills that occur at the drill site should be placed here; those that come from oil tankers or pipelines should go in 4. Transportation & Service Corridors or in 9.2 Industrial & Military Effluents, depending on your perspective.

Examples:

•oil wells

•deep sea natural gas drilling

3.2 Mining & Quarrying

Definition: Exploring for, developing, and producing minerals and rocks

Exposition: It is a judgment call whether deforestation caused by strip mining should be in this category or in 5.3 Logging & Wood Harvesting – it depends on whether the primary motivation for the deforestation is access to the trees or to the minerals. Sediment or toxic chemical runoff from mining should be placed in 9.2 Industrial & Military Effluents if it is the major threat from a mining operation.

Examples:

•coal strip mines

•alluvial gold panning

•gold mines

•rock quarries

•sand/salt mines

•coral mining

•deep sea nodules

•guano harvesting

•dredging outside of shipping lanes

3.3 **Renewable Energy**

**Definition: Exploring, developing, and producing renewable energy**

Exposition: Hydropower should be put in 7.2 Dams & Water Management/Use.

**Examples:**

•geothermal power production

•**solar farms**

•**wind farms** (including birds flying into windmills)

•tidal farms

***This must occur in the United States***

**U.S. Department of State 12**

[Department of State Foreign Affairs Manual, Volume 7, June 29, http://www.state.gov/documents/organization/86755.pdf

7 FAM 1112 WHAT IS BIRTH “IN THE UNITED STATES”?

(CT:CON-314; 08-21-2009)

a. INA 101(a)(38) (8 U.S.C. 1101 (a)(38)) provides that **“the term „United States,‟ when used in a geographical sense, means the continental United States, Alaska, Hawaii, Puerto Rico, Guam, and the Virgin Islands of the United States.”**

***B. Violation – SPS energy production takes place IN space --- not on Earth or in the US***

**Hoffert & Potter 97** Martin I Hoffert is a professor of physics at New York University. Seth D Potter was a Research Scientist in Physics at New York University when this article was written. He is currently an engineer at The BoeingCompany in Seal Beach, California, USA, and serves on the Board of Directors of the National Space Society Education Chapter. October 1997, "Beam It Down: How the New Satellites Can Power the World", Extracted from "Solar Power Satellites: A Space Energy System for Earth", edited by Peter Glaser <http://www.spacefuture.com/archive/beam_it_down_how_the_new_satellites_can_power_the_world.shtml>, jj

The benefits are too large to walk away from. **A network of solar power satellites** such as what we propose **could supply** the **earth with** 10 to 30 trillion watts of **electrical power** - enough to satisfy the needs of the human race through the next century. **Solar power satellites** thus **offer a vision in which energy production moves off the earth's surface**, allowing everyone to live on a "greener" planet. Consider the philosophical implications: no longer need humankind see itself trapped on spaceship earth with limited resources. We could tap the limitless resources of space, with the planet preserved as a priceless resource of biodiversity.

***C. Voting issue for limits — they explode the topic, allowing production anywhere in the universe — makes international Affs with unique, unpredictable advantages topical— and makes the entire space topic Aff ground — overburdens the neg which undermines our preparedness for all debates.***

**T – incentive**

***Financial incentives include funding and loan guarantees; procurement is a non-financial incentive***

**Czinkota et al, 9** - Associate Professor at the McDonough School of Business at Georgetown University (Michael, Fundamentals of International Business, p. 69 – google books)

Incentives offered by policymakers to facilitate foreign investments are mainly of three types: fiscal, financial, and nonfinancial. Fiscal incentives are specific tax measures designed to attract foreign investors. They typically consist of special depreciation allowances, tax credits or rebates, special deductions for capital expenditures, tax holidays, and the reduction of tax burdens. **Financial incentives offer special funding for the investor by providing, for example, land or buildings, loans, and loan guarantees. Nonfinancial incentives include guaranteed government purchases; special protection from competition through tariffs, import quotas, and local content requirements,** and investments in infrastructure facilities.

***This is a voting issue –***

***1. Limits – non financial incentives make the topic limitless crushing fairness***

***2. Negative ground – their interpretation means they don’t have to defend an increase in production --- nullifying core DA’s like oil prices and tradeoff***

***Incentives are for energies that currently exist --- key to predictability and ground***

**Wallach 10**

Mark Wallach is a Partner at Calfee, Halter & Griswold LLP, where he serves as Co-Chair of the Litigation Group of more than 40 attorneys. The firm represents a broad spectrum of businesses, organizations and individuals, including publicly and privately traded corporations, on matters ranging from business issues to intellectual property matters, and is a member of Lex Mundi, a network of law firms located in 155 countries. His practice includes litigation and trial of complex business disputes, concentrating on corporate, business tort, utilities and public law litigation, with in-depth focus on consultant and accountant liability litigation, contract disputes, trade secrets and non-competition covenants. Mr. Wallach also works with clients to resolve zoning and other issues involving local and state governments. He regularly appears in state and federal courts throughout the country on behalf of both plaintiffs and defendants. Mr. Wallach is Chair of The Sculpture Center, a non-profit organization that promotes the careers of young sculptors, and a member of the Executive Committee of the Cleveland Chapter of the American Constitution Society. He is listed in Who's Who in America and The Best Lawyers in America, as well as Chambers' Leading U.S. Lawyers. For several years, Mr. Wallach has been an active advocate for Space Based Solar Power, becoming General Counsel of the NewSpace Alliance in 2008. He was a contributor to the October 2007 Report on Space Based Solar Power issued by the National Space Security Office, and has written and spoken widely on SBSP to a variety of audiences. In addition, Mr. Wallach is an active member of the National Space Society and the Space Frontier Foundation, and has participated in multiple meetings with Congressional offices about SBSP and space issues, generally. In 2009, Mr. Wallach became a member of the Advisory Board of Space Energy, Inc. Perhaps the first issue raised by SBSP power contracts will be whether those contracts can be used to satisfy regulatory targets for renewable energy. Unlike more conventional (if less promising) renewable sources, to some extent, this question may be answered by the specifics of state regulatory requirements. Some states may insist that power actually be produced and purchased to meet renewable energy targets, while others may only require that those utilities have entered into good-faith contracts with providers of qualifying energy.

Online Journal of Space Communication, Issue No. 16: Solar Power Satellites, Winter 2010, <http://spacejournal.ohio.edu/issue16/wallach.html>, jj

Perhaps **the first issue raised by SBSP power contracts will be whether those contracts can be used to satisfy regulatory targets for renewable energy**. Unlike more conventional (if less promising) renewable sources, to some extent, this question may be answered by the specifics of state regulatory requirements. Some **states** may **insist that power actually be produced and purchased to meet renewable energy targets**, while others may only require that those utilities have entered into good-faith contracts with providers of qualifying energy.

In California, for instance, public opinion holds that the PG&E/Solaren contract is useful, whether or not it could be performed. (The California Public Utilities Commission approved the contract on April 10, 2009.) The law appears to be fairly stringent; that is, Section 399.15 of the California Public Utilities Code requires that **the specified purchase levels "are procured from eligible renewable energy resources**." Further, **a report** published by the California Energy Commission **discusses the risks of signed renewable energy contracts failing to meet the timelines in the contracts.** The report notes that "this risk of contract failure could cause individual load-serving entities, or entire states, to fall short of their renewable energy targets." The report suggests that **companies anticipate a contract failure rate of 20 to 30 percent**. This leads to the conclusion that **simply because a company has a contract in place to procure renewable energy, the contract will not, by itself, satisfy the regulation unless it is actually procured.**

**DA1**

***Immigration will pass --- Obama has the upper hand and PC is key***

**Boston Herald 2/18**, Obama pressures GOP with own immigration plan, <http://bostonherald.com/news_opinion/us_politics/2013/02/obama_pressures_gop_with_own_immigration_plan>, jj

President **Obama upped the ante on the immigration reform showdown with Republicans, vowing to present his own bill to Congress if the GOP refuses to compromise — a move hailed by political pundits and reform advocates as a savvy maneuver** to keep the backing of crucial Latino voters.

“**As the election showed, the Democrats have their boot on the neck of the Republicans**,” said Maurice Cunningham of the University of Massachusetts Boston. “**Why let up?”**

A bipartisan group of eight lawmakers has been working on an immigration plan for the past few weeks. Yesterday, White House Chief of Staff Denis McDonough warned those lawmakers their time is limited.

“We will be prepared with our own plan if these ongoing talks between Republicans and Democrats up on Capitol Hill break down,” McDonough said in one of several interviews on Sunday talk shows after news of the president’s alternative plan leaked.

The administration’s proposal would create a visa for those in the country illegally and allow them to become legal permanent residents within eight years. The proposal also requires businesses to know the immigration status of their workers and adds more funding for border security.

It drew immediate criticism from U.S. Sen. Marco Rubio (R-Fla.), one of the eight lawmakers on the immigration panel. “If actually proposed, the president’s bill would be dead on arrival in Congress,” Rubio said.

Local activist groups yesterday praised Obama.

“It’s a good day. **It shows leadership and it shows he’s really trying to provide leadership**,” said Eva A. Millona, head of the Massachusetts Immigration and Refugee Advocacy Coalition. “But **we’re optimistic both parties are serious to get this done.”**

**The president is seizing on a key moment**, agreed Alejandra St. Guillen, executive director of Oiste, a Latino civic education organization.

“I don’t know what other option he had,” St. Guillen said. “**Right after the election we had Republicans talking about immigration reform. In a sense, the White House might have thought this was the right time.”**

***Military clean energy costs PC***

**Snider 12**

Annie Snider, E&E reporter February 23, 2012 Military's alt energy programs draw Republicans' ire <http://www.eenews.net/public/Greenwire/2012/02/23/2?page_type=print>

**Suspicion is growing among Republican lawmakers that the Defense Department's efforts to move to renewable energy are more about politics than they are about saving lives and boosting security**, as officials claim. The Pentagon's green push -- including outfitting Marines and soldiers with solar gear, testing aircraft and ships on biofuels and building renewable power plants at bases -- won supporters from both sides of the aisle over the past year as leaders drew a clear line between the technologies and military might. Stories about how solar equipment allowed units in Afghanistan to carry fewer batteries and more ammunition helped prompt eight Republicans and 15 Democrats -- many of whom hold vastly opposing views on national energy policy -- to last summer form the Defense Energy Security Caucus, which aims to educate Congress on military energy issues, including "the strategic value of utilizing sustainable energy" (E&E Daily, July 8, 2011). And at a subcommittee hearing with the Pentagon's top energy and environment officials last spring, lawmakers were more concerned about where the solar panels being installed at military installations were made than with the policy behind the projects in the first place (E&E Daily, April 14, 2011). But **as election-year politics ramp up and Republicans target the Obama administration for its clean energy programs, especially its investment in failed solar panel manufacturer Solyndra, the military's attempts to move to alternative energy are coming under new scrutiny.** "**Obama is hiding new renewable energy bets at the Pentagon, charging our Defense Department with major investments in 'low-emissions economic development' while cutting their budget by $5.1 billion**," Catrina Rorke, director of energy policy at the center-right American Action Forum, wrote in a blog post following the Obama administration's budget release last week. "New energy spending is new energy spending, no matter where it happens." **The idea that the administration is using DOD as a more politically palatable vehicle for renewable energy investments is now reverberating across Capitol Hill**, even as Pentagon officials flatly deny the allegations. At a budget hearing last week, Navy Secretary Ray Mabus, the department's most high-profile alternative energy advocate, took volley after volley from Republicans on the House Armed Services Committee. **They said that his priorities were misplaced, argued that spending on clean energy was taking money out of more important missions and hinted at a link between the Pentagon's green efforts and the prominence of former Silicon Valley clean-tech investors within the Obama administration**. "You're not the secretary of the energy, you're the secretary of the Navy," said Rep. Randy Forbes (R-Va.), who leads the subcommittee with jurisdiction over military energy and environment issues. **Prime among the lawmakers' complaints was that the military is paying a higher price for some forms of alternative energy at a time when DOD proposes cutting weapons programs and reducing forces in order to meet budget mandates**. "**You've bought fuel**, blended [bio]fuel for the jets to fly **at almost four times the cost of traditional energy**," Rep. Mike Conaway (R-Texas) said to Mabus, referring to the $12 million the Navy is paying for 450,000 gallons of advanced biofuel to power a carrier strike group during exercises off the coast of Hawaii this summer (Greenwire, Dec. 5, 2011). "So in order to make up for that difference, will those planes fly a quarter of the time they would have otherwise flown as part of this exercise?"

***Immigration reform expands skilled labor --- key to India relations***

**L**os **A**ngeles **Times**, 11/9/20**12** (Other countries eagerly await U.S. immigration reform, p. <http://latimesblogs.latimes.com/world_now/2012/11/us-immigration-reform-eagerly-awaited-by-source-countries.html>)

"**Comprehensive immigration reform will see expansion of skilled labor visas," predicted** B. Lindsay **Lowell, director of policy studies for the Institute for the Study of International Migration at Georgetown University**. A former research chief for the congressionally appointed Commission on Immigration Reform, **Lowell said he expects to see at least a fivefold increase in the number of highly skilled labor visas that would provide "a significant shot in the arm for India and China." There is widespread consensus among economists and academics that skilled migration fosters new trade and business relationships between countries and enhances links to the global economy, Lowell said. "Countries like India and China weigh the opportunities of business abroad** from their expats with the possibility of brain drain, **and** I think **they** still **see the immigration opportunity as a bigger plus than not," he said**.

***Relations check Indo Pak nuke war***

**Dugger, ’02** (Celia “Wider Military Ties With India Offer U.S. Diplomatic Leverage”, NYT, http://www.nytimes.com/2002/06/10/world/wider-military-ties-with-india-offer-us-diplomatic-leverage.html, 6/10)

Military cooperation between India and the United States has remarkably quickened since Sept. 11, with a burst of navy, air force and army joint exercises, the revival of American military sales to India and a blur of high-level visits by generals and admirals. The fledgling relationship between American and Indian military leaders will be important to Mr. Rumsfeld in talks intended to put to rest fears of war between India and Pakistan. ''We can hope this translates into some influence and trust, though I don't want to overstate it,'' a senior American defense official said in an interview on Thursday. ''I don't want to predict this guarantees success.'' The American diplomatic efforts yielded their first real gains on Saturday when India welcomed a pledge by Pakistan's military ruler to stop permanently the infiltration of militants into Kashmir. India indicated that it would soon take steps to reduce tensions, but a million troops are still fully mobilized along the border -- a situation likely to persist for months -- and the process of resolving the crisis has just begun. India has linked the killing of civilians in Kashmir to a Pakistan-backed insurgency there and has presented its confrontation with Pakistan as part of the global campaign against terrorism. India itself made an unstinting offer of support to the United States after Sept. 11, and Washington responded by ending the sanctions placed on India after its 1998 nuclear tests. With that, the estrangement that prevailed between the world's two largest democracies during the cold war, when India drew close to the Soviet Union and the United States allied with Pakistan, has eased. India, for decades a champion of nonalignment, seeks warmer ties with the United States in hopes of gaining access to sophisticated military technology and help in dealing with Pakistan. From the start of President Bush's term, some influential officials in his administration saw India as a potential counterweight to that other Asian behemoth, China, whose growing power was seen as a potential strategic threat. But since Sept. 11, the priority has been terrorism. The United States is hoping its deeper military and political ties with India will give it some measure of leverage to prevent a war between India and Pakistan that could lead to a nuclear ~~holocaust~~ and would play havoc with the hunt for Al Qaeda in Pakistan.

**DA2**

***DoD budget aligned with DoD strategic guidance now—additional tradeoffs collapse the entire package***

**Harrison 12**

Todd Harrison, Center for Strategic and Budgetary Priorities, 8/24/2012, ANALYSIS OF THE FY 2013 DEFENSE BUDGET AND SEQUESTRATION, http://www.csbaonline.org/publications/2012/08/analysis-of-the-fy2013-defense-budget-and-sequestration/

**The Fiscal Year (FY) 2013 defense budget** currently being debated in Congress **is a departure from previous budgets** in several respects. **It is the first budget submitted following the release of the Pentagon’s new strategic guidance, marking the beginning of a “pivot” from the wars of the past decade to the Asia-Pacific region. It is also the first budget request in more than a decade to propose a real decline in defense spending** from the level currently enacted. Moreover, the prospect of sequestration hangs over the budget, threatening to cut some 10 percent of funding if Congress does not act to prevent it. Secretary of Defense Leon Panetta has argued that **the budget request is a “complete package**,” that “**there is little room here for significant modification**,” and that **any further funding reductions**, such as those called for by sequestration, **would require the Department to fundamentally rethink its new strategy.**1 Nevertheless, the FY 2013 request is unlikely to survive unscathed and the Department will likely be forced to revise its strategic guidance.

***Plan causes massive tradeoffs undermining the military budget***

**Spencer 11**, research fellow in nuclear energy – Heritage, 6/22/’11

(Jack, “Capability, Not Politics, Should Drive DOD Energy Research,” http://www.heritage.org/research/reports/2011/06/capability-not-politics-should-drive-dod-energy-research)

**With multiple wars** ongoing, **traditional threats looming, and new ones emerging, the** U.S. **Armed Forces are already under tremendous stress.** So **introducing a new assignment that** needlessly **bleeds scarce resources** away from core missions to advance a political agenda **is untenable**. Yet **this is** exactly **what** the **Obama** Administration **is doing by ordering the military to lead a green revolution.**

The White House is pushing the idea that the alternative energy industry would get the kick start it needs if the military will just commit to using them. But the assumptions behind this argument are flawed, and **the strategy would increase demands on the military budget** while **harming national security.** **Congress should put a stop to it** right away.

Not a Legitimate Military Mission

**Catalyzing a commercially viable alternative energy industry is not within the military's purview.** Even it if were, the federal government has a horrible track record of developing products for commercial use. In most cases, governments fund things that have no market value—hence the need for government support.

***Resourced strategic guidance key to overall hegemony, and Asia and Middle East stability***

**Barno and Bensahel 12**

David Barno, Lieutenant General, Center for a New American Security Senior Advisor and Senior Fellow, Nora Bensahel, Ph.D., CNAS Deputy Director of Studies and Senior Fellow, 1/6/12, You Can't Have It All, www.cnas.org/node/7641

On Thursday, President Barack Obama and his top defense advisers unveiled new strategic guidance to direct the U.S. military as it transitions from a decade of grueling ground wars to an era of new challenges, including a rising China and looming budget cuts. The administration has adopted what is best characterized as a "pivot but hedge" strategy: The United States will pivot to the Asia-Pacific but hedge against unexpected threats elsewhere, particularly in the greater Middle East. This new guidance makes good sense in today's world, but it assumes that the Pentagon will absorb only $487 billion in budget cuts over the next decade. **If** far **deeper cuts occur**, as required by sequestration, **the D**epartment **o**f **D**efense **will not have the resources to execute the guidance**. "**Pivot but hedge" will die in its crib**.

The pivot to the Asia-Pacific is essential because the region stands poised to become the centerpiece of the 21st-century global economy. By 2015, East Asian countries are expected to surpass North America and the eurozone to become the world's largest trading bloc. Market opportunities will only increase as the region swells by an additional 175 million people by 2030. As America's economic interests in the Asia-Pacific grow, its diplomatic and military presence should grow to defend against potential threats to those interests.

From the perspective of the United States and its Asian allies, China and North Korea represent the most serious military threats to regional security. China's military modernization continues to progress, and its foreign policy toward its neighbors has become increasingly aggressive over the past two years. Meanwhile, the death of Kim Jong Il means that nuclear-armed North Korea has begun a leadership transition that could lead to greater military aggressiveness as his son Kim Jong Un seeks to consolidate his power and demonstrate control. In light of these potential dangers, several Asian nations have asked the United States to strengthen its diplomatic and military presence in the region so it can remain the ultimate guarantor of peace and security. A bolstered U.S. presence will reassure allies who worry about American decline by clearly conveying an unwavering commitment to Asian security.

But while the Asia-Pacific is becoming more important, instability across the greater Middle East -- from Tunisia to Pakistan -- still makes it the most volatile region in the world. The Arab Spring unleashed a torrent of political change that has reshaped the region in previously unfathomable ways. Iran continues to pursue nuclear weapons, and it has threatened recently to close the Strait of Hormuz. Trapped in the middle of the upheaval is Israel, a permanent ally and key pillar of America's regional security strategy. Meanwhile, U.S.-Pakistan relations continue to plunge toward a nadir, lessening American influence over a nuclear-armed and terrorist-infested state that is arguably the most dangerous country in the world.

Amid these dangers, U.S. interests in the greater Middle East remain largely unchanged: ensuring the free flow of petroleum from a region containing 51 percent of proven global oil reserves, halting nuclear proliferation, and guarding against the diminished but still real threat of Islamist-inspired terror attacks. Protecting these interests will unquestionably require the active involvement of the U.S. military over the next 10 years and beyond, though this certainly does not mean U.S. troops will necessarily repeat the intensive counterinsurgency campaigns of the last decade.

The administration's new guidance tries to balance America's rightful new focus on the Asia-Pacific with the continuing reality of deep instability in other areas of the world where U.S. interests are at stake. Yet implementing this "pivot but hedge" strategy successfully depends largely on how much Congress cuts from the Pentagon's budget, something that still remains undecided at the start of a divisive presidential election year.

The 2011 Budget Control Act, signed as part of last summer's negotiations over raising the U.S. debt ceiling, contains spending caps that will reduce the Department of Defense's base budget (excluding ongoing war costs in Afghanistan) by at least $487 billion over 10 years, according to Pentagon estimates. This represents a decline of about 8 percent compared to current spending levels. Administration officials have repeatedly described these cuts as painful but manageable. Indeed, Defense Secretary Leon Panetta stated Thursday that these cuts require difficult choices but ultimately involve "acceptable risk."

Yet deeper cuts are an entirely different story. Administration officials are extremely concerned about the Budget Control Act's automatic spending reduction process known as sequestration, which was triggered in November by the failure of the deficit reduction "super committee." According to the Congressional Budget Office, this process would roughly double the cuts to the Pentagon's base budget, resulting in nearly $900 billion in total reductions. Current law requires these cuts to take effect in January 2013 unless Congress enacts new legislation that supersedes it.

The new guidance says little about what cuts the Department of Defense will make when it releases its fiscal year 2013 budget request next month. But the Pentagon has made clear that its new guidance and budget request assume it will absorb only $487 billion in cuts over the next 10 years. Defense officials have acknowledged that the new guidance cannot be executed if sequestration takes place. When announcing the new strategy, for instance, Panetta warned that sequestration "would force us to shed missions, commitments, and capabilities necessary to protect core U.S. national security interests."

Sequestration would likely require the United States to abandon its longstanding global engagement strategy and to incur far greater risk in future military operations. If sequestration occurs, the Pentagon will likely repeat past mistakes by reducing capabilities such as ground forces that provide a hedge against unexpected threats. A pivot to the Asia-Pacific might remain an executable option under these conditions, but the U.S. ability to hedge against threats elsewhere -- particularly in the volatile Middle East -- would be diminished. This is a recipe for high risk in an uncertain and dangerous world.

The Pentagon's new strategic guidance presents a realistic way to maintain America's status as a global superpower in the context of shrinking defense dollars. But **further cuts**, especially at the level required by sequestration, **would make this "pivot but hedge" strategy impossible to implement** **and** would **raise serious questions about whether the U**nited **S**tates **can continue to play the central role on the global stage**.

***Asia conflict likely and goes nuclear war***

**Landy**, National Security Expert @ Knight Ridder, 3/10/**’2K**

(Jonathan, Knight Ridder, lexis)

**Few** if any **experts think China and Taiwan, North Korea and South Korea, or India and Pakistan are spoiling to fight. But even a minor miscalculation by any of them could destabilize Asia, jolt the global economy and** even **start** a **nuclear war. India, Pakistan and China all have nuclear weapons, and North Korea** may have a few, **too. Asia lacks the** kinds of **organizations, negotiations and diplomatic relationships that helped keep** an uneasy **peace** for five decades **in Cold War Europe. “Nowhere else** on Earth **are the stakes as high and relationships so fragile,” said** Bates **Gill, director of northeast Asian policy studies at** the **Brookings** Institution, a Washington think tank. “We see the **convergence of great power interest** overlaid with lingering confrontations **with no institutionalized security mechanism** in place. **There are elements for potential disaster.**” In an effort to cool the region’s tempers, President Clinton, Defense Secretary William S. Cohen and National Security Adviser Samuel R. Berger all will hopscotch Asia’s capitals this month. For America, the stakes could hardly be higher. **There are 100,000 U.S. troops in Asia committed to defending Taiwan, Japan and South Korea, and the U**nited **S**tates **would instantly become embroiled if Beijing moved against Taiwan or North** Korea **attacked South Korea.** While Washington has no defense commitments to either **India or Pakistan**, a **conflict** between the two **could end the global taboo against using nuclear weapons and demolish the** already **shaky** international **nonprolif**eration **regime.** In addition, globalization has made a stable Asia \_ with its massive markets, cheap labor, exports and resources \_ indispensable to the U.S. economy. Numerous U.S. firms and millions of American jobs depend on trade with Asia that totaled $600 billion last year, according to the Commerce Department.

**CP**

***The United States federal government should phase out all current energy subsidies, financial incentives, and loan guarantees.***

***The Department of Defense should:***

* ***provide diminishing procurement contracts to renewable energies on the condition the renewables improve in price and performance.***
* ***reduce procurement contracts as the renewable energies improve in price and performance.***

***Must end subsidies for alt energies because they cause market bubbles that jeopardize the industries. Targeted, temporary funding is key to competitiveness and innovation***

Jesse **Jenkins et al** . April 20**12**, Director of Energy Policy & Climate Policy, Breakthrough Institute, Beyond Boom & Bust: Putting Clean Tech on a Path to Subsidy Independence, <http://www.brookings.edu/research/papers/2012/04/~/media/Research/Files/Papers/2012/4/18%20clean%20investments%20muro/0418_clean_investments_final%20paper_PDF.PDF>, KEL

In light of these budgetary findings, this report concludes that **policy makers** and business leaders **need to unite behind timely energy policy reform that supports US innovation**, **rewards continual improvements in clean tech price and performance, and secures subsidy independence for clean tech markets as rapidly as possible**. The key implications of this report’s analysis are: g **The *maintenance of perpetual subsidies* is not a sustainable solution to the new challenges facing the US clean tech industry**. **Clean tech markets** in America **have lurched from boom to bust for decades, and the root cause remains** the same**: the higher costs and risks of emerging US clean tech products** relative to either incumbent fossil energy technologies or lower-cost international competitors, which make US clean tech sectors dependent on subsidy and policy support. g **Cost competitiveness is achievable**, **but *until technological innovation and cost declines can secure independence from ongoing subsidy,* clean tech segments *will remain continually imperiled by the threat of policy expiration and political uncertainty.*** Continual improvement in price and performance is thus the only real pathway beyond the cycle of clean tech boom and bust. g **Maintaining a viable US clean tech industry will require policy makers to reform the nation’s myriad energy subsidies**, **which should be optimized to** drive improvements in technology price and performance and **ensure clean tech segments achieve subsidy independence as *rapidly as possible.*** g **Federal clean energy policies should reward firms for continually improving the performance and reducing the cost of their technologies, or for inventing and commercializing next-generation**, advanced energy **technologies, *not simply for deploying current-generation technologies* without advancing them towards subsidy independence**. g **Energy subsidies should be temporary and targeted** **to drive the maturation and improvement of emerging technologie**s. **Just as subsidies for clean tech sectors should phase out as these sectors mature**, it is long-past time to end subsidies for well-established fossil energy production methods and technologies as well. g **The U**nited **S**tates **can** leverage its strengths as an innovation leader and **accelerate the pathway to clean tech subsidy independence by increasing funding for energy RD&D, accelerating advanced energy technology commercialization, and harnessing the advanced manufacturing capabilities , regional industry clusters, and high-skilled energy workforce that are crucial to a robust innovation system**. g **Establishing subsidy independent, highly innovative US clean tech markets will also position US firms to compete effectively in growing international markets for clean energy products**. With the right reforms, the United States has the opportunity to be a leader in the invention and production of next-generation technologies for sale to an energy-hungry global market.

***The counterplan gives flexibility to the DoD and allows them to pick the most competitive renewables --- but the plan locks them into contracts with uncompetitive SPS tech --- stifles innovation***

**Spencer 11**

Jack Spencer, Research Fellow in Nuclear Energy, Institute for Economic Policy Studies at The Heritage Foundation, 6/22/11, Capability, Not Politics, Should Drive DOD Energy Research, www.heritage.org/research/reports/2011/06/capability-not-politics-should-drive-dod-energy-research

**Do not establish long-term contracts** based on price floors. Many **purveyors of expensive energy want the Pentagon to engage in long-term contracts with energy suppliers that set price floors**. **This has** two **negative impacts**. First, **it would cost the military more to fuel its operations**. **Setting price floors signals to the market that certain fuel producers do not have to compete**. Second, **prices would never fall below the floor even if production costs allow for lower pricing** **or superior alternatives exist at lower prices. The Pentagon is a massive fuel consumer** that can help fuel suppliers make substantial profits. **But fuel suppliers should have to compete for the Pentagon’s business**. **Long-term contracts should be used to guarantee that the Pentagon has the supplies it needs, not to provide a guaranteed market** for expensive fuel producers.

***Impact is great power war***

**Baru 9** Sanjaya is a Professor at the Lee Kuan Yew School in Singapore Geopolitical Implications of the Current Global Financial Crisis, Strategic Analysis, Volume 33, Issue 2 March 2009 , pages 163 – 168

Hence, **economic policies and performance do have strategic consequences.**2 In the modern era, the idea that **strong economic performance is the foundation of power** was argued most persuasively by historian Paul Kennedy. **'Victory** (in war)', Kennedy claimed, **'has repeatedly gone to the side with more flourishing productive base**'.3 **Drawing attention to the interrelationships between** economic **wealth, technological innovation, and the ability of states to** efficiently **mobilize economic and technological resources for power projection and national defence**, Kennedy argued that **nations that were able to better combine military and economic strength scored over others**. 'The fact remains', Kennedy argued, **'that all of the major shifts in the world's military-power balance have followed alterations in the productive balances**; and further, that the **rising and falling** of the various empires and states in the international system **has been confirmed by the outcomes of the major Great Power wars**, where victory has always gone to the side with the greatest material resources'.4 In Kennedy's view, **the geopolitical consequences of an economic crisis, or even decline, would be transmitted through a nation's inability to find adequate financial resources to simultaneously sustain economic growth and military power**.

**Solvency**

***Solvency takes 30 years***

**Fan et. al 11** William Fan, Research Fellow at Jet Propulsion Laboratory, former Teaching Assistant at California Institute of Technology, Harold Martin, James Wu, Brian Mok, 6-2-11, Cal Tech, SPACE BASED SOLAR POWER, <http://www.pickar.caltech.edu/e103/Final%20Exams/Space%20Based%20Solar%20Power.pdf>

While hard to estimate, we believe currently that **SBSP is not feasible for the next 30 years. There must first be a large decrease in launch costs, and significant adoption of Space Based Solar Power solar technology before SBSP would be a plausible large scale energy source**. **Efficiency levels are still not yet at a level where the large added cost of a space launch can justify SBSP.** Furthermore, **the difficulties in large scale wireless energy transmission is paramount, and have large scale demonstrations have not yet occurred over significant distances**. **We have also not yet seen a large boom in large scale wireless energy transmission that would allow us to project an efficiency trend for this technology**. We conclude that **it is still too early for SBSP**, barring any large scale technological disruptions **within the next 30 years**.

***Obstacles are enormous***

**Betts 07** Mitch Betts, I’m a journalist interested in strategic foresight and competitive intelligence. I’m a member of the World Future Society and Investigative Reporters and Editors (IRE). Corporate Intelligence, 9-28-07, Pentagon studying space-based solar power platforms to prevent energy wars, <https://corpintel.wordpress.com/2007/09/28/space-based-solar-power/>, jj

But, of course, **there’s no shortage of challenges**, such as:

**extreme complexity and scalability issues**

**a cost of hundreds of billions of dollars**

the need for a long-term political commitment (i.e., budget)

**the need for technology breakthroughs, such as “wireless power beaming”**

**the need to manufacture the satellites in space using lunar materials**

**legal issues**

**and did I mention the need to scrounge for hundreds of billions of dollars?**

**By the way, as one proponent acknowledged, “the microwave beams will heat the atmosphere slightly and the frequency must be chosen to avoid cooking birds.”**

Personally**, I put s**olar **p**ower **s**atellites **in the same category as the space elevator**: **Fascinating, ambitious, but ultimately so gigantic and expensive and fraught with complexity that it’s hard to imagine it really happening.**

***Rockets for SPS don’t exist***

**Oil Drum 11**, 6/3, Space Solar Power – Recent Conceptual Progress, <http://www.theoildrum.com/node/7898>, jj

**They have some disadvantages, however:**

**For optical reasons, they don't scale down to small sizes; 5 GW is about as small as you want to make one**. [8]

**At 50% loss electricity-in space to electricity-on-the-ground, the cost is doubled from one cent per kWh to two**. On the other hand, that's 40 times less cost than transmitting the same power over wires for the same distance.

**They take a large investment to get the cost of transporting parts to GEO down to where they make economic sense.**

Cost Requirements to make Space Solar Power Economical

Is a space solar project worth doing? We need to run a cost/benefit analysis to find out.

For a ten-year return on capital, a kW of power sold for a penny a kWh generates $800 of revenue (~80,000 revenue-hours in ten years). **Two cents per kWh is about the most power could sell for to displace coal. That means a kW of power satellite capacity can't cost more than $1600 or $1.6 B per GW if it is to meet this goal.**

**If power satellites take 5 kg of parts to generate a kW on the ground**,[9]**and the transport fraction is ~1/3, then the cost to lift parts to GEO can be no more than $100/kg. That's a reduction of 200 to one ($20,000 per kg down to $100) over current cost to deliver communication satellites to GEO.**

Hiroshi Yoshida, Chief Executive Officer of Excalibur KK, a Tokyo-based space and defense-policy consulting company, and William Maness, chief executive officer of Everett, Wash.-based PowerSat Corp., both think **it will take this kind of transport cost reduction for power satellites to be competitive with other power sources**.[10] [11]

Conventional Rockets

**Can we get to this lift cost with conventional rockets?**

**Unfortunately, the answer is no, for several reasons**. **The chemical energy in rocket fuel vs. the required energy it takes to get to orbit is not enough**. **Rocket technology with chemical fuels has reached the performance limit**. The most promising design is the Falcon Heavy (a proposal of SpaceX), with first launch intended for 2012 at a cost of $100 M per trip. The rocket is expected to put 53 tons in low earth orbit (190 km) above the earth’s surface, or 19.5 tons in geostationary orbit at 36,000 km. That is a reduction to $4000/kg, a factor of five below current rockets, but not enough. **Launching a Falcon Heavy every hour might get the price down to $1000/kg, which is still too high by a factor of ten.**

***Cart before the horse --- private sector won’t develop SPS with a demo project***

**Economist 08** – 12/4, Let the sun shine in, <http://www.economist.com/node/12673299>, jj

**Getting SSP off the ground will require the involvement of the private sector**, the study observes, **but private firms are unlikely to act without a demonstration project to confirm the viability of the scheme**. The NSSO estimates that **this would cost $8 billion-10 billion, and suggests that it could be funded by a consortium involving America and its allies**—such as Canada, Japan, the European Union or Australia, all of which have shown interest in SSP in the past. In the meantime, NASA is evaluating the possibility of an experiment involving the International Space Station.

***DoD doesn’t make SPS economical***

**Bullis**, Technology Review editor, **9**

Kevin, published by MIT, 4-15-9, “Startup to Beam Power from Space” http://www.technologyreview.in/blog/energy/23381/

Even then, **the report was skeptical about the economic success of the first space-based power plants.** **The rocket launches alone could be a big problem**: the report estimated that **building just one power plant would require 120 launches, while the United States only launches about 15 a year** (as of 2007). "**Even with the [D**epartment **o**f **D**efense] **as an anchor tenant customer at a price of $1-2 per kilowatt hour . . . when considering the risks of implementing a new unproven space technology and other major business risks, the business case for [space-based solar power] still does not appear to be close in 2007 with current capabilities (primarily launch costs)," the report said.**

***Double bind --- plan’s illegal and won’t happen or it violates international space law***

Mark I **Wallach, ’10**, Calfee, Halter & Griswold LLP, Winter 2010, (Office Journal of Space Communication, Space Solar Power, Legal Issues for Space Based Solar Power, Issue No. 16: Solar Power Satellites, <http://spacejournal.ohio.edu/issue16/wallach.html>)

**The ITU**, an agency of the United Nations, **holds responsibility for assigning both orbital and electromagnetic spectrum positions**. **The ITU is governed by a constitution and the International Telecommunications Convention. The rights and obligations therein are binding on all member states**. Currently, the ITU appears to apply a "first-in-time, first-in-right" system to orbital allocation. However, **the ITU's primary considerations are supposed to be equitable access and efficient use of a limited resource**. Many argue that **these considerations obligate the ITU to reserve spaces for developing nations. The matter of crowding is already a contentious issue** **for present and future operators of satellites at GEO**. Telecommunications satellites need to be positioned far enough away from one another to ensure that their signals do not interfere with each other. The ITU Radio Communication Sector interprets, administers, and enforces the policies and agreements of the ITU, and also oversees coordination of the use of the spectrum and assists in solving conflicts with orbital position in the "Master Register." **The Space Treaty, a legally binding** international **agreement** that provides the legal framework for the access and use of outer space and celestial bodies, **does not allow for the allocation of orbital slots "either as a property right or through appropriation by national sovereignty**." **Article II of the Space Treaty provides that outer space "is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." The Space Treaty also appears to prevent private companies from selling slots in the geostationary orbit**: "Under the current treaty regime, the geostationary orbit is a scarce resource that no nation or individual can claim a legal right to beyond that of a squatter, which does not work to allocate the orbital space either efficiently or equitably." **While the ITU presumably will govern the allocation of GEO slots to SBSP satellites, it is by no means clear how conflicts between communications satellites and their vastly larger SBSP cousins will be decided, or what criteria will be used to make those decisions.**

***Extinction***

**Krieger 2002** (David, Current President of the Nuclear Age Peace Foundation and former Professor at the University of Hawaii and San Francisco State University)

http://www.wagingpeace.org/articles/2002/07/10\_krieger\_law-force.htm

**An important marker of civilization has always been the ascendancy of law over the unbridled use of force. At the outset of the 21st century, we are faced with a pervasive dilemma. Reliance on force given the power of our destructive technologies could destroy civilization as we know it.** The trials at Nuremberg and Tokyo following World War II were an attempt to elevate the force of law over the law of force. The newly created International Criminal Court, which will bring the Principles of Nuremberg into the 21st century, is supported by all major US allies. Unfortunately US leaders are opposing the Court and seem to fear being held to the same level of accountability as they would demand for other leaders. Of course, law does not prevent all crime. It simply sets normative standards and provides that those who violate these standards will be punished. In the case of the most heinous crimes, the remedies of law are inadequate. But even inadequate remedies of law are superior to the unbridled use of force that compounds the injury by inflicting death and suffering against other innocent people. Perpetrators of crime must be brought before the bar of justice, but there must also be safeguards that protect the innocent from being made victims of generalized retribution. When an individual commits a crime, there should be clear liability. When a state commits a crime, however, who is to be held to account? According to the Principles of Nuremberg that were applied to the Axis leaders after World War II, it should be the responsible parties, whether or not they were acting in the service of the state. At Nuremberg, it was determined that sovereignty has its limits, and that leaders of states who committed serious crimes under international law would be held to account before the law. These crimes included crimes against peace, crimes against humanity and war crimes. **Without the international norms that are established by law, the danger exists of reverting to international anarchy, in which each country seeks its own justice by its own means. Only established legal norms, upheld by the international community and supported by the most powerful nations, can prevent such chaos and the ultimate resort to war to settle disputes. International legal norms are essential in a world in which violence can have even more fearful results than were first experienced at Hiroshima and Nagasaki.** International law is needed if we are to abolish war before war abolishes us. We cannot have it both ways. If we choose law, the nations of the world must join together in a common effort to support and enforce the law. Albert Einstein, the great 20th century scientist and humanitarian, wrote, “Anybody who really wants to abolish war must resolutely declare himself in favor of his own country’s resigning a portion of its sovereignty in favor of international institutions: he must be ready to make his own country amenable, in case of a dispute, to the award of an international court. He must in the most uncompromising fashion support disarmament all around….” In recent years, the United States has pulled away from international law by disavowing treaties, particularly in the area of disarmament, and by withdrawing its support from the International Criminal Court. **Without US leadership in support of international law, force rather than law will gain strength as the international norm. Relying on force may be tempting to the most powerful country on the planet, but it portends disaster, not least for the United States itself.**

**Warming**

***Transition to renewables now --- it solves warming***

**Bowen ‘12**

Currently a businessman, Robert Bowen served in the Colorado legislature in the 1980s as a moderate Democrat. He was also appointed by three different governors to serve on various boards and commissions. He has followed political news, national news headlines and international news closely for almost five decades.

8-22-12, Examiner, US carbon emissions are declining due to clean energy <http://www.examiner.com/article/us-carbon-emissions-are-declining-due-to-clean-energy>, jj

US carbon emissions are declining due to clean energy

A new report that studied 2,500 electrical power plants owned by 100 utilities in the United States was released this week and it shows that **harmful carbon pollution is on the decline. This is due to a transition to clean energy**. The report is out just before the science-deniers open their national convention in Tampa next Monday. The 2012 Benchmarking Air Emissions report looked at 2010-2011 data from the US Energy Information Administration and the Environmental Protection Agency to determine trends in four power plant pollutants: carbon dioxide (CO2), sulfur dioxide (SO2), nitrogen oxide (NOx) and mercury (Hg). The report looked at 100 utilities operating 2,500 power plants. These plants account for 86% of electricity generation and 88% of all emissions in the nation. The good news is that three of the pollutants studied have declined significantly. **The primary reason** is that coal power plants have been closing and are replaced by natural gas. Another factor **is the increase of electrical generation from wind and solar.** These **utilities have doubled their use of renewable energy since 2004. Renewables now account for 5% of the US electricity supply according to the report.** Natural gas now supplies 32% of all US electrical generation which is about the same as coal. Natural gas consumption by the electric power sector has risen an average of 4% annually for the past 10 years Power plants in 2010 were responsible for about 65% of SO2 emissions overall, 16% of NOx emissions, 68% of mercury air emissions and 40% of CO2 emissions. Because of this transition to gas and renewables, SO2 emissions are down 40% and NOx emissions are down 35% since 2008. More coal power plants are slated to close this year. These moth-balled plants produce about 40 gigawatts (GW) of electricity representing 12% of the US coal-fired capacity. Even though this trend began in earnest under the Bush administration, Mitt Romney is running ads accusing President Obama for waging a “war on coal.” If such a war exists, the result seems to be cleaner, healthier air and fewer greenhouse gas emissions. Maybe it is a good thing. **Southern Company**, a utility in the Southwest with more than 4.4 million customers and 43,000 MWs of generating capacity is one of the nation's most coal-intensive power producers. Southern, will use more natural gas than coal in 2012 for the first time in its 100-year history. The utility **owns a 30 MW solar PV plant** with Ted Turner **in New Mexico - the partnership just made a second solar acquisition. Its subsidiary**, Alabama Power, **buys wind energy from a farm in Oklahoma, and another unit, Georgia Power, is working on its first utility-scale project. Colorado’s Xcel Energy brought 68MW of new solar on line so far this year.** CO2 emissions from power plants are down 9% in the United States since 2008, more than any country or region. This decline occurred despite a global rise in emissions to record levels in 2011, largely due to a 9.3% leap in greenhouse gas emissions in China. The authors of the report were optimistic. "**This is an historic transition for the electric power industry**," says Mindy Lubber, president of Ceres, which prepared the report with M.J. Bradley & Associates, Natural Resources Defense Council (NRDC), Entergy, Exelon, Tenaska and Bank of America. "**More and more power producers are shifting away from coal-fired generation in favor of lower-emitting** natural gas-fired plants, **renewable power and energy efficiency**. **The economic case for cleaner energy is better than it's ever been, and this report shows that the industry is adapting to stronger Clean Air Act emissions standards, state-driven efficiency and renewable energy incentives** and the dynamics of the current natural gas market." The data shows that an **energy policy that shifts to** cleaner gas and **renewables does in fact make a difference**. The problem is, Congress wants to put an end to renewable energy, and Mitt Romney seems to be a big fan of coal. Should he win, no one but the Almighty knows what his energy agenda will be, but odds are that he will slow if not reverse the trend to clean energy that is showing results in our air quality.

***Intermittancy’s a myth --- studies & empirics***

Tabitha **Naylor, 2011**-11-15, SunBolt Energy Systems, Busting Myths about Solar Power, <http://www.sunboltenergysystems.com/2011/11/15/busting-myths-about-solar-power/>, jj

**There are misconceptions about solar power generation that ought to be obsolete but still persist** to this day. **One of these is the myth that says solar energy is feasible only in areas that enjoy plenty of sunshine. Another states that a home powered by solar panels will experience intermittent power interruptions depending on the weather.**

**Both are categorically false.**

While it is true that location affects the cost-efficiency of solar power generation, it is also a widely known fact that **solar tech**nology **works incredibly well almost anywhere around the world**. As a rule of thumb, **a larger solar power plant in less sunnier locations like Connecticut should generate the same output as that of a smaller plant in a location like New Mexico that enjoys a lot more sunlight**. **Places that are cloudy and rainy may somehow limit the stored energy harnessed by solar panels, but not significantly enough to make solar power plant installations prohibitive or downright unprofitable.**

**A good example is Germany**. Located in Northern Europe, **a substantial portion of the country experiences a continental climate wherein winters can be harsh and days rather cloudy. In spite of not having plenty of sunshine, however, Germany still ranks as the largest solar power ecosystem in the world and is now remarkably profiting from its energy policies that gave the country an early head start on the now lucrative market for renewable energy.** Now **that should altogether crush the misconception that you need tons of sunlight for solar power generation to be feasible.**

On the contrary, **consistent findings in different** experimental **studies indicate** that solar panels constructed in sunnier locations may actually experience periods of low efficiency as temperatures rise above 107 degrees. Even at the 95 to 100 degree range, slight drops in power output were experienced. Optimum efficiency was regained only after cooling the solar panels with water sprays. This phenomenon clearly indicates that **a little rain even helps optimize solar power plants**.

**Another good example is Japan**. Like Germany, Japan is at the forefront of solar technologies, controlling a solar power market that is around three times the size of its American counterpart. It is also way up in terms of latitude compared to the US as a whole.

The fact is, **solar panels should work anywhere where the sun shines**, and that’s practically on just about the whole surface of the Earth. **Any place where inhabitants can easily distinguish night and day should be able to accommodate a feasible solar power generation plant.**

**Another myth that should have been busted years ago is the one that says homes with solar panels will inevitably experience intermittent power interruptions depending on the weather**. **Properly planned solar panel installations squarely make this claim non-existent**. Commonly, **homes with solar panels are also connected to the main power grid and the power just switches to the grid if solar storage cells are running on empty**. This is how most homes in the US with professionally designed solar power systems allow their owners to even earn extra income from either the government or the utility provider. One such owner has not spent a cent for power consumption, earning instead an annual income of US$ 700.00 from PG&E.

“Running on empty” should not even be the case if the installation has been planned well. If the target is to use 100% solar, then the appropriate number and capacity of panels and storage cells should be deployed. In addition, **the energy generated during periods of sunshine should be readily available during moments of heavy clouds or no sunlight.**

**The old adage that “wind and solar are intermittent energy supplies” is no longer true**. And when Paul Smith stated that “if the wind doesn’t blow and the sun doesn’t shine, we don’t get energy,” is selling himself short. **In contemporary solar power systems, stored energy is even available after one whole month of sunless period. This is how sophisticated lighthouses in very cold climes such as Washington and Alaska harness and use solar power.**

**By all indications, this is also how self-sustained, environmentally sound communities of the future will be empowered.**

***Land use arg is a myth***

**Lovins 11** (Amory B. Lovins, Chairman and Chief Scientist Rocky Mountain Institute (www.rmi.org) 6 April 2011, Renewable energy’s “footprint” myth, Preprint of an article of the same title accepted for publication in July 2011 in The Electricity Journal 24(6), June 2011, doi:10.1016/j.tej.2011.06.005, online pdf, jj)

Land footprint seems an odd criterion for choosing energy systems: **the amounts of land at issue are not large, because global renewable energy flows are so vast that only a tiny fraction of them need be captured.** For example, **economically exploitable wind resources, after excluding land with competing uses, are over nine times total national electricity use in the U.S**.i and over twice in Chinaii; before land-use restrictions, the economic resource is over 6× total national electricity use in Britain and 35× worldwide—all at 80-meter hub height, where there’s less energy than at the modern ≥100 m.iii Just the 300 GW of windpower now stuck in the U.S. interconnection queue could displace two-fifths of U.S. coal power. **Photovoltaics, counting just one-fifth of their extractable power over land to allow for poor or unavailable sites, could deliver over 150 times the world’s total 2005 electricity consumption**,iv **The sunlight falling on the Earth every ~70 minutes equals humankind’s entire annual energy use**. **An average square meter of land receives each year as much solar energy as a barrel of oil contains, and that solar energy is evenly distributed across the world within about twofold**.v **The U.S., “an intense user of energy, has about 4,000 times more solar energy than its annual electricity use. This same number is about 10,000 worldwide[, so] …if only 1% of land area were used for PV, more than ten times the global energy could be produced**….”vi

**Nonetheless, many nuclear advocates**vii **argue that renewable electricity has far too big a land “footprint” to be environmentally acceptable**, while nuclear power is preferable because it uses orders of magnitude less land. If we assume that land-use is an important metric, a closer look reveals the opposite is true.viii

For example, Stewart Brand’s 2010 book Whole Earth Discipline cites novelist and author Gwyneth Cravens’s claim that “A nuclear plant producing 1,000 megawatts [peak, or ~900 megawatts average] takes up a third of a square mile.” But this direct plant footprint omits the owner-controlled exclusion zone (~1.9–3.1 mi2).ix Including all site areas barred to other uses (except sometimes a public road or railway track), the U.S. Department of Energy’s nuclear cost guidex says the nominal site needs 7 mi2, or 21× Cravens’s figure. She also omits the entire nuclear fuel cycle, whose first steps—mining, milling, and tailings disposal—disturb nearly 4 mi2 to produce that 1-GW plant’s uranium for 40 years using typical U.S. ores.xi Coal-mining to power the enrichment plant commits about another 22 mi2-y of land disturbance for coal mining, transport, and combustion,xii or an average (assuming full restoration afterwards) of 0.55 mi2 throughout the reactor’s 40-y operating life. Finally, the plant’s share of the Yucca Mountain spent-fuel repository (abandoned by DOE but favored by Brand) plus its exclusion zone addsxiii another 3 mi2. Though this sum is incomplete,xiv clearly Brand’s nuclear land-use figures are too low by more than 40-foldxv—or, according to an older calculation done by a leading nuclear advocate, by more than 120-fold.xvi

This is strongly confirmed by a new, thorough, and authoritative assessment I found after completing the foregoing bottom-up analysis. Scientists at the nuclear-centric Brookhaven

National Laboratory and at Columbia University, using Argonne National Laboratory data and a standard lifecycle assessment tool, foundxvii that U.S. nuclear-system land use totals 119 m2/GWh, or for our nominal 1-GW plant over 40 y, 14.5 mi2—virtually identical to my estimate of at least 14.3 mi2. Here’s their summary of “Land transformation during the nuclear-fuel cycle,” Fig. 1:

Of this 119 m2/GWh of land-use, Brand counts only 2.7 m2/GWh—1/16th of the power-plant site—or 2.3%. Not that he’s unaware of the concept of a fuel cycle, which he bemoans for coal. His land-use errors for renewables, however, are in the opposite direction. “A wind farm,” he says, “would have to cover over 200 square miles to obtain the same result [as the 1-GW nuclear plant], and a solar array over 50 square miles.” On p. 86 he quotes Jesse Ausubel’s claimxviii of 298 and 58 square miles respectively. Yet these windpower figures are ~100–1,000× too high, because they include the undisturbed land between the turbines—~98–99+% of the sitexix— which is typically used for cultivation, grazing, wildlife, or other uses (even solar collection) and is in no way occupied, transformed, or consumed by windpower. For example, the turbines that make 15% of Iowa’s electricity rise amidst farmland, often cropped right up to the base of each tower, though wind royalties are often more profitable than crops. Saying that wind turbines “use” the land between them is like saying that the lampposts in a parking lot have the same area as the parking lot: in fact, ~99% of its area remains available to drive, park, and walk in.

The area actually used by 900 average MW of windpower output—unavailable for other uses— is only ~0.2–2 mi2, not “over 200” or “298.”xx Further, as noted by Stanford’s top renewables expert, Professor Mark Jacobson,xxi the key variable is whether there are permanent roads. Most of the infrastructure area, he notes, is temporary dirt roads that soon revegetate. Except in rugged or heavily vegetated terrain that needs maintained roads, the long-term footprint for the tower and foundation of a modern 5-MW tubular-tower turbine is only ~13–20 m2. That’s just ~0.005 mi2 of actual windpower footprint to produce 900 average MW:xxii not ~50–100× but 22,000– 34,000× smaller than the unused land that such turbines spread across. Depending on site and road details, therefore, Brand overstates windpower’s land-use by 2–4 orders of magnitude.

His photovoltaic land-use figures are also at least 3.3–3.9× too high (or ≥4.3× vs. an optimized system), apparently due to analytic errors.xxiii Moreover, ~**90% of today’s photovoltaics are mounted not on the ground but on rooftops and over parking lots, using no extra land—yet ~90% are also tied to the grid**.xxiv **PVs on the world’s urban roofs alone could produce many times the world’s electricity consumption**.xxv The National Renewable Energy Laboratory found that:

In the United States, cities and residences cover about 140 million acres of land. **We could supply every kilowatt-hour of our nation’s current electricity requirements simply by applying PV to 7% xxviof this area—on roofs, on parking lots, along highway walls, on the sides of buildings, and in other dual-use scenarios**. **We wouldn’t have to appropriate a single acre of new land to make PV our primary energy source!…[I]nstead of our sun’s energy falling on shingles, concrete, and under-used land, it would fall on PV—providing us with clean energy while leaving our landscape largely untouched. and concludes: “**Contrary to popular opinion, **a world relying on PV would offer a landscape almost indistinguishable from the landscape we know today.**”xxvii **This would also bypass the fragile grid, greatly improving reliability and resilience.**

Summarizing, then, the square miles of land area used to site and fuel a 1-GW nuclear plant at

90% capacity factor, vs. PV and wind systems with the same annual output, are:

Thus **windpower is far less land-intensive than nuclear power; photovoltaics spread across land are comparable to nuclear if mounted on the ground in average U.S. sites, but much or most of that land** (shown in the table) **can be shared with lifestock or wildlife, and PVs use no land if mounted on structures, as ~90% now are**. Brand’s “footprint” is thus the opposite of what he claims.

These comparisons don’t yet count the land needed to produce the materials to build these electricity supply systems—because doing so wouldn’t significantly change the results. Modern wind and PV systems are probably no more, and may be less, cement-, steel-, and other basicmaterials- intensive than nuclear systems—consistent both with their economic competitiveness and with how quickly their output repays the energy invested to make them. For example, a modern wind turbine, including transmission, has a lifecycle embodied-energy payback of under 7 months;xxviii PVs’ energy payback ranges from months to a few years (chiefly for their aluminum and glass housings);xxix and adding indirect (via materials) to direct land-use increases PV systems’ land-use by only a few percent,xxx just as it would for nuclear power according to the industry’s assessments. Indeed, a gram of silicon in amorphous solar cells, because they’re so thin and durable, produces more lifetime electricity than a gram of uranium does in a light-water reactor—so it’s not only nuclear materials, as Brand supposes, that yield abundant energy from a small mass. Their risks and side-effects, however, are different. A nuclear bomb can be made from a lemon-sized piece of fissile uranium or plutonium, but not from any amount of silicon.

Only for that purpose is energy or power density a meaningful metric. For civilian energy production, it’s merely an intriguing artifact. What matters is economics and practicality.

***( ) Even advocates agree SPS can’t be broadly commercialized --- can only be used in niche markets --- not economical, means it can’t solve warming***

**Garretson 12** Peter Garretson, Lieutenant Colonel, USAF, Lt Col Peter Garretson is an airpower strategist currently serving on the CSAF’s Strategic Studies Group (HAF/CK). His previous assignment was at the Institute for Defence Studies and Analyses in New Delhi as an Air Force Fellow examining Indo–US long-term space collaboration under the sponsorship of the Council on Foreign Relations. Prior to that he was the chief of future science and technology exploration for the HQ USAF Directorate of Strategic Planning (AF/A8XC). Strategic Studies Quarterly ♦ Spring 2012, Solar Power in Space?, <http://www.au.af.mil/au/ssq/2012/spring/garretson.pdf>, jj

First, **SBSP advocates** see a system that can deliver constant power at predictable levels as fundamentally different than terrestrial solar power. They **believe a first-generation system need not compete directly against coal or nuclear power in price but could service niche markets**. **Niche markets do exist, including DoD forward locations** paying exorbitant prices for electricity, up to tens of dollars per kilowatt-hour (kWh). As early as 2008, the Greater Houston Partnership, an NGO which represents the international oil companies, approached the DoD executive agent for space with a formal letter requesting cooperation in examining the use of SBSP to power remote locations to extract shale gas or even manufacture liquid natural gas (LNG) directly. Proof of the concept in niche markets establishes the public viability and acceptability of the concept, increasing private capital available for financing at a greater scale and catalyzing development of further intellectual capital to lower costs.

***( ) SPS can’t replace fossil fuels – requires hundreds of satellites to offset energy use***

Al **Globus**, space expert, Spring **2008**, “On The Moon,” Ad Astra, http://www.nss.org/adastra/AdAstra-SBSP-2008.pdf

While it has been suggested that in the long term, space solar power (SSP) can provide all the clean, renewable energy Earth could possibly need (and then some), there has been less discussion on the most economic way to produce that power. If we want to build two or three solar power satellites, one obvious approach is to manufacture the parts on the ground, launch them into orbit, and assemble them there, just like the International Space Station. But **a few power satellites won’t solve our energy** or greenhouse gas **problems**. We’ll need more. **To generate all the energy used on Earth today** (about 15 terawatts) **would require** roughly **400** solar power **satellites 10 kilometers across**. Assuming advanced, lightweight space solar power technology, **this will require at least 100,000 launches** to bring all the materials up from Earth. But **even 400 satellites won’t be enough**. Billions of people today have totally inadequate energy supplies— and the population is growing. **Providing everyone with reasonable quantities of energy might take** five to **ten times more** than we produce today. **To supply this energy from solar power satellites requires a staggering launch rate**. There are two major issues with a very high launch rate.

***( ) Construction of SPS emits tons of CO2***

**Keiichiro 2k** (Asakura, Keio economic observatory, July, <http://policy.rutgers.edu/cupr/iioa/AsakuraCollinsNomuraHayami&Yoshioka_LifeCycleCO2.pdf>, p. 4, accessed: 25 June 2011, JT)

In this section we describe the main results of the estimate of the overall CO2 emission from constructing and operating the SPS system. Table 3 shows that **the CO2 released by the SPS system would be some 1.58 billion tons, which is about 25 more than the 1.2 billion tons of CO2 released by Japan during 1990**. Notably, the quantity released by the rockets used to launch the SPS satellites is relatively low. **The major components are the CO2 released in producing the photo-voltaic panels**, which is some 60 of the total, and that from the rectenna which is some 30 of the total. **The CO2 released by maintenance is not included**, however, since data is not available:if the maintenance ratio of the satellite and rectenna is 1 per year, the overall CO2 emission would increase by some 30.

***( ) SPS causes warming***

**Bickford 13**, Gary B. Client Services Project Engineer at Ives Group. February, <http://www.linkedin.com/groups/2012-Final-Report-NASA-Alpha-2946743.S.210056114>

It may be technically possible **to push power this way**, though it **would have unintended consequences** (how would all those thousands of miles of power and communications wires that presently exist respond? I suspect that, even with a very low induced signal percentage, the induced current might 'collect' in odd places due to standing waves and resonant circuits, generating stray signals and currents of all sorts. This could cause random problems with attached electronics (or worse).

But beyond the financial and technical issues, there is a longer term issue - **this method of providing power is effectively adding "10s to 1000s of meawatts" of additional heat to the Earth**. 1000s of megawatts is just one nuclear power plant. This may be a drop in the bucket compared to the solar influx (about 0.34 net kw per square meter), but **to be actually useful in replacing existing power generation, this amount would have to be increased by a factor of 1000 - 1 or more terawatts.**

It's been shown that **very small changes in the heat equation can have large long term consequences**. This may not be a problem for a long time (or a gigawatt), but **what if it becomes so successful that the amount of power becomes a significant fraction of the solar insolation? That could make the present issues with CO2 look trivial.**

**Space Radar Frontline**

***ESA solves***

**Science Daily 10** – 7/23, European Space Agency Develops Radar to Watch for Space Hazards, <http://www.sciencedaily.com/releases/2010/07/100723093842.htm>, jj

July 23, 2010 — **As part of ESA's Space Situational Awareness activities, a new radar system will be developed to help safeguard space missions. The radar will detect hazardous objects in Earth orbit and trigger warnings that enable satellite operators to avoid collisions, making spaceflight safer for all.** On 7 July, ESA and Spain's Indra Espacio S.A. signed a contract under which the Spanish company and its European partners will design the future Space Situational Awareness (SSA) surveillance radar and develop a demonstrator radar. **The contract is a significant milestone** in ESA's SSA Preparatory Programme (SSA-PP). In the future, the SSA surveillance radar will assist in detecting hazardous objects in low orbits. Early detection of debris is crucial to help warn satellite operators of possible collision risks, enabling avoidance manoeuvres to be made. **The contract includes the design of the future SSA radar and the design, development and installation of a small-scale phased-array radar demonstrator to validate the full-scale radar.** The contract is valued at €4.7 million and will help Europe's space industry maintain its world-class technical expertise. Fostering European expertise In addition to managing the project, Indra Espacio is responsible for the design and development of the radar transmitter. Building the radar receiver will be subcontracted to the Fraunhofer Institute for High Frequency Physics and Radar Techniques, based in Wachtberg, Germany. "**Both organisations have extensive experience in the design and development of cutting-edge technology for space applications and we are very pleased to be working with them at this early stage of the SSA Programme**," said Nicolas Bobrinsky, ESA's SSA Programme Manager. In a parallel contract with the Agency, Indra Espacio are also surveying a suitable site for the radar to be located in an ESA Member State. Prompt and precise information The radar will provide prompt and precise information on objects orbiting Earth. Using these data, a wide range of services will be possible, such as warnings of potential collisions between these objects and operational satellites and alerts on when and where debris enters Earth's atmosphere. The full SSA system will also make use of a number of optical telescopes together with networked data processing centres to enable the system to observe objects in all populated orbital regions. While radar technology works most efficiently for the surveillance of objects in low and highly elliptical orbits, optical surveillance is better for objects in medium and geostationary orbits. About Space Situational Awareness The SSA Preparatory Programme was authorised at the ESA Ministerial Council meeting in November 2008. Under the SSA, ESA is preparing a capability to watch for hazards in space stemming from possible collisions between objects in orbit, harmful space weather and potential strikes by natural objects that cross Earth's orbit. **SSA will, ultimately, enable Europe to detect, predict and assess the risk to life and property due to remnant man-made space objects, reentries, in-orbit explosions and release events, collisions, disruption of missions and satellite-based service capabilities, potential impacts of Near-Earth Objects, and the effects of space weather phenomena on space- and ground-based infrastructure.** The Preparatory Programme is running from 2009 to 2011/12 and is focusing on governance, data policy, technical requirements and the architecture of a future full European SSA capability. After the foundation of the Preparatory Programme and based on its results, European ministers will decide on a proposal for the full programme to be readied in the period 2012-19.

***Tons of hurdles to space radar besides SPS --- this is an on-point response to their article***

**Day 07** Dwayne Day has previously written about the history of space radar programs. See: “Radar Love: The Tortured History of American Space Radar Programs”. 7-23-07, Letter: solar power satellites and space radar, <http://www.thespacereview.com/article/914/1>, jj

Taylor **Dinerman’s article** **about developing** **s**olar **p**ower **s**atellites **to power space radar satellites** (“Solar power satellites and space radar”, The Space Review, July 16, 2007) **represents a solution in search of a problem**. To date, the most detailed unclassified discussion of the technology and funding choices concerning Space Radar is a January 2007 report from **the** Congressional Budget Office (**CBO**). That **report discussed the power issue for Space Radar and although it acknowledged that better solar panels are required, it stated** (page 14): “**The total power required for the solar arrays in CBO’s notional satellite designs should not present a technical challenge.** However, **those arrays are smaller and lighter than arrays with similar power output on current generation satellites.”** **The CBO report identified several other technologies as being greater challenges for Space Radar**. **These include radar bandwidth, Ground Moving Target Indicator processing, and communications bandwidth**. **It would be a better approach to devote attention to these existing technology challenges than to try and create new ones by pursuing beamed solar power.**

**The stated goal of developing this beamed solar power technology in order to make Space Radar “more stealthy” is also puzzling**. Space Radar is an active emitter. Active emitters can be made stealthy through complex and classified methods such as narrow beam actively-scanned frequency-hopping arrays (witness the F-22 Raptor’s radar). However, **it is unclear if any progress has been made at doing this for the kind of radar being envisioned for Space Radar, or if that is even possible**. **This is presumably a significant technological challenge and eliminating the need for solar panels on the satellite may have no real effect on the satellite’s stealthiness**. **Stealth for radar satellites—and the systems needed to achieve it—seems to be the kind of subject best left to satellite systems engineers.**

**The article also states that an initial test satellite could be launched immediately and an even more sophisticated one can be launched by 2010. Considering that the modern incarnation of Space Radar was initiated about a decade ago and has yet to result in a launch, this schedule seems optimistic**. **It also seems odd to refer to 2010 as “long term” for any space platform. That** **is only two and a half years away, much less than the typical development time for even a small satellite using existing technology, not technology that has not been developed yet, like a space-based Airborne Moving Target Indicator**. The rule of thumb is: large **satellites with new technology take at least seven to ten years to develop (the James Webb Space Telescope will take at least 15 or more)**, while small satellites with current technology take three to five years to develop. **NASA has stated that building even a small satellite in three years increases risk and four years is better**. **We apparently do not even have the less challenging Ground Moving Target Indicator technology yet**, and it therefore seems prudent to walk before we skip.

Finally, it is worth noting that **Space Radar has experienced significant programmatic upheaval in past years not because of a “power problem,” but because the Air Force and the intelligence community have been at odds about what it should actually do and how different requirements drive the design and the cost. In addition, the Air Force has done a poor job of explaining why such a maddeningly expensive system is necessary.**

The CBO report is fascinating reading and recommended for anybody interested in the subject.

***Satellites fail – antenna and tech barriers - takes out radar***

**Spaceflight 08** (“Space Radar,” September 2008, http://www.spyflight.co.uk/sbr.htm, Sawyer)

**One of the major stumbling blocks** in the differing requirements of the intelligence and military communities **is** whether **the Space Radar** system should have a MTI capability. A SAR satellite sufficient for the requirements of the intelligence community would probably only require a relatively small antenna of around 40 square meters, however, the **MTI capability** sought by the military, **sufficently sensitive to track ground vehicles** travelling at 30 kilometeres per hour, **would** probably **require an antenna as large as 100 square meters** at vastly increased cost. Another area of serious concern is the total estimated cost of the proposed Space Radar system. Estimates for a nine satellite sustem with 40 square meter antennas range bwteen $35 - $50 billion, but given the inability of recent military space systems to stay within budget **and the complex immauture technologies involved,** there would be every chance the final cost would be more than double this figure.

***Nuclear primacy high***

The stockpile isn’t decaying---we’re upgrading the counterforce capabilities of every leg of the triad

**McDonough 9** – David S. McDonough, Doctoral Fellow at the Centre for Foreign Policy Studies at Dalhousie University, March 2009, “Tailored Deterrence: The ‘New Triad’ and the Tailoring of Nuclear Superiority,” online: http://www.canadianinternationalcouncil.org/download/resourcece/archives/strategicd~2/sd\_no8\_200

**Less noticed** **is the continuing** **modernization of the existing arsenal**. The **remaining** low-yield **Minuteman III ICBM warheads will be replaced by the high-yield MX warhead** **and** further **augmented by the inclusion of GPS** guidance **systems**. **The SLBM force** of highly accurate and high-yield D-5 warheads **will** also **benefit from** the addition of **GPS accuracy and ground-burst capability**. **Even the bomber force will become armed with stealthy and low-flying cruise missiles** – ideal to avoid an adversary’s early warning radar. **The nuclear force may** indeed **be smaller**, **but it is** also **becoming more accurate and more lethal**, and **ideal for disarming counterforce strikes**.

***( ) No impact --- conventional deterrence solves***

**Perkovich 9**  
(Adviser to the International Commission on Nuclear Non-Proliferation and Disarmament and a member of the Council on Foreign Relations Task Force on US Nuclear Policy, “Extended Deterrence on the way to a nuclear free world” International Commission on Nuclear Non-proliferation and Disarmament, May 2009, pg. [www.icnnd.org/research/Perkovich \_Deterrence.pdf](http://www.icnnd.org/research/Perkovich%20_Deterrence.pdf))

**The most credible** and perhaps least dangerous **way to assure allies of U.S. commitments to defend them is to station U.S. conventional forces on allied territories**, as is already the case in original NATO states and in Japan and South

Korea. **With U.S. conventional forces in harm’s way, an adversary attacking a U.S. ally would draw the U.S. into the conflict with greater certainty than if nuclear weapons were directly and immediately implicated**. Indeed, the greater credibility that U.S. conventional forces bring to extended deterrence is one reason why Poland has been keen to have U.S. missile defense personnel based on Polish soil. **Were U.S. personnel attacked, the U.S. would respond forcefully. Arguably the best way to strengthen the credibility of U.S. extended deterrence would be to stress that conventional capabilities of the U.S. and its allies alone are sufficient to defeat all foreseeable adversaries in any scenario** other than nuclear war. And as long as adversaries can threaten nuclear war, the U.S. will deploy nuclear weapons to deter that threat. Of course, basing U.S. conventional forces on allied territory also invites controversy in many places, including Japan. Such controversies are much less intense than would flow from proposals to base nuclear weapons, but they point to the fundamental underlying political-psychological challenge of extended deterrence. Allies want the protection that the U.S. can provide, and worry about abandonment, but they also don’t want to be implicated in U.S. policies that could entrap them in conflicts not entirely of their making. This tension is the heart of the extended deterrence challenge. To repeat, **rather than focusing on nuclear weapons, the U.S. and its allies should concentrate on building cooperation and confidence in overall political-security strategies in each region**. Indeed, it is worthwhile to honestly consider whether in Northeast Asia and CentralEurope and Turkey the recently expressed concerns over the future credibility of extended U.S. nuclear deterrence is a proxy for deeper concerns that are more difficult to express. For example, in Poland, Russia’s rhetoric and foreign policy, including the conflict with Georgia, elicit private worries that NATO would not actually risk confrontation with Russia to defend Poland against Russian bullying. Can NATO as a collection of 26 states with diverse interests and capabilities be relied upon stand up forcefully in behalf of Poland (and other new NATO states)? Doubts about the answer to this question at least partially explain why Poland has sought special guarantees from the U.S. **It is not clear that focusing on the nuclear element of extended deterrence in this situation helps produce policies and capabilities that actually would deter or dissuade Russia from bellicosity.** **The types of scenarios in which Russia might bully Poland are not likely to include credible threats of Russian coercion that would make countervailing use of nuclear weapons realistic or desirable. Indeed, raising the specter of nuclear threats could undermine the credibility of extended deterrence because allied states**, including the American public, **would probably become alarmed in ways that would weaken resolve to push back firmly against Russian pressure. This resembles the credibility problems of extended nuclear deterrence during the Cold War.**

***Threat of orbital debris low now and the private sector will solve when it becomes more serious.***

**Baiocchi and Welser** 20**10** [Dave Baiocchi, defense analyst and engineer at RAND, Ph.D. and M.S. in optics, University of Arizona; and William Welser IV, management systems researcher at the RAND Corporation, “ Confronting Space Debris”, http://www.rand.org/pubs/monographs/MG1042.html]

When viewed in light of the comparable problems, **there is evidence to suggest that orbital debris does not at present pose a great-enough risk to warrant the deployment of a remediation technology**.6 A community will only move on to the next stage shown in Figure S.1 when the current stage is not sufficient to properly address the problem. **While everyone in the space community certainly agrees that orbital debris poses a risk, the lack of government and private industry funding for this effort suggests that the perception of risk has not yet crossed a critical threshold that would prompt demands for remediation.**

The current lack of private funding for debris remedies is particularly telling. Today, the majority ownership of operational space assets (as a percentage of the total operational inventory) has shifted from government to commercial industry.7 For this new majority of commercial stakeholders, the “imperative to create shareholder value entails that any investment in a technical system be guided by its value creation potential” (Brathwaite and Saleh, 2009). In other words, **if debris were deemed to represent an unacceptable risk to current or future operations, a remedy would already have been developed by the private sector.**

***Squo solves***

**Selding 10** (Peter, Space News Writer, “NASA May Move Orbital Debris Mitigation Off Back Burner,” July 23, http://www.spacenews.com/civil/100723-nasa-orbital-debris-mitigation.html)

BREMEN, Germany — **NASA**’s Orbital Debris Program Office **expects to begin active work on how to remove debris in orbit on the strength of the new U.S. National Space Policy**, according to the office’s chief scientist. Nicholas L. Johnson said the office, which assembles data from the U.S. **Air Force**-run Space Surveillance Network, **has been working on these issues for years, but only on an informal basis, with few resources and no formal mandate. That changed** on June 28, **when President Barack Obama issued an updated space policy that specifically orders NASA and the U.S. Defense Department to “pursue research and development of technologies and techniques … to mitigate and remove on-orbit debris.”** Attending the 38th Congress of the Committee on Space Research (Cospar) here July 18-25, Johnson said **it is too early to tell exactly how the new policy will be transformed into programs and budgets. But the specificity of the wording, he said, gives reason to conclude that NASA will be able to increase its efforts.** In addition to asking NASA and the Defense Department to research debris mitigation — making satellites and rockets less likely to break up in orbit, and removing satellites from the orbital highways upon retirement — **the policy’s inclusion of orbital debris removal may take the NASA office in a new direction.**

***Plan opens the floodgates – They circumvents the ITU – which is the barrier to SPS now – Causes GSO overcrowding – zero-sum with telecommunication satellites***

US SPS will open the floodgates --- if they win the tech is viable, the GSO will become overcrowded --- trades off with telecommunication satellites. Once first company launches SPS into GSO, companies will be emboldened and start launching them now --- it’s not happening now because the legal precedent is unclear

Aleksey **Shtivelman**\*J.D., Boston University School of Law, 2012; B.S. Business Management Major, B.A.; Spanish Language and Literature Major, Stony Brook University, 20**09**.\* B.U. J. SCI. & TECH. L. SOLAR POWER SATELLITES: THE RIGHT TO A SPOT IN THE WORLD’S HIGHEST PARKING LOT, <http://www.bu.edu/law/central/jd/organizations/journals/scitech/volume182/documents/Shtivelman_web.pdf>, jj

A. **Demand for SBSP satellites will overcrowd the amount of available GSO slots** Since the GSO is limited and SBSP may require access to the GSO, there should likely be a system for owning or allocating slots to launching countries. **SBSP will do much more than simply influence the allocation of orbital positions in the GSO by crowding the orbit; SBSP will inundate the GSO so that communication satellites may be among the least common satellites in orbit**.104 SBSP satellites produce electricity at rates much cheaper than other alternatives, such as coal-powered plants.105 It is estimated that by the year 2030, solar power electricity will cost three times less than coal power electricity.106 By the year 2070, electricity derived from solar power is expected to be seventy times cheaper than coal power.10 Although “[t]he evidence is there, the technical ability is there and the funding capability is within reasonable and achievable levels,” **one reason why we do not currently have SBSP satellites in orbit is that there is no viable legal system that regulates these satellites in space and no one is willing to spend billions of dollars on a satellite that they may not be able to launch into orbit**.109 Currently, the United States invests large sums of money on landbased solar energy. On July 3, 2010, President Barack Obama announced that the Department of Energy would receive nearly two billion dollars in commitments from solar power companies to build one of the world’s largest solar power plants in Arizona.110 The European Union Commission plans to spend sixteen billion Euros over the next ten years to build solar power stations and an additional fifty billion Euros over the next ten years to develop technologies that will help cut greenhouse gas emissions by eighty percent by 2050.111 This **increase in use of solar power technology may increase investment in solar power satellites and thereby cause overcrowding of the GSO.**112

***SPS causes Orbital Crowding***

Mark I **Wallach, ’10**, Calfee, Halter & Griswold LLP, Winter 2010, (Office Journal of Space Communication, Space Solar Power, Legal Issues for Space Based Solar Power, Issue No. 16: Solar Power Satellites, <http://spacejournal.ohio.edu/issue16/wallach.html>)

**Another major, yet still largely undeveloped, legal question is who owns the right to the "slot" located at the geosynchronous orbit** above a particular rectenna. The highly prized equitorial orbit at approximately 36,000 kilometers above mean sea level has the unique characteristic of appearing to maintain the same position relative to the earth's surface, since the object in that orbit has an orbital period matching the earth's rotation period. Ideally, SBSP satellites collecting energy and converting it into a microwave beam for transmission to the surface will be positioned in a suitable location over the equator from which they can reach their targeted receiving rectennas by way of movable "spot beams." **Who owns - or who controls - the "air rights" to the space far above the atmosphere at GEO? If there is**, for example, **a communications satellite already located there, does it have primacy by reason of prior arrival? If a company receives approval to locate its SBSP collecting satellite at a particular spot, is it entitled to that location in perpetuity, or for the life of the satellite**? In general, **since most of the orbital slots in GEO have already been assigned to interested nations, and not to individuals or companies, it will fall to the** International Telecommunications Union (**ITU) and** the regulatory **agencies of nations** to adjudicate such questions. The ITU, an agency of the United Nations, holds responsibility for assigning both orbital and electromagnetic spectrum positions. The ITU is governed by a constitution and the International Telecommunications Convention. The rights and obligations therein are binding on all member states. Currently, the ITU appears to apply a "first-in-time, first-in-right" system to orbital allocation. However, **the ITU's primary considerations are supposed to be equitable access and efficient use of a limited resource. Many argue that these considerations obligate the ITU to reserve spaces for developing nations**. **The matter of crowding is already a contentious issue** **for present and future operators of satellites at GEO**. Telecommunications satellites need to be positioned far enough away from one another to ensure that their signals do not interfere with each other. The ITU Radio Communication Sector interprets, administers, and enforces the policies and agreements of the ITU, and also oversees coordination of the use of the spectrum and assists in solving conflicts with orbital position in the "Master Register."The Space Treaty, a legally binding international agreement that provides the legal framework for the access and use of outer space and celestial bodies, does not allow for the allocation of orbital slots "either as a property right or through appropriation by national sovereignty." Article II of the Space Treaty provides that outer space "is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." The Space Treaty also appears to prevent private companies from selling slots in the geostationary orbit: "**Under the current treaty regime, the geostationary orbit is a scarce resource that no nation or individual can claim a legal right to beyond that of a squatter, which does not work to allocate the orbital space either efficiently or equitably."**

***Finite number of orbits – orbital crowding causes a cascade of space debris***

**Telegraph, ’11**, Feb 1 2011, (Michael Day, Space junk: a risky game of space invaders, http://www.telegraph.co.uk/science/space/8135495/Space-junk-a-risky-game-of-space-invaders.html)

**The**[**space**](http://www.telegraph.co.uk/science/space/)**around our planet is no longer a lonely place. Vital orbits near and far from Earth's surface are shrouded in a perpetual and perilous shroud of debris and defunct satellites**. In addition to thousands of large fragments, Nasa estimates there are at least half a million objects between 1cm and 10cm wide circling Earth. Even objects this small can, when hurtling at orbital velocities, cripple a satellite. **And as their number grows, so does the risk of further collisions, and the release of even more shrapnel. The resulting vicious circle threatens not only the multi-billion pound satellite industry, but the safety of manned missions into space. "The crowding in low Earth orbits is a really big issue,"** says Professor Martin Barstow, of the University of Leicester, "**and the volume of debris will only increase unless we manage to stop it accumulating, give greater protection to satellites or clear the debris."** Russia's Cosmos 2251 had been circling the planet aimlessly for 14 years, following just two years of active service after its launch in 1993. At the end of its useful life, there had been no plan to move it out of harm's way. Fortunately, the Cosmos-Iridium smash may yet be viewed as the event that catalysed a pivotal change in attitudes to space safety: there are signs that the United States government, in particular, has accepted that things cannot go on as they are. Of key concern are two vital areas. The first, between 200 and 1,000 miles from the planet's surface, is known as "low Earth orbit", used by the Hubble space telescope, the International Space Station and the space shuttles that restock it. The closeness to Earth makes repair missions relatively easy – but to resist gravity, objects in these orbits must travel very rapidly (approximately 17,000mph). The resulting friction against the edge of the atmosphere – and bombardment by debris – ultimately causes the devices to fail. Examining the Hubble, says Prof Barstow, "you can clearly see the severe damage that tiny objects have caused. Even dust particles travelling at very high velocities can enter and knock out a satellite if they hit the wrong part." Because of the speed at which these satellites travel, it is hard to bounce communications signals off them, or use them to observe specific events, such as weather patterns. This is where geostationary satellites come in. Once in orbit, at approximately 22,000 miles from the planet, these craft circle in perfect synchronicity with Earth, effectively resting at a fixed point in the sky. This allows them to monitor a particular area, or to be used as a way station for the phone calls, radio signals and electronic data transfers that keep the information economy ticking over. **There are two problems, however. First, the height of the orbit makes these satellites effectively impossible to repair**. Second, **the need to place them far enough apart to avoid harmful radio interference means that there is a limited number of "slots" available, adding to concerns about overcrowding.** There are more than 200 dead satellites in geostationary orbit, and the International Association for the Advancement of Space Safety (IAASS) has warned that this could increase fivefold within 10 years.

## 2NC

### 2nc Interp + Violation

#### ---The production occurs in space --- contextual ev

Kramer 09, Jesse, 10-9, The Promise of Space Based Solar Power, <http://centanne.blogspot.com/2009/10/promise-of-space-based-solar-power.html>

Earth space is finite, but space space is infinite. Thus our solution: space based solar power (SBSP) using solar power satellites (SPSs). SPSs would absorb energy from the sun and transmit it through concentrated microwave beams to receiving stations on Earth. This would be done on a constant basis as there'd be no interruptions from the day/night cycle (since satellites can always face the sun). The Earth-based receiving stations could transmit the energy wirelessly (a technology now in its nascent phase) wherever needed. Concerns over terrestrial space would be solved as energy production would occur far above the planet. While the receiving stations would take up some space, it would be far less than the solar arrarys they would displace.

#### ---SPS energy is captured and converted in space

Seboldt 04 Wolfgang Seboldt, Institute of Space Simulation, German Aerospace Center (DLR), Cologne, Germany, Space- and Earth-based solar power for the growing energy needs of future generations, Acta Astronautica, Volume 55, Issues 3–9, August–November 2004, Pages 389–399

<http://dx.doi.org/10.1016/j.actaastro.2004.05.032>, jj

3. Space options for global terrestrial power supply

Space solar power (SSP) in general comprises the collection of solar power in space, its conversion to electricity and transmission with large high-power antennas— directly or via orbital redirectors—to Earth-based receivers or rectennas (= antennas + electric rectifiers). The following ‘classical’ space solar power concepts are under discussion: Solar Power Satellites (SPS), Power Relay Satellites (PRS) and Lunar Power Stations (LPS—promoted by David Criswell of the University of Houston—are an interesting alternative. This idea of collecting solar power on the Moon and transmitting it to Earth has the big advantage of eventually using lunar resources for build-up and operation [16]. But the technological requirements (e.g. lunar infrastructure, multiple satellites in GEO to redirect the beam from the Moon to target sites on Earth) are extremely high, and major technological and operational break-throughs are necessary to satisfy them. Therefore, LPS will not be considered in the paper.

#### ---The energy is generated and produced in space then transmitted to Earth

Meulenberg & Balaji 11 Andrew Meulenberg, NAv6 Center of Excellence, Universiti Sains Malaysia, P.S. Karthik Balaji, National Institute of Technology, The LEO Archipelago: A system of earth-rings for communications, mass-transport to space, solar power, and control of global warming ☆ ☆☆Acta Astronautica, Volume 68, Issues 11–12, June–July 2011, Pages 1931–1946 <http://dx.doi.org/10.1016/j.actaastro.2010.12.002>, jj

Power generated in space from solar energy, if not used locally, must be transmitted for either space or terrestrial applications. This energy can be transmitted using microwaves or lasers. Pros and cons of each of these beaming methods in various parameters are reviewed briefly.

#### Production of electricity occurs in space – not on the ground – that is simply transmission

The Green Age (alternative energy information organization) no date “Solar Energy from Space” http://www.thegreenage.co.uk/greenfuture/future-power/solar-energy-from-space

**Space Based Solar Power captures sunlight in Orbit** where it is constant and stronger than on Earth, this then gets converted to coherent radiation and beamed down to a receiver on Earth. **The Typical design for this would be a satellite sitting in geostationary orbit with** kilometres2 of **photovoltaic arrays** situated either side **capturing the sunlight producing the electricity**; **this would then be converted to radio frequencies that are best suited to atmospheric transmission and beamed down to a reference signal on earth**, where the beam would picked up by a rectifying antenna and converted into electricity for the grid, delivering approx 5-10GW of electrical power to the grid.

### A2: C/I – Energy Production = Conversion to Electricity

#### They don’t meet --- conversion happens in space

Kiantar Betancourt, August 28, 2010, Space Energy, Space Based Solar Power: Worth the effort?, <http://www.spaceenergy.com/announcements/space-based-solar-power-worth-the-effort-kiantar-betancourt>, jj

SBSP has the potential to fulfill the planets growing energy needs in the coming centuries.[13] The concept of SBSP is simple. Satellites are sent into space fitted with solar panels that can convert the sun’s rays into electricity.[14] This electricity is then converted into microwaves and is then transmitted back to a receiver on the planet’s surface.[15] The receiver on the planet’s surface converts the microwaves back into electricity where it can be fed into the power grid.[16] Any company or country seeking to implement this technology faces certain legal and technical challenges. However the promise of SBSP is worth the cost of overcoming these challenges.

#### The conversion process is in space

Clean Energy Ideas, no date, How Do You Produce Electricity from Solar Energy, <http://www.clean-energy-ideas.com/articles/how_do_you_produce_electricity_from_solar_energy.html>

Before you're able to produce electricity through solar energy, there needs to be some form of solar cell or panel that will be used to absorb the sun's energy. Solar panels are constructed from a semi-conductive material with the most common material of choice being silicon. The semi-conductive material contains electrons which will naturally just stay there not doing anything.

When photons (contained within the suns rays) hit a solar cell, the electrons contained in the solar cell material absorb this solar energy, which transforms the electrons into conduction electrons. If the energy of these photons is great enough then the electrons are able to become free and carry an electric charge through a circuit to the destination.

So there we have a basic understand of how you produce electricity from solar energy. The below section explains how various aspects can degrade or improve the efficiency of solar electricity systems.

#### production is extraction of the resource, consumption is use

Ristinen, professor of physics – University of Colorado, and Kraushaar, professor of physics – University of Colorado, ‘99

(Robert A. and Jack J., Energy and the environment, p. 21)

The history of consumption and product of energy in the United States since 1950 is shown in Figure 1.8. In this figure, and elsewhere in this text, **energy *production* refers to the** mining **of coal and the bringing of oil and natural gas** to the earth’s surface**, or to the** making of useful energy **by nuclear power**, hydroelectric power, geothermal power, biomass fuel, **solar** collectors, **and other means. Energy *consumption* occurs when the fossil fuel is burned or when energy is put to use by the consumer.**

#### Voter for limits—secondary production is a limitless category

Kim Woodard (Research Assistant at the Resource Systems Institute of the East-West Center, Chairman and CEO of Javelin Investments) 1980 “The International Energy Relations of China” p. 457

**Secondary energy production can most easily be defined as the conversion of one energy fuel to another**. As such, **it is a catch-all** category **that can be used to provide a cluster of statistical energy production series that do not easily fall into either primary production or energy consumption categories. The number and variety of secondary energy production statistics could be multiplied indefinitely by an ever sharper differentiation of substages in the flow of energy commodities through society**. I have chosen co include just a few forms of secondary energy production in this analysis—coke production, thermal electric power generation, total electric power generation, total refined petroleum production, the differentiated production of petroleum fuels, plant use of energy in energy production, and the use of hydrocarbons in the production of petrochemical and fertilizer feedstocks. These were statistics that were available for the Chinese case or could be generated by inference from primary energy data and a few oversimplified assumptions. All the secondary energy production statistics presented in this section were generated by the computer and then rounded to a reasonable level of approximation. All the statistics presented for various forms of secondary energy production are general estimates, and none have been tested directly against whatever data exist in the Chinese press. Validation of the statistics would require separate in-depth analysis of each secondary energy production industry—a task far beyond the means of this book. These statistics, therefore, should be taken as a point of reference, not the final word.

#### Precision—our definition comes prior to their offense

Sara Øvergaard (Senior Executive Officer in the Department on Energy Statistics at Statistics Norway) September 2008 “Issue paper: Definition of primary and secondary energy” <http://unstats.un.org/unsd/envaccounting/londongroup/meeting13/LG13_12a.pdf>

**The ability to separate primary and secondary energy is important in energy statistics**. The Energy Balance is set up to record the flow of new energy entering the system of national energy supply, its transformation and losses until end use. To avoid double counting, **it is important to be able to separate new energy entering the system, (primary) and the energy that is transformed within the system (secondary). Internationally agreed definitions on primary and secondary energy are therefore important** in order to compare Energy Balances. **A consistent differentiation between primary and secondary energy is also useful in energy planning when developing** long-range **policies** **and for energy analysts** who are concerned with broader energy or environmental issues, such as conversion losses, transmission losses, distribution, energy efficiency measures and carbon emissions from energy sources. **When defining primary and secondary energy, it is important that the definition is operational and founded on the laws of physics.** **The definitions must be operational**, meaning that **it should be helpful for statisticians enabling them to make a clear and consistent division between primary and secondary energy based on information about the sources that the energy is embodied in and the processes that it has been part of. The definition of primary and secondary energy should be founded on physics, and not on the ability of statisticians to measure or record it**. For example, in the OECD/IEA/Eurostat, Energy Statistics Manual2, the major difference between the Eurostat and the IEA Energy Balance format lies in the presentation of the production of primary and secondary fuels. Statisticians can for example due to measurement problems choose to assume that the actual mechanical energy taken from a hydro source is equal to the electric generated energy, but this should not influence the fact that hydro is a primary energy source, and that the electricity produced from this source is secondary energy.

#### “Production” is the extraction or collection process --- the plan affects the conversion phase which is distinct

Wilbanks et al ‘06

Lead Author: Thomas J. Wilbanks1 Contributing Authors: Marilyn Brown,1 Ken Caldeira,2 Bill Fulkerson,3 Eric Haites,4 Steve Pacala,5 and David Fairman6 1Oak Ridge National Laboratory, 2Carnegie Institution, 3University of Tennessee, 4Margaree Consultants, 9 5Princeton University, and 6Consensus Building Institute, Inc.

Chapter 6. Energy Extraction and Conversion

<http://cdiac.ornl.gov/SOCCR/pdf/SOCCR_Chapter06.pdf>, jj

Carbon emissions from energy extraction (e.g., mining and oil/gas production) and conversion (e.g., 19 electricity generation and refining) are one of the “big three” sectors accounting for most of total 20 emissions from human systems, along with industry and transportation. The largest share of total 21 emissions from energy supply (not including energy end use) are from (a) coal and other fossil fuel use in 22 producing electricity and (b) fossil fuel conversion activities such as oil refining. Other emission sources 23 are less well-defined but generally small, such as methane from reservoirs established partly to support 24 hydropower production (Tremblay et al., 2004), or from materials production (e.g., metals production) 25 associated with other renewable or nuclear energy technologies.

### Outer Space =/= The U.S.

***This must occur in the United States***

**U.S. Department of State 12**

[Department of State Foreign Affairs Manual, Volume 7, June 29, http://www.state.gov/documents/organization/86755.pdf

7 FAM 1112 WHAT IS BIRTH “IN THE UNITED STATES”?

(CT:CON-314; 08-21-2009)

a. INA 101(a)(38) (8 U.S.C. 1101 (a)(38)) provides that **“the term „United States,‟ when used in a geographical sense, means the continental United States, Alaska, Hawaii, Puerto Rico, Guam, and the Virgin Islands of the United States.”**

#### ‘In the United States’ excludes energy produced outside of US airspace

Rense (citing US code under the 14th amendment) February 2008 “McCain Not A US Citizen,

Can't Be President?” <http://rense.com/general81/cain.htm>

Excerpted from http://www.state.gov/documents/organization/86755.pdf 7 FAM 1116 KEY PHRASES USED IN THE 14th AMENDMENT AND IN LAWS DERIVED FROM IT 7 FAM 1116.1 "In The United States" 7 FAM 1116.1-1 States and Incorporated Territories (TL:CON-64; 11-30-95) a. **The phrase "in the United States**" as used in the 14th Amendment **clearly includes States that have been admitted to the Union**. Sections 304 and 305 of the INA provide a basis for citizenship of persons born in Alaska and Hawaii while they were territories of the United States. These sections reflect, to a large extent, prior statutes and judicial decisions which addressed the l4th Amendment citizenship implications of birth in these and other U.S. territories. Guidance on evidence on such births should be sought from CA/OCS. b. Sec. 101(a)(38) INA provides that, for the purposes of the INA, **The term "United States",... when used in the geographical sense, means the continental United States, Alaska, Hawaii, Puerto Rico, Guam, and the Virgin Islands of the United States**.In addition, under Pub. L. 94-241, the "approving Covenant to Establish a Commonwealth of the Northern Mariana Islands in Political Union with the United States of America", (Sec. 506(c)), which took effect on November 3, 1986, the Northern Mariana Islands are treated as part of the United States for the purposes of sections 301 and 308 of the INA. c. All of the aforenamed areas, except Guam and the Northern Mariana Islands, came within the definition of "United States" given in the Nationality Act of 1940, which was effective from January 13, 1941 through December 23, 1952. d. Prior to January 13, 1941, there was no statutory definition of "the United States" for citizenship purposes. Thus there were varying interpretations. Guidance should be sought from the Department (CA/OCS) when such issues arise. Here are the exemptions... 7 FAM 1116.1-4 **Not Included in the Meaning of "In the United States"** (TL:CON-64; 11-30-95) a. A U.S.-registered or documented ship on the high seas or in the exclusive economic zone is not considered to be part of the United States. A child born on such a vessel does not acquire U.S. citizenship by reason of the place of birth (Lam Mow v. Nagle, 24 F.2d 316 (9th Cir., 1928)). b. **A U.S.-registered aircraft outside U.S. airspace is not considered to be part of U.S. territory**. A child born on such an aircraft outside U.S. airspace does not acquire U.S. citizenship by reason of the place of birth.

#### "outer space" is NOT "in the United states"

Bornemann ’98

(Lauren S.-B, "ARTICLE: THIS IS GROUND CONTROL TO MAJOR TOM ... YOUR WIFE WOULD LIKE TO SUE BUT THERE’S NOTHING WE CAN DO \* ... THE UNLIKELIHOOD THAT THE FTCA WAIVES SOVEREIGN IMMUNITY FOR TORTS COMMITTED BY UNITED STATES EMPLOYEES IN OUTER SPACE: A CALL FOR PREEMPTIVE LEGISLATION" 63 J. Air L. %26 Com. 517)

Finally, the Court relied on the "longstanding principle of American law 'that legislation of Congress, unless a contrary in tent appears, is meant to apply only within the territorial juris diction of the United States.'" n118 The Court commented that avoidance of international clashes is only one basis for the pre sumption against extraterritoriality, another being "the com monsense notion that Congress generally legislates with [\*535] domestic concerns in mind." n119 The Court ruled, therefore, that in the absence of "clear evidence of congressional intent to ap ply the FTCA to claims arising in Antarctica," the presumption against extraterritoriality holds fast. n120

**A2: Reasonability/T Debates = Race To Bottom---2NC**

***It’s arbitrary and undermines research***

Resnick 1Evan- assistant professor of political science – Yeshiva University, “Defining Engagement,” Journal of International Affairs, Vol. 54, Iss. 2

In matters of national security, establishing **a clear definition of terms is a precondition** for effective policymaking. **Decisionmakers who invoke critical terms in an erratic, ad hoc fashion risk** alienating their constituencies. They also risk **exacerbating misperceptions** and hostility among those the policies target. **Scholars who commit the same error undercut their ability to conduct valuable empirical research**. Hence, if scholars and policymakers fail rigorously to define "engagement," they undermine the ability to build an effective foreign policy.

### 2NC Solvency

***CP solves innovation and clean energy deployment while avoiding winner picking, market bubbles and industry collapse***

Jesse Jenkins et al . April 2012, Director of Energy Policy & Climate Policy, Breakthrough Institute, Beyond Boom & Bust: Putting Clean Tech on a Path to Subsidy Independence, <http://www.brookings.edu/research/papers/2012/04/~/media/Research/Files/Papers/2012/4/18%20clean%20investments%20muro/0418_clean_investments_final%20paper_PDF.PDF>, KEL

Several policies could be structured to meet these criteria. **Competitive deployment incentives could be created for various clean tech segments of similar maturity, with incentives for each segment falling steadily over time to demand and reward continual innovation and price improvements**.99 **Steadily improving performance-based standards could create both market demand and spur consistent technology improvement**.100 **Such incentives or performance standards could also be set competitively by “toprunners,” the leading industry performers in each market segment, forcing other firms to steadily innovate to stay competitive in the market**.101 **Demanding federal procurement opportunities could be created to drive both market opportunities and ensure steady improvement of each successive generation of product, particularly when clean tech products align with strategic military needs**.102 And where direct government procurement does not make sense, **reverse auction incentives could be established for varying technologies to drive industry competition and innovation**.103 **If structured to adhere to these criteria, a new era of clean tech deployment policies will neither select “winners and losers” a priori nor create permanently subsidized industries**. Rather, **these policies will provide opportunities for all emerging clean energy technologies to demonstrate progress in price and performance , foster competitive markets within a diverse energy portfolio, and put clean tech segments on track to full subsidy independence.**

***Ground based solar is cheaper and just as effective***

space is a harsh environment which makes energy production there difficult --- ground solar has flaws but they are easier and cheaper to overcome than SPS’s.

**Murphy 12** Tom Murphy is an associate professor of physics at the University of California, San Diego. An amateur astronomer in high school, physics major at Georgia Tech, and PhD student in physics at Caltech, Murphy has spent decades reveling in the study of astrophysics. He currently leads a project to test General Relativity by bouncing laser pulses off of the reflectors left on the Moon by the Apollo astronauts, achieving one-millimeter range precision. Murphy’s keen interest in energy topics began with his teaching a course on energy and the environment for non-science majors at UCSD. Motivated by the unprecedented challenges we face, he has applied his instrumentation skills to exploring alternative energy and associated measurement schemes. Following his natural instincts to educate, Murphy is eager to get people thinking about the quantitatively convincing case that our pursuit of an ever-bigger scale of life faces gigantic challenges and carries significant risks. 3-20, Space-Based Solar Power, <http://physics.ucsd.edu/do-the-math/2012/03/space-based-solar-power/>, jj

Energy Return on Energy Invested

**My initial reaction to the notion of flinging solar panels in space was that the energy needed to launch panels to geosynchronous orbit might totally undermine the energy delivered by such a system**. Let’s take a quick look with approximate numbers.

**First, today’s silicon solar panels return their investment of energy after 3–4 years of deployment. Stick them in the sun for 30–40 years, and you have an EROEI of 10:1. Specially light-weighted space panels will likely require more energy to make per kilowatt, but will spend a much greater fraction of their time in space soaking up energy**. Let’s just guess that the payback would be 5 years if the space panel were deployed on the ground. But in space, **the panel works five times longer per day than the panels for which the 3–4 year payback is calculated. So let’s call it an even one year for manufacture payback in space. Panels in space will be subjected to a much harsher cosmic ray (and damaging debris) environment than those on the ground, so we should reduce the lifetime to, say, 20 years. Still, that’s a 20:1 EROEI for the manufacturing piece alone. But then there’s the launch.**

A study of gross weight of rockets compared to payload delivered to geosynchronous orbit reveals a roughly 100:1 ratio. This intuitively makes sense to me given the logarithmic rocket equation: much of the fuel is spent lifting the fuel that must be spent to lift more fuel, etc. (see the appendix of the stranded resources post for my explanation of this).

There is a nice rule of thumb—highly approximate—that the embodied energy in products is about the same as that of the equivalent mass of gasoline, at about 40 MJ/kg. Aluminum production requires more, at 220 MJ/kg, but many materials are surprisingly close to this value (and fuel will be right on the mark). A rocket will use a lot of aluminum, but much more fuel. So we might go with a round number like 50 MJ per kg.

If I take my ultra-lightweight panel producing 1 kW/kg, I must launch 100 kg of rocket, at a cost of 5 GJ. A 1 kW panel will deliver 0.5 kW to the end-user, after transmission/conversion losses are considered. The 5 GJ launch price tag is then paid off in 107 seconds, or about one third of a year. Add the embodied energy of the other components in space and on the ground, and I could easily believe we get to a year payback—now bringing the total (manufacture plus launch) to two years and an EROEI around 10:1. If my 100× light-weighting proves to be unrealistic, and we can only realize a factor of ten improvement over our rooftop panels, the solar panel launch cost climbs to three years, so that adding other components results in perhaps a 4:1 EROEI.

In the end, the EROEI is not as prohibitive as I imagined: it’s not a net energy drain as I might have feared. But **it’s not obviously better than conventional solar either.**

In Summary

**I sense that people have a tendency to think space is easy**. We have lots of satellites, we’ve gone to the Moon (remember that?!), we used to have a space shuttle program, and we have seen many movies and television shows set in space. **But space is a very challenging environment, and it is extremely costly and difficult to deliver things there.** If you go to the Fed-Ex site to get delivery costs, you immediately get hung up on not knowing the postal-code for space. **Once in space, failures cannot be serviced. The usual mitigation strategy is redundancy, adding weight and cost. A space-based solar power system might sound very cool and futuristic, and it may seem at first blush an obvious answer to intermittency, but this comes at a big cost. Among the possibly unanticipated challenges:**

The gain over the a good location on the ground is only a factor of 3 (2.4× in summer, 4.2× in winter at 35° latitude).

**It’s almost as hard to get energy back to the ground as it is to get the equipment into space in the first place.**

**The microwave link faces problems with transmission through the atmosphere, and also flirts with roasting ducks on the wing.**

Diffraction of the downlink beam, together with energy density limits, means that **very large areas of the ground still need to be dedicated to energy collection.**

**Traditional solar photovoltaics in good locations can accomplish much the same for much reduced cost, and with only a few times more land than the microwave link approach would demand. The installations will be serviceable and will last longer. Batteries seem an easier way to cover storage shortcomings than launching stuff to space**. I did not even address solar thermal schemes in this post, which competes well with photovoltaics and can very naturally build in storage capability.

**I am left puzzled as to why we would want to take a harder, more expensive road to solar power. I think it is just not intuitive to most how difficult and expensive space is.** And perhaps they think it’s very futuristic and cool to push our power generation out to space: it fits the preferred narrative about where we’re going. I don’t know—I’m just guessing.

Astronomers frequently face this issue: should we build a telescope/observatory on the ground, or launch something into space? **The prevailing wisdom is that if the science can be accomplished on the ground, then by golly you’d best do it that way. You’ll have the result sooner, at less expense, and with a greater chance of success.** The lion’s share of astronomical advance is carried out from the ground. Space is reserved for those places where there is no other way. **The atmosphere blocks many interesting wavelengths, creates turbulence that makes high-resolution imaging difficult, and produces variations in transmission that make it impossible to measure fluxes to high precision.** The rotating Earth gets in the way of continuous observation of a single target for long periods. Some of the more exciting (an well-publicized) discoveries come from space missions, because these avenues are not generally available to us, increasing discovery potential.

**Space-based solar power contains little intrinsic advantage that we can get “only from space.” It looks like a wash at best, and the astronomers would say “don’t bother.”**

***SPS links to all their solvency deficits***

**Murphy 12** Tom Murphy is an associate professor of physics at the University of California, San Diego. An amateur astronomer in high school, physics major at Georgia Tech, and PhD student in physics at Caltech, Murphy has spent decades reveling in the study of astrophysics. He currently leads a project to test General Relativity by bouncing laser pulses off of the reflectors left on the Moon by the Apollo astronauts, achieving one-millimeter range precision. Murphy’s keen interest in energy topics began with his teaching a course on energy and the environment for non-science majors at UCSD. Motivated by the unprecedented challenges we face, he has applied his instrumentation skills to exploring alternative energy and associated measurement schemes. Following his natural instincts to educate, Murphy is eager to get people thinking about the quantitatively convincing case that our pursuit of an ever-bigger scale of life faces gigantic challenges and carries significant risks. 3-20, Space-Based Solar Power, <http://physics.ucsd.edu/do-the-math/2012/03/space-based-solar-power/>, jj

I’ll take a break from writing about behavioral adaptations and get back to Do the Math roots with an evaluation of solar power from space and the giant hurdles such a scheme would face. On balance, **I don’t expect to see this technology escape the realm of fantasy and find a place in our world. The expense and difficulty are incommensurate with the gains.**

**How Much Better is Space?**

First, let’s understand the ground-based alternative well enough to know what space buys us. But in comparing ground-based solar to space-based solar, I will depart from what I think may be the most practical/economic path for ground-based solar. I do this because **space-based solar adds so much expense and complexity that we gain a large margin for upping the expense and complexity on the ground as well.**

For example, **transmission of power from space-based solar installations would likely be by microwave link to the ground.** If we’re talking about sending power 36,000 km from geosynchronous orbit, I presume we would not balk about transporting it a few thousand kilometers across the surface of the Earth. This allows us to put solar collectors in hotspots, like the Desert Southwest of the U.S. or Northern Africa to supply Europe. A flat panel tilted south at latitude in the Mojave Desert of California would gather an annual average of 6.6 full-sun-equivalent hours per day across the year, varying from 5.2 to 7.4 across the months of the year, according to the NREL redbook study.

Next, surely we would allow our fancy ground-based panels to articulate and track the sun through the sky. One-axis tracking about a north-south axis tilted to the site latitude improves our Mojave site to an annual average of 9.1 hours per day, ranging from 6.3 to 11.2 throughout the year. A step up in complexity, two-axis tracking moves the yearly average to 9.4 hours per day, ranging from 6.8 to 12.0 hours. We only gain a few percent in going from one to two axes, because the one-axis tracker is always pointing within 23.5° of the direction to the sun, and the cosine projection of this angle is never less than 92%. In other words, it is useful to know that a simple one-axis tracker does almost as well as a more sophisticated two-axis tracker. Nonetheless, we will use the full-up two-axis performance against which to benchmark the space gain.

On a yearly basis, then, getting continuous 24-hour solar illumination beats the California desert by a factor of 2.6 averaged over the year, ranging from 2.0 in the summer to 3.5 in the winter. One of my points will be that **launching into space is a heck of a lot of work and expense to gain a factor of three in exposure. It seems a good bet that it’s cheaper to build three times as many panels and stick them on the ground. It’s not rocket science.**

For technical accuracy, we would also want to correct for the atmosphere, which takes a 21% hit for the energy available to a silicon photovoltaic (PV) on the ground vs. space, using the 1.5 airmass standard. Even though the 1347 W/m² solar constant in space is 35% larger than that on the ground, much of the atmospheric absorption is at infrared wavelengths, where silicon PV is ineffective. But taking the 21% hit into account, we’ll just put the space gain at a factor of three and call it close enough.

What follows can apply to straight-up PV panels as collectors, or to concentrated reflectors so that less photovoltaic material is used. Once we are comparing to two-axis tracking on the ground, concentration is on the table.

**Orbital Options**

Are we indeed dealing with 24 hours of exposure in space? **A common run-of-the mill low-earth-orbit (LEO) satellite orbits at a height of about 500 km**. At this height, **the earth-hugging satellite spends almost half its time blocked from the Sun by the Earth. The actual number for that altitude is 38% of the time, or 15 hours per day of sun exposure**. It is possible to arrange a nearly polar “sun synchronous” orbit that rides the sunrise/sunset line on Earth so that the satellite is always bathed in sunlight, with no eclipsing by Earth.

But **any LEO satellite will sweep past the ground at over 7 km/s, appearing for only 2 minutes above a 30° elevation even for a direct overhead pass** (and only about 6 minutes from horizon to horizon). **What’s worse, this particular satellite in a sun-synchronous orbit will not frequently generate overhead passes at the same point on the Earth, which rotates underneath the orbit.**

In short, **solar installations in LEO could at best provide intermittent power to any given site**—**which is the main rationale for leaving the ground in the first place**. Possibly an armada of smaller installations could zip by, each squirting out energy as it passes by. But **besides being a colossal headache to coordinate, the sun-synchronous full-sun satellites would necessarily only pass over sites experiencing sunrise or sunset. You would get all your energy in two doses per day, which is not a very smooth packaging, and seems to defeat a primary advantage of space-based solar power in avoiding the need for storage.**

Any serious talk of solar power in space is based on geosynchronous orbits. The period of a satellite around the Earth can be computed from Kepler’s Law relating the square of the period, T, to the cube of the semi-major axis, a: T² = 4π²a³/GM, where GM ≈ 3.98×1014 m³/s² is Newton’s gravitational constant times the mass of the Earth. For a 500 km-high orbit (a ≈ 6878 km), we get a 94 minute period. The period becomes a day at a ≈ 42.2 thousand kilometers, or about 6.6 Earth radii. For a standard-sized Earth globe, this is about a meter from the center of the globe, if you want to visualize the geometry.

A geosynchronous satellite indeed orbits the Earth, but the Earth rotates underneath it at like rate, so that a given location on Earth always has a sight-line to the satellite, which seems to hover in the sky near the celestial equator. It is for this reason that satellite receivers are often seen tilted to the south (in the northern hemisphere) to point at the perched platform.

Being so far from the Earth, the satellite rarely enters eclipse. When it does, the duration will be something like 70 minutes. But this only happens once per day during periods when the Sun is near the equatorial plane, within about ±22 days of the equinox, twice per year. In sum, we can expect shading about 0.7% of the time. Not too bad.

**Power Transmission**

**Now here’s the tricky part. Getting the power back to the ground is non-trivial**. We are accustomed to using copper wire for power transmission. **For the space-Earth interconnect, we must resort to electromagnetic means**. Most discussions of electromagnetic power transmission centers on lasers or microwaves. **I’ll immediately dismiss lasers as impractical for this purpose, because clouds block transmission, because converting the power into electricity is not as direct/efficient as it can be for microwaves, and because generation of laser power tends to be inefficient** (my laser pointer is about 2%, for instance, though one can do far better).

So let’s go microwave! For reasons that will become clear later, we want the highest frequency (shortest wavelength) we can get without losing too much in the atmosphere. Below is a plot generated from an interactive tool associated with the Caltech Submillimeter Observatory (where I had my first Mauna Kea observing experience). This plot corresponds to a dry sky with only 2.0 mm of precipitable water vapor. Even so, water takes its toll, absorbing/scattering the high-frequency radiation so that the fraction transmitted through the atmosphere is tiny. Only at frequencies of 100 GHz and below does the atmosphere become nearly transparent.

But if we have 25 mm of precipitable water (and thick clouds have far more than this), we get the following picture, which is already down to 75% transmission at 100 GHz. Our system is not entirely immune to clouds and weather.

But we will go with 100 GHz and see what this gets us. Note that even though microwave ovens use a much lower frequency of 2.45 GHz (λ = 122 mm), the same dielectric heating mechanism operates at 100 GHz (peaking around 10 GHz). In order to evade both water absorption and dielectric heating, we would have to drop the frequency to the radio regime.

At 100 GHz, the wavelength is about λ ≈ 3 mm. **In order to transmit a microwave beam to the ground, one must contend with the diffractive nature of electromagnetic radiation. If we formed a perfectly collimated (parallel) beam of microwave energy from a dish in space with diameter Ds—where the ‘s’ subscript represents the space segment—we might naively anticipate the perfectly-formed beam to arrive at Earth still fitting in a tidy diameter Ds. But no. Diffraction imposes an angular spread of about λ/Ds radians, so that the beam spreads to a diameter at the ground**, Dg ≈ rλ/Ds, where r is the distance between transmitter and receiver (about 36,000 km in our case). We can rearrange this to say that the product of the diameters of the transmitter and receiver dishes must approximately equal the product of the propagation distance and the wavelength: DsDg ≈ rλ

So? Well, let’s first say that Ds and Dg are the same. In this case, we would require the diameter of each dish to be 330 m. These are gigantic, especially in space. Note also that really we need Dg = Ds + rλ/Ds to account for the original extent of the beam before diffraction spreads it further. So really, the one on Earth would be 660 m across.

**Launching a microwave dish this large should strike anyone as prohibitively difficult,** so let’s scale back to a more imaginable Ds = 30 m (still quite impressive), in which case our ground-based receiver must be 3.6 km in diameter!

Now you can see why I wanted to keep the frequency high, rather than dipping into the radio, where dishes would need only get bigger in proportion to the wavelength.

**Converting Back to Electrical Power**

At microwave frequencies, it is straightforward to directly rectify the oscillating electric field into direct current at something like 85% efficiency. **The generation of beamed microwave energy in space, the capture of the energy at the ground, then conversion to electrical current all take their toll, so that the end-to-end process may be expected to have something in the neighborhood of 50% efficiency.**

Beam Safety and Consequences

I don’t worry too much about keeping the beam from veering off the collection region. There are clever, fail-safe schemes for ensuring proper alignment/pointing. According to the Wikipedia page on the topic, the recommended transmission strength would be 230 W/m² in the center of the beam. This is about a quarter the strength of full sunlight, and is thought to be a safe level through which aircraft and birds can fly.

At this level, our 3.6 km diameter collecting area would generate about 40 GWh of energy in a day, at an assumed reception/conversion efficiency of 70%. By comparison, a flat array of 15%-efficient PV panels occupying the same area in the Mojave Desert would generate about a fourth as much energy averaged over the year. So these beaming hotspots are not terribly more concentrated than what the sunlight provides already. Again, **I find myself scratching my head as to why we should go to so much trouble.**

**A2: Perm do both**

#### Procurement mandates like the plan pick winners and kill innovation

Lieberman 08 Ben Lieberman is Senior Policy Analyst in Energy and the Environment and Nicolas D. Loris is a Research Assistant in the Thomas A. Roe Institute for Economic Policy Studies at The Heritage Foundation. 7-28-08, Energy Policy: Let's Not Repeat the Mistakes of the '70s, Heritage Foundation, <http://www.heritage.org/research/reports/2008/07/energy-policy-lets-not-repeat-the-mistakes-of-the-70s>, jj

Bad Idea #3: Picking Winners and Losers Among Alternatives

During the 1970s and early 1980s there were many attempts by the federal government to pick winners and losers among emerging energy alternatives -- synthetic fuels, solar, ethanol and others -- and tilt the playing field in their favor. Virtually all turned out to be big disappointments.

Several recent bills would either subsidize or mandate alternative fuels and/or vehicles. However, the 30-plus-year history of federal attempts to encourage such alternatives includes numerous failures and few, if any, successes.

Indeed, many of the recipients of tax breaks and incentives in the bill have been subsidized for decades -- ethanol since 1978, for example -- originally with the promise that they would become viable within a few years and then go off the dole and compete in the marketplace. But this has never happened. Instead, Congress just passed a huge expansion of the ethanol mandate, essentially forcing Americans to use more of it even as it continues to be heavily subsidized. Wind and solar are doing no better competing without government help.

Even after decades of special tax breaks, alternative energy still provides only a small fraction of America's energy needs. For example, wind and solar energy account for less than 3 percent of America's electricity because of their high costs and unreliability.[3] Further, the overall percentage of electricity attributable to renewable sources is not expected to increase by 2030, according to the Energy Information Administration.[4]

After all these years, Washington has failed to grasp the serious economic and technological shortcomings of these energy alternatives, which is why they needed special treatment in the first place. Federal efforts to pick winners and losers among energy sources -- and to lavish mandates and subsidies on the perceived winners -- have a dismal track record relative to allowing market forces to decide the direction of energy innovation.

What Government Should Do

Those who don't know energy policy history are condemned to repeat it. There are many energy bills currently pending before Congress, and they fall into two general categories: (1) those that seek to increase domestic energy supplies, and (2) those that seek scapegoats and diversions instead. Policymakers should recognize the failures of past energy policies that led to some of the most dismal and frustrating years for American consumers and instead focus on ways to increase the supply of energy domestically.

#### Relations DA --- AND, US development of the GSO violates the Bogota Declaration --- signatories have claimed sovereignty over arcs of the GEO over their territory

Andy Dziuba, edited by George Adcock, Contributing Editor, Senior Writer, 5/18/11, Space Law and the Future of Space Exploration, <http://www.brighthub.com/science/space/articles/73480.aspx>, jj

A geostationary orbit means that a satellite is orbiting the Earth at such a distance and speed so that it is always over the same spot. To stay in a geostationary orbit, a satellite must occupy a small ring of space above the equator. This means that there can only be so many geostationary satellites before that ring is full. Because of this scarcity, many countries have disputes over slots for their satellites in geostationary orbit. A separate United Nations institution called the International Telecommunications Union is tasked with resolving these disputes. This organization was created to regulate information and communication technology issues, and generally acts impartially when settling disputes. But eventually all the geostationary orbits will be taken. When that happens, it's likely that no amount of diplomacy on the part of the United Nations will be able to resolve disputes. To complicate matters further, many countries that are on the equator have declared ownership of geostationary orbits. They claim that a satellite placed into geostationary orbit is violating their airspace. To them, it is an issue of their natural resources being stolen, the same as fishing rights. In 1976 several nations made the Bogota Declaration, stating that they could exercise national sovereignty over arcs of geostationary orbit that are directly over their territory. So far, there have been no incidents of countries interfering with satellites as a result of the Bogota Declaration, but it is a definite possibility for the future of space travel.

#### That means they deck relations with key allies --- Brazil and Indonesia consider the GSO their property

Sunao 12 KAI, Sunao, Professor, College of Law, Nihon University, THE LAW OF THE SPACE ELEVATOR, <http://www5a.biglobe.ne.jp/~kaisunao/ronbun/law_of_space_elevator.html>

Bogota Declaration: From 29 November to 3 December 1976, the equatorial states of Ecuador, Colombia, Brazil, Congo, Zaire, Uganda, Kenya, and Indonesia met in Bogota, Colombia “with the purpose of studying the geostationary orbit that corresponds to their national terrestrial, sea, and insular territory and considered as a natural resource.” The Declaration claimed the right of equatorial states to exercise national sovereignty over the arcs of the geostationary orbit (GSO) that are directly over their territories. This claim is in apparent contravention to the Outer Space Treaty of 1967, which states that “outer space... is not subject to national appropriation by claim of sovereignty.” However, the Bogota Declaration asserts that “there is no valid or satisfactory definition of outer space,” and that the GSO “must not be considered part of the outer space.”

#### US-Indonesia relations key to regional stability

**Kay, Fellow – Pacific Forum - CSIS, 05**(Indonesian Public Perceptions of the U.S. and Their Implications for U.S. Foreign Policy, Pacific Forum CSIS, Issues & Insights Vol.5–No.4, jj)

The final U.S. interest is broadly defined regional concerns. **The U.S. has viewed Indonesia as a “pillar of regional security in Southeast Asia.**34 **Given its size, position, and role in the region, what takes place in Indonesia will have an impact throughout Southeast Asia**.35**As the anchor of** the Association of Southeast Asian Nations (**ASEAN**), **a key player in** the ASEAN Regional Forum (**ARF**), **founder and prominent member of the Non-Aligned Movement, member of the** Organization of the Islamic Conference (**OIC**), **and the only Southeast Asian member of** the Organization of Petroleum Exporting Country (**OPEC), Indonesia has a powerful role in the region and beyond**. Thus, **a stable Indonesia will remain key to a prosperous and peaceful Southeast Asia**. Given these multiple interests, **a favorable perception of the U.S. in Indonesia is imperative**. Perceptions of the U.S. as arrogant, a bully, and a unilateralist will inevitably lead to complications in U.S.-Indonesia relations. Although U.S.-Indonesia relations have generally been cordial, undercurrents stemming from differences in priorities, perceptions, and expectations over the war on terror have led to strains. The key question therefore, is what the U.S. can do to better understand, inform, engage, and influence Muslim Indonesia to win the hearts and minds of the Muslim world and undermine support for terrorist organizations. A pro-active U.S. foreign policy that addresses negative perceptions of the U.S. will provide the foundation for closer U.SIndonesia relations.

**A2 Perm do CP**

***1) Energy production subsidies must be unconditional – they are flat and increase each year***

**JENKINS ET AL ’12** - directs the Energy and Climate Program at the Breakthrough Institute (Jenkins, Jesse. Mark Muro. “BEYOND BOOM & BUST”. April, 2012. http://assets.nationaljournal.com/Beyond%20Boom%20and%20Bust\_Embargoed\_4\_17.pdf)

**Reducing the cost of clean energy technologies will require continuous innovation and improvement** even after technologies are commercialized and launched into the marketplace. Yet, by and large, **today’s energy subsidies do not do enough to support America’s innovators, and they have not yet succeeded in driving down the costs** of clean energy far enough to compete with fossil fuels. The government, however, has a long history of successfully driving innovation and price declines in emerging technologies by acting as a demanding customer to spur the early commercialization, large- scale deployment, and steady improvement of cutting-edge technology. 91 Unfortunately, **clean tech deployment policies today often closely resemble crop supports, offering a** flat production subsidy **for any clean energy produced, rather than the demanding** military procurement policies that delivered **steady improvements** and the eventual mass-adoption of everything from radios, microchips, and jet engines, to gas turbines, lasers, and computers. 92 Many of today’s clean energy subsidies are focused primarily on supporting the deployment of existing energy technologies at current prices, and most provide no clear pathway to subsidy independence. The federal renewable electricity PTC, for example, has provided the same level of subsidy to wind power and closed-loop biomass-fueled power plants since initial enactment in 1992 and to geothermal and other qualifying renewable electricity sources since 2004, when it was first extended to them. **Subsidy levels increase each year at the rate of inflation, keeping per MWh subsidy levels constant in real dollar terms and providing no clear incentive for continual cost declines or pathway to eventual subsidy independence**.

***This is specific to the energy production literature***

**TRABISH ’12** - writes and edits NewEnergyNews (Trabish, Herman K. “TODAY’S STUDY: THE BACKING NEW ENERGY IS GETTING AND THE BACKING IT NEEDS”. May 7, 2012. http://newenergynews.blogspot.com/2012/05/todays-study-backing-new-energy-is.html)

Despite this recent success, however, **nearly all clean tech** segments **in the U**nited **S**tates **remain reliant on *production and deployment subsidies* or other supportive policies to gain an expanding foothold in today’s energy markets**. Now, many of these subsidies and policies are poised to expire—with substantial implications for the clean tech industry.

***2) “Resolved” is definite.***

**Dictionary.com 06** (http://dictionary.reference.com/browse/Resolved, verb)

**to come to a definite** or earnest **decision** about; determine (to do something): I have resolved that **I shall live to the full**.

***“Should” is immediate and mandatory.***

**SUMMER ‘94** (Justice, Oklahoma City Supreme Court, http://www.oscn.net/applications/oscn/DeliverDocument.asp?CIteID= 20287#marker3fn14)

**The legal question to be resolved by the court is whether the word “should”** 13 in the May 18 order **connotes futurity or may be deemed a ruling in praesenti.**14 The answer to this query is not to be divined from rules of grammar;15 it must be governed by the age-old practice culture of legal professionals and its immemorial language usage. To determine if the omission (from the critical May 18 entry) of the turgid phrase, “and the same hereby is”,(1) makes it an in futuro ruling – i.e., an expression of what the judge will or would do at a later stage – or (2) constitutes an in in praesenti resolution of a disputed law issue, the trial judge’s intent must be garnered from the four corners of the entire record.16 Nisi prius orders should be so construed as to give effect to every words and ever part of the text, with a view to carrying out the evident intent of the judge’s direction. 17 The order’s language ought not to be considered abstractly. The actual meaning intended by the document’s signatory should be derived from the context in which the phrase to be interpreted is used. 18 When applied to the May 18 memorial, these told **canons impel my conclusion that the judge doubtless intended his ruling as an in praesenti resolution** of Dollarsaver’s quest for judgment n.o.v. Approval of all counsel plainly appears on the face of the critical May 18 entry which is [885 P.2d 1358] signed by the judge. 19 True minutes20 of a court neither call for nor bear the approval of the parties’ counsel nor the judge’s signature. To reject out of hand the view that in this context “should” is impliedly followed by the customary, “and the same hereby is”, makes the court once again revert to medieval notions of ritualistic formalism now so thoroughly condemned in national jurisprudence and long abandoned by the statutory policy of this State. IV Conclusion Nisi prius judgments and orders should be construed in the manner which gives effect and meaning to the complete substance of the memorial. When a judge-signed direction is capable of two interpretations, one of which would make it a valid part of the record proper and the other would render it a meaningless exercise in futility, the adoption of the former interpretation is this court’s due. A rule – that on direct appeal views as fatal to the order’s efficacy the mere omission from the journal entry of a long and customarily implied phrase, i.e., “and the same hereby is” – is soon likely to drift into the body of principles which govern the facial validity of judgments. This development would make judicial acts acutely vulnerable to collateral attack for the most trivial reasons and tend to undermine the stability of titles or other adjudicated rights. It is obvious the trial judge intended his May 18 memorial to be an in praesenti order overruling Dollarsaver’s motion for judgment n.o.v. It is hence that memorial, and not the later June 2 entry, which triggered appeal time in this case. Because the petition in errir was not filed within 20 days of May 18, the appeal it untimely. I would hence sustain the appellee’s motion to dismiss.21 Footnotes: 1 The pertinent terms of the memorial of May 18, 1993 are: IN THE DISTRICT COURT OF BRYAN COUNTRY, STATE OF OKLAHOMA COURT MINUTE /18/93 No. C-91-223 After having heard and considered arguments of counsel in support of and in opposition to the motions of the Defendant for judgement N.O.V. and a new trial, the Court finds that the motions should be overruled. Approved as to form: /s/ Ken Rainbolt /s/ Austin R. Deaton, Jr. /s/ Don Michael Haggerty /s/ Rocky L. Powers Judge 2 The turgid phrase – “should be and the same hereby is” – is a tautological absurdity. This is so because **“should” is synonymous with ought or must and is in itself sufficient to effect an inpraesenti ruling** – one that is couched in “a present indicative synonymous with ought.” See infra note 15.3 Carter v. Carter, Okl., 783 P.2d 969, 970 (1989); Horizons, Inc. v. Keo Leasing Co., Okl., 681 P.2d 757, 759 (1984); Amarex, Inc. v. Baker, Okl., 655 P.2d 1040, 1043 (1983); Knell v. Burnes, Okl., 645 P.2d 471, 473 (1982); Prock v. District Court of Pittsburgh County, Okl., 630 P.2d 772, 775 (1981); Harry v. Hertzler, 185 Okl., 151, P.2d 656, 659 (1939); Ginn v. Knight, 106 Okl. 4, 232 P. 936, 937 (1925). 4 “Recordable” means that by force of 12 O.S. 1991 24 an instrument meeting that section’s criteria must be entered on or “recorded” in the court’s journal. The clerk may “enter” only that which in “on file.” The pertinent terms of 12 O.S. 1991 24 are: “Upon the journal record required to be kept by the clerk of the district court in civil cases…shall be termed copies of the following instruments on file” 1. All items of process by which the court acquired jurisdiction of the person of each defendant in the case; and 2. All instruments filed in the case that bear the signature of the end judge and specify clearly the relief granted or order made.” [Emphasis added.] 5 See 12 O.S. 1991 1116 which states in pertinent part: “Every direction of a court of judge made or entered in writing, and not included in a judgment is an order.” [Emphasis added.] 6 The pertinent terms of 12 O.S. 1993 696 3, effective October 1, 1993, are: “A. Judgments, decrees and appealable orders that are filed with the clerk of the court shall contain: 1. A caption setting forth the name of the court, the names and designation of the parties, the file number of the case and the title of the instrument; 2. A statement of the disposition of the action, proceeding, or motion, including a statement of the relief awarded to a party or parties and the liabilities and obligations imposed on the other party or parties; 3. The signature and title of the court;…”7 The court holds that the May 18 memorial’s recital that “the Court finds that the motions should be overruled” is a “finding” and not a ruling. In its pure form, a finding is generally not effective as an order or judgment. See, e.g., Tillman v. Tillman, 199 Okl. 130, 184 P.2d 784 (1947), cited in the court’s opinion. 8 When ruling upon a motion for judgment n.o.v. the court must take into account all the evidence favorable to the party against whom the motion is directed and disregard all conflicting evidence favorable to the movant. If the court should concluded that the motion is sustainable, it must hold, as a matter of law, that there is an entire absence of proof tending to show a right to recover. See Austin v. Wilkerson, Inc., Okl., 519 P.2d 899, 903 (1974). 9 See Bullard v. Grisham Const. Co., Okl., 660 P.2d 1045, 1047 (1983), where this court reviewed a trial judge’s “findings of fact”, perceived as a basis for his ruling on a motion for judgment in n.o.v. (in the face of a defendant’s reliance on plaintiff’s contributory negligence). These judicial findings were held impermissible as an invasion of the providence of the jury proscribed by OKLA. CONST. ART, 23 6 Id. At 1048. 10 Everyday courthouse parlance does not always distinguish between a judge’s “finding”, which denotes nisi prius resolution of face issues, and “ruling” or “conclusion of law”. The latter resolves disputed issues of law. In practice usage members of the bench and bar often confuse what the judge “finds” with what the official “concludes”, i.e., resolves as a legal matter. 11 See Fowler v. Thomsen, 68 Neb. 578, 94 N.W. 810, 811-12 (1903), where the court determined a ruling that “[1] find from the bill of particulars that there is due the plantiff the sum of…” was a judgment and not a finding. In reaching its conclusion the court reasoned that “[e]ffect must be given to the entire in the docket according to the manifest intention of the justice in making them.” Id., 94 N.W. at 811. 12 When the language of a judgment is susceptible of two interpretations, that which makes it correct and valid is preferred to one that would render it erroneous. Hale v. Independent Powder Co., 46 Okl. 135, 148 P. 715, 716 (1915); Sharp v. McColm, 79 Kan. 772, 101 P. 659, 662 (1909); Clay v. Hildebrand, 34 Kan. 694, 9 P. 466, 470 (1886); see also 1 A.C. FREEMAN LAW OF JUDGMENTS 76 (5th ed. 1925). 13 “Should” not only is used as a “present indicative” synonymous with ought but also is the past tense of “shall” with various shades of meaning not always to analyze. See 57 C.J. Shall 9, Judgments 121 (1932). O. JESPERSEN, GROWTH AND STRUCTURE OF THE ENGLISH LANGUAGE (1984); St. Louis & S.F.R. Co. v. Brown, 45 Okl. 143,144 P. 1075, 1080-81 (1914). For a more detailed explanation, see the Partridge quotation infra note 15. Certain **contexts mandate a construction of the term “should” as more than merely indicating preference or desirability.** Brown, supra at 1080-1081 (jury instructions stating that jurors **“should”** reduce the amount of damages in proportion to the amount of contributory negligence of the plaintiff **was held to imply an obligation and to be more than advisory**; Carrrigan v. California Horse Racing Board, 60 Wash. App. 79, 802 P.2d 813 (1990) (one of the Rules of Appellate Procedure requiring that a party “should devote a section of the brief to the request for the fee and expenses” was interpreted to mean that a party under an obligation to included the requested segment); State v. Rack, 318 S.W.2d 211, 215 (Mo. 1958) (“should” would mean the same as “shall” or “must” when used in an instruction to the jury which tells the triers they “should disregard false testimony”). 14 **In praesenti means literally “at the present time.”** BLACK’S LAW DICTIONARY 792 (6th Ed. 1990). **In legal parlance the phrase denotes that which in law is presently or immediately effective, as opposed to something that will or would become effective in the future** [in futurol]. See Van Wyck v. Knevals, 106 U.S. 360, 365, 1 S.Ct. 336, 337, 27 L.Ed. 201 (1882).

***Substantial requires that the increase be definite and immediate***

**Words and Phrases 64**, (40 W&P 759)

The words “outward, open, actual, visible, **substantial**, and exclusive,” in connection with a change of possession, mean substantially the same thing. They mean not concealed, not hidden; exposed to view; free from concealment, dissimulation, reserve, or disguise; in full existence; denoting that which no merely can be, but is opposed to potential, apparent, constructive, and imaginary; veritable; genuine; **certain; absolute**; real at present time, as a matter of fact, not merely nominal; opposed to form; actually existing; true; not including, admiring, or pertaining to any others; undivided; sole; opposed to inclusive.

***Substantially is without material qualification***

**Black’s Law Dictionary 1991**

[p. 1024]

Substantially - means essentially; **without material qualification**.

### 2NC Net Benefit

#### Innovation turns 100% case --- key to renewables transition

Schelmetic 12 (Tracey Schelmetic, 8-21-12, Thomas Net, Do Tariffs on Chinese Solar Panels Help or Hurt the U.S. Solar Industry?, <http://news.thomasnet.com/green_clean/2012/08/21/do-tariffs-on-chinese-solar-panels-help-or-hurt-the-u-s-solar-industry/>, jj)

If the goal is to create a global energy system that is largely carbon free, continual dependence on subsidies, whether domestic and legitimate or foreign and mercantilist, is not the way. Driving innovation is.

Matthew Stepp, one of the authors of the report, told Ars Technica that it is important for the U.S. to create an effective solar market policy because it could well serve as the foundation for future policies for next-generation renewable energy technologies.

“For the U.S. to out-innovate, it must still prosecute green mercantilist policies,” Stepp said. “China is dominating first-generation silicon-based solar PV. But the U.S. has been a leader in second-generation thin-film solar technologies and is currently investing significantly in third- and fourth-generation solar designs that use nanotechnologies. What’s to stop China from simply doing what it’s doing now in first-generation solar to next-generation solar … and unfairly subsidize and export dump their way to market dominance?”

Clifton Yin, a clean energy policy analyst at the Information Technology and Innovation Foundation (ITIF), expressed optimism for the U.S. solar industry. He said the Obama administration’s tariffs will work to the U.S.’s advantage.

“The tariffs are meant not only to level the solar market playing field for U.S. manufacturers, but also to discourage unfair Chinese trade practices and hopefully serve as a wake-up call for Chinese policymakers,” Yin said. “However, even in the absence of the Chinese government changing policies, there is a lot that U.S. solar panel manufacturers can do. There needs to be a renewed focus on research and development and innovation to develop solar products that are much more cost and performance effective. Ultimately, they’re not only competing with cheap Chinese panels, but also cheap fossil fuels everywhere,” he added.

The ultimate goal, Yin said, should be spurring cost reductions and performance improvements such that solar is competitive with fossil fuels without relying on subsidies.

#### Clean Tech innovation is the lynchpin of competitiveness --- plan uniquely undermines --- this answers their impact D which just says it’s high now --- even if it’s high now, renewable innovation key to maintain

Jenkins 2011, Jesse, ”Director of Energy and Climate Policy, Breakthrough Institute”, http://energy.nationaljournal.com/2011/10/is-america-losing-the-clean-en.php#2102285

There are a host of reasons why targeted policies and smart public investments in emerging clean tech sectors are justified. But clean tech business leaders and policymakers alike must be crystal clear: the true economic rewards in clean energy industries will not come from producing technology for subsidy-created markets that vacillate wildly with the public mood and the business cycle. Without substantial innovation to improve the performance and reduce the cost of clean energy technologies, the promise that the clean energy sector might become economically viable, much less a cornerstone of American economic revival, will never be realized. The real clean energy race is thus to invent, commercialize, progressively improve, and mass-produce cheap and reliable clean energy technologies that can compete on cost not just with international competitors but also with fossil fuels. In short, the race is to make clean energy cheap and subsidy-independent. The ultimate economic prize is a $5 trillion global energy market expected to double over the next forty years. That economic opportunity dwarfs the value of today’s subsidy-dependent and often-volatile clean energy markets. For security, economic, and environmental reasons, the global energy system is modernizing and diversifying. Developing and developed nations alike will move toward new forms of advanced energy technologies that reduce dependence on foreign nations, insulate their economies from volatile energy markets, and are cleaner and thus less costly from a public health perspective. Supplying this massive global market with reliable and affordable clean energy technologies thus represents one of the most significant market opportunities of the 21st century. In this clean energy race, pole position is still up for grabs. China may have cornered today’s subsidy-dependent markets for solar cells in recent years, but they have not yet won the race to make solar energy cheap. Chinese firms have achieved recent cost advantages by simply scaling up yesterday’s solar technology, wringing cost declines out of gigawatt-scale manufacturing supply chains and capitalizing on both a temporary glut in refined silicon and lucrative Chinese state subsidies. None of these factors are truly repeatable, and technology and market analysts project that China’s solar cost declines will soon stall out well above the levels necessary to make solar power truly affordable and subsidy-independent. America is still home to the most innovative solar firms, from technology leaders like First Solar making advanced thin film solar technologies to SunPower Corp., the manufacturer of the world’s most efficient crystalline PV panels. And we retain a global lead in venture capital investment and clean energy research. Yet to win this race to make clean energy cheap, America must overcome two threats, one each from both home and abroad. Abroad, we must ensure that Chinese firms play by the rules. And American manufacturers must out-innovate and out-compete China’s high-volume producers of conventional clean energy technologies, like crystalline PV cells, with steadily advancing technology and productivity. Already, technology leaders like First Solar are under pressure, with Citigroup reporting that the American firm may be facing layoffs of 10 percent of their workforce in coming months, as customers demand cheaper products. If these competitive pressures fuel a new round of American innovation, all the better. But if subsidized Chinese producers of conventional PV panels that will never become cheap enough to be subsidy independent end up knocking the real innovators out of the market, or squeezing their profits so much they cannot reinvest in continual R&D, both America and the world ultimately lose. At home, today’s repeatedly expiring and poorly optimized energy subsidies do American innovators little favor. The problem is that today's subsidies are principally designed to accelerate market adoption—a situation that strongly favors America's mercantilist, low-wage competitors like China—rather than demand and reward innovation and support continual adoption of the most advanced manufacturing processes by US firms. Energy subsidies today operate more like crop supports than like the demanding military procurement policies that delivered jet engines, microchips, and a suite of other core technologies now enabling blockbuster products like Apple’s iPhone. The intermittent and haphazard nature of US energy policy also wreaks havoc with the business confidence necessary for long-term investments in innovation. As a result, many private firms focus principally on ramping-up production for subsidized markets rather than pioneering next-generation designs and manufacturing processes. This must change. Both industry and government must re-prioritize innovation and competitiveness if the United States is to build a durable and globally competitive clean energy industry. Making clean energy cheap and fully competitive should become our nation’s rallying focus.

## 1NR

**Solvency**

**SPS Alpha Fails**

***SPS-Alpha changes nothing --- nobody knows how much it costs or if it works***

Brian **Westenhaus**, editor of the popular energy technology site New Energy and Fuel, 13 April 20**12**, Oil Price, NASA Take an In-Depth Look at Space Based Solar Power, <http://oilprice.com/Alternative-Energy/Solar-Energy/NASA-Take-an-In-Depth-Look-at-Space-Based-Solar-Power.html,jj>

Early results show that a **SPS-Alpha could be built using the modular design**, a one thousand meter array would need 80,000 modules at a mass between 10 to 12,000 mt.

At this early date, the modelling shows that to size a system the time between refuelling platform propulsion and attitude control is a key parameter.

The new NASA study shows as have other private work that the technology risks are not significant and orbital stations are feasible.

**The open questions remain, what does it cost and how much net power gets to the surface of the earth? These are questions that are going to need demonstrations. Those alone are very costly enterprises**. At the end what will ratepayers have to pay?

Orbital power is a fantastic idea and the new NASA report is as interesting as many already seen. Still **that cost for power to consumers is an elusive number that has to come soon for credibility.**

**\*2NC – DoD SPS Fails**

***Advocates agree --- plan puts cart before the horse***

**Betts 07** Mitch Betts, I’m a journalist interested in strategic foresight and competitive intelligence. I’m a member of the World Future Society and Investigative Reporters and Editors (IRE). Corporate Intelligence, 9-28-07, Pentagon studying space-based solar power platforms to prevent energy wars, <https://corpintel.wordpress.com/2007/09/28/space-based-solar-power/>, jj

**A demo of the technology is a critical first step (to prove it can be done and to identify the remaining challenges)**, **says the director of the SBSP study**, Col. (Select) Michael “Coyote” Smith, chief of the Future Concepts Branch in the National Security Space Office. (Smith’s shop is known as the “Dream Works” of the National Security Space Office.)

**\*2NC – SQUO Solves Space Radar**

***Europe’s Space Agency is developing space radar now --- extend Science Daily --- they’re hitting milestones and have tons of expertise --- plan not key***

***Status quo solves radar***

**Spaceflight 08** (“Space Radar,” September 2008, http://www.spyflight.co.uk/sbr.htm, Sawyer)

In an attempt **to** try and **still** try and **leverage** some **capability** in this area, **the** US **Air Force is now** attemting to see if it can benefit from **paying for access to data from international and commercial radar satellites already in orbit.** Currently in orbit are the Canadian Radarsat-2, the German SAR-Lupe constellation and the Israeli TecSAR satellite and funding has been requested from "all radar data providers and space radar system developers" to allow access to commence as early as 2009. Radarsat-2 was launched in Dec 2007, the last of the five SAR-Lupe satellites was deployed in Jul 2008 and TecSAR was launched in Jan 2008, so whilst **these modern systems** would not have many of the bells and whistles that Space Radar would have provided, drawing data from all of them would nevertheless **still go some way to providing the capability sought by the US Air Force.** The first step in this process will be a demonstration period when the performance, capability and utility of the radar data available from the current systems can be evaluated and the necessary operational concepts agreed.

**\*2NC – Space Radar Fails**

***Zero risk plan solves space radar --- extend Day & spaceflight--- on point response to their internal link article --- tons of challenges beyond energy --- there’s no radar or communications bandwith and it’s hard to target moving objects on the ground. The tech is so expensive that the plan is irrelevant***

**CBO ‘07** (Congressional Budget Office, Alternatives for Military Space Radar – A CBO Study, 2007, <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/76xx/doc7691/01-03-spaceradar.pdf>, jj)

Arguably, **the most critical technical challenge facing the Space Radar program is the development of data-processing algorithms that can distinguish between moving targets and the background clutter** around them. Identifying such targets from space is especially hard: from the point of view of an orbiting satellite, **the ground is moving at about 15,000 miles per hour, so distinguishing a vehicle that is moving only a few miles per hour faster than that is a difficult task**. Production of the Space Radar satellites would also require that various hardware challenges be met. Those **challenges would include developing a large phased-array radar antenna that could survive launch and deployment in space; improving the efficiency of batteries that operate in space; and developing signal-processing systems, satellite-to-ground communications, and intelligence exploitation systems that could handle the large flow of raw data and resulting intelligence products** that a Space Radar satellite would generate.

**Read these**

***No war***

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

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

***US early warning systems work fine***

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

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

***Russia is fixing its early warning***

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

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

**DA**

**Asia—Internal Link Frontline**

***Additional defense budget tradeoffs undermine effective execution of the Asia pivot—spills-over to funding for a slew of critical capabilities—collapses US power***

**Horowitz 12**

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

Recognizing the vital role that a peaceful and stable Asia-Pacific plays in ensuring overall global security, the United States has announced plans to rebalance its overall defense efforts toward the region. At the June 2012 Shangri-La Dialogue in Singapore, Secretary of Defense Leon Panetta stated that “all of the U.S. military services are focused on implementing the president’s guidance to make the Asia-Pacific a top priority.” Unfortunately, the looming “fiscal cliff” facing the United States has large-scale implications for its role in Asia. The 2011 Budget Control Act includes almost $500 billion in automatic cuts to defense spending that will be triggered if Congress fails to pass a deficit reduction bill by January 2, 2013. These cuts would come on the heels of existing reductions of about $487 billion, intended to increase efficiency and decrease the size of ground forces over the next ten years. Consequently, U.S. decision-makers face the difficult task of both addressing current financial realities and implementing an ambitious new strategic agenda in the Asia-Pacific. **Decisions about defense spending are integrally linked to the U**nited **S**tates’ overall **strategy in the Asia-Pacific**. Given ongoing uncertainty surrounding North Korea, China’s continuing development of anti-access/area-denial (A2/AD) capabilities, and disputes over the East and South China seas, maintaining a robust presence in the region will be a high priority for any future administration. However, sequestration or **other major defense cuts** could **undermine perceptions of U.S. resolve** in the Asia-Pacific and make core U.S. allies such as Japan and South Korea doubt Washington’s willingness to invest appropriately in relevant capabilities. Concretely, such cuts could make it more difficult for the United States to maintain its current presence. The United States’ predominant military strategy for ensuring continued superiority in the Asia-Pacific is AirSea battle (ASB)—an operational concept designed to help the U.S. Air Force and Navy jointly respond to A2/AD challenges, enhance deterrence, and ensure freedom of action around the world over the next generation. Implementing ASB will require significant investments in advanced technologies, including long-range precision-strike capabilities and submarine modernization. Furthermore, ASB primarily involves investments in the air force and navy, raising questions about how best to rebuild the readiness of the army and marines. There is a trade-off between providing relatively equal budget shares to the services—potentially reducing inter-service rivalries—and rebalancing toward the Asia-Pacific. Even within the air force and navy, there are disagreements about which programs represent the highest priority for the U.S. military. One concern is the potential for large decreases in the procurement of F-35s—the multirole replacement fighter for the air force and navy. Unless the military can find substitutes, **further cuts beyond those already planned** could potentially make it more difficult for the U.S. military to control the skies in a future confrontation in the Asia-Pacific. Decreases in F-35 procurement could also make U.S. allies less likely to purchase the F-35, thereby reducing interoperability with allied Asian militaries and further raising F-35 unit costs. Budget cuts may also lead to the scaling back of plans to purchase the full slate of Virginia-class attack submarines that the navy has requested. Given China’s continuing investments in submarines and anti-ship missiles, the modernization of the U.S. fleet is critical to maintaining U.S. naval capabilities in the Asia-Pacific, particularly for antisubmarine warfare and strike operations. Major cuts could affect the size of the navy, in terms of ships afloat, and compromise the United States’ ability to project power in crisis situations. **At even greater risk of funding cuts is** **r**esearch **and** **d**evelopment. **R&D** into next-generation robotics, a new long-range bomber, and C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) **is** **essential to guaranteeing U.S. military power** over the long term. R&D for basic programs is also likely to be on the chopping block during periods of defense austerity. One example is the X-47B drone designed to launch from and recover to aircraft carriers. Decreases in funding for such cutting-edge programs could undermine the United States’ long-term capacity to control the commons in the Asia-Pacific. The unparalleled access the United States enjoys to air, sea, and space could decline if other nations develop new technologies capable of placing legacy platforms such as large carriers or manned fighters at risk. Rising powers in the region are not standing still. The United States will only maintain its conventional superiority if it continues investing in R&D that will pay off with new weapon systems down the road.

***These additional cuts result in Asia war that draws in the US***

**Forbes 11**

Randy Forbes, R-Va., is chairman of the House Armed Services Readiness Subcommittee and founder and co-chairman of the Congressional China Caucus, 10/26/11, Defence Cuts Imperil US Asia Role, thediplomat.com/2011/10/26/defence-cuts-imperil-us-asia-role/?all=true

As Washington considers even **more defence cuts**, we cannot forget the long-term strategic challenges we face. **Failure to properly resource** ourAsia-Pacific forces will **weaken deterrence** and **make conflict more likely**—conflict that can’t help but **involve the U**nited **S**tates given its critical interests in the region. By cutting defence now, we will incur unacceptably high costs in the future. Our military and our nation simply cannot afford it.

***We have internal link uniqueness—but further defense cuts make the Asia pivot hollow***

**Auslin**, director of Japan Studies – American Enterprise Institute, 2/7/**’12**

(Michael, “Defense Cuts Sap Obama's Asia Pivot,” WSJ)

After months of uneasily watching Washington's budget debates, Asian allies are increasingly fearful that proposed cuts will reduce America's commitment to the region just as China's power and territorial assertiveness are growing. In response, Asian countries have quickly stepped up their efforts to cooperate with Washington on military matters. While many want the U.S. to speak softly, they still want it to carry a big stick. Active Asian outreach to the U.S. reverses traditional "entanglement" policy, whereby smaller nations feared making security agreements with Washington that would commit them to supporting U.S. goals and limit their own freedom of action. Now, it is the Lilliputians that want to tie down Gulliver. The President's plan is to have smaller forces respond to security challenges in a flexible manner, instead of building large, expensive and politically controversial bases. The Pentagon will commit to global strike platforms, including a new long-range bomber. But in a region of increasingly powerful militaries, "leaner" does not inspire confidence. America's Asian partners may feel they have to help the hesitant superpower along. Most notably, the Philippines, which kicked the U.S. military out of the islands exactly 20 years ago, has in essence invited it back, agreeing to host greater numbers of U.S. forces in coming years. Singapore is planning to let the U.S. Navy forward deploy the Littoral Combat Ship on the island, and Australia will play host to up to 2,500 U.S. Marines in Darwin. Even Japan, which currently hosts the bulk of U.S. forces in Asia, has begun slowly to fulfill a 2006 agreement to relocate a Marine Air Station within Okinawa. Our Asian allies and partners are doing more for their own security, but their abilities are limited. Almost all are increasing or modernizing their submarine forces and buying more surface ships. Those that can afford it, like Japan, South Korea and Australia, are purchasing high-end military equipment, such as Aegis ballistic missile defense destroyers and the not-yet-ready F-35 stealth fighter. However, American policy makers have to accept the idea that the United States will remain the only major military power among liberal nations in Asia. Not everyone is happy about the new cooperation. Beijing has of course warned Washington not to destabilize the region with its new focus on Asia, and Indonesia has been worried that the placement of Marines in Australia is somehow meant to contain Jakarta. While most in Asia want America's renewed attention, they are also skeptical that the "pivot" will outlast Mr. Obama's presidency or amount to concrete policies. This is something a visitor to the region hears constantly. U.S. military officials from the Chief of Naval Operations on down have promised that the **budget cuts will not lead to a reduction in U.S. operation**s in the Indo-Pacific in the short term. **Yet** even they admit that **further cuts**, as may happen under the sequestration scenario, **would lead to a radically different U.S. military that has to choose among missions**.**-**

**Back to flow**

**1NC – Airforce Frontline**

***The Air Force thinks their aff is a terrible idea***

**Garretson 12** Peter Garretson, Lieutenant Colonel, USAF, Lt Col Peter Garretson is an airpower strategist currently serving on the CSAF’s Strategic Studies Group (HAF/CK). His previous assignment was at the Institute for Defence Studies and Analyses in New Delhi as an Air Force Fellow examining Indo–US long-term space collaboration under the sponsorship of the Council on Foreign Relations. Prior to that he was the chief of future science and technology exploration for the HQ USAF Directorate of Strategic Planning (AF/A8XC). Strategic Studies Quarterly ♦ Spring 2012, Solar Power in Space?, <http://www.au.af.mil/au/ssq/2012/spring/garretson.pdf>, jj

The difference between the evaluations of the IAA and the USAF Energy Horizons does not portray how divided the community is or how vehement is the opposition to even due-diligence exploration of the concept.10 How controversial is it? No other project has continually animated a small group of disempowered advocates who find the vision inspiring nor drawn the outright ire of seasoned technical professionals, as this quote from one **Air Force Research Laboratory** scientist demonstrates: “AFRL **decided for good reason not to further support SSP**. . . . **A former AF Chief Scientist . . . chastised AFRL saying it was one of the dumbest ideas he’s ever seen** . . . **A [senior HQ NASA official] prohibited all NASA centers from any further involvement with SSP . . . there are so many other crucial areas requiring attention**. . **. . This is a concept the Air Force can do without, especially considering the lean years ahead**.”11 **And another, “If the government, especially the USAF spends one thin dime on this, I’ll be a GAO whistleblower. . . . They need to avoid this like the plague, or I will surface their incompetence to management . . . or high enough that I’d find some sane person that understands. It always looks good to the clueless and uninformed**.”12

***SQUO solves Air Force energy security***

**Lyle 12** Amaani Lyle, American Forces Press Service, 5-23-12, Army, Air Force mount renewable energy push, <http://www.af.mil/news/story.asp?id=123303213>, jj

5/23/2012 - WASHINGTON -- **The** Army **and Air Force are committed to developing 1 billion watts of renewable energy on their installations by 2025**, senior leaders from both services announced May 23.

**The plan marks the latest milestone in a multi-year endeavor to find ways to make the military more energy efficient**, said Katherine Hammack, the assistant secretary of the Army for installations, energy and environment, and Terry Yonkers, the assistant secretary of the Air Force for installations, environment and logistics.

One gigawatt, a unit of power equal to 1 billion watts, can power about 250,000 homes, Hammack explained.

Energy security drives the initiatives, Hammack said, adding that increased usage of renewable energy -- such as solar power -- on military installations would enable them to operate even if local power grids go down.

"Right now, the bases operate off of a nationwide electric grid, which, as populations grow, is getting aged and vulnerable," Hammack said. "This is a move toward distributed energy where you're generating (it) at the point of use."

The Army Corps of Engineers will work with the two services to assess land and resources and to determine energy transmission capabilities, Hammack said.

As the technology develops, she said, renewable energy steps will include the installation of solar paneling on military base buildings and vehicle garages, and dual-usage of the panels as land buffers.

**Biofuels will be a behind-the-scenes game changer for the Air Force**, according to Yonkers, who lauded the seminal research of alternative fuels at Wright-Patterson Air Force Base, Ohio.

"These **biofuels don't produce the kind of soot that conventional crude oil-derived fuels produce,"** Yonkers said, adding that this results in a cooler-running engine, which reduces metal fatigue and increases engine life.

"If you can reduce the temperature in the combustion chamber of an engine by as little as a hundred degrees, you can get 10,000 hours or more on those parts that compose that engine," Yonkers said.

**As the United States continues to seek ways to reduce dependency on imported oil, biofuels could play a large part in the transition while reducing the cost to taxpayers**, he said.

"Maintenance costs will go down substantially. We can keep those engines (online) much longer and the overall cost of doing business with the Air Force goes down," Yonkers said.

Private sector financing will be the linchpin of the services' energy endeavors through power purchase agreements, enhanced use leasing, energy savings performance contracts and utility energy savings contracts, Yonkers explained.

**New sources of clean energy will vary among installations, he said, and will include solar, wind, biomass and geothermal developments.**

**The desired end result of these advances, Yonkers said, is to "reduce demand, increase supply and change the culture of how airmen and soldiers consider energy."**

***Air power fails---history and Libya proves***

**Ramberg, June 6th, 2011** (Bennett, Ph.D., Johns Hopkins; J.D. UCLA, foreign policy analyst in the [Bureau of Politico-Military Affairs](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Bureau+of+Politico-Military+Affairs%22) at the [Department of State](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Department+of+State%22) during the [George H.W. Bush](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22George+H.W.+Bush%22) administration, academic appointments have included positions at Princeton, Stanford and UCLA, Seattle Post Intelligencer, “Why NATO’s air might lacks power” <http://www.seattlepi.com/default/article/Why-NATO-s-air-might-lacks-power-1411125.php>, jj)

NATO is chagrined. Yes, the bombing campaign stopped [Muammar Qadhafi](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Muammar+Qadhafi%22)'s march on Benghazi. And, yes, it staved off rebel defeats elsewhere, breaking the government's siege on Misurata. But **the alliance's hopes for a quick victory through a mini "shock and awe" failed after months of trying.** Catch me if you can, the dictator taunted NATO in his May 13 radio comment: "I am in a place you cannot reach." **Given NATO's resources, why the failure?** One answer: The colonel is not the blowhard some depicted. That should come as no surprise. Over the decades, Qadhafi proved to be a brutal but deft dictator. He beat back multiple attempts to unseat him. He survived years of isolation following the 1988 Lockerbie bombing. And in 2003, he proved nimble enough to surrender his nascent nuclear program as the quid pro quo for resumption of diplomatic relations with the United States and others. But there remains another reason: **NATO's belief in air power**. **In 1999, the alliance learned** **a** lesson - or, better put, **mislesson - that air power could win wars**. **In** the 11-week **Kosovo** campaign, **air power did** indeed **prevail. NATO hoped the strategy would repeat in North Africa. But the presumption lay on a historic anomaly - with unique caveats - rather than the broader tapestry of air power in history. The result: the Libya stalemate today**. A deeper look at history adds perspective. Air power classically seeks to bend the curve of war toward success. Tactically, it attempts to block adversary gains and provide an additive to ground forces. Strategically, it strives to incite domestic political instability within the adversary's ranks, intimidating the enemy to concede. The Kosovo war included intense NATO bombing subject to a limited objective: the expulsion of Serbian forces from the province. The three-month war included about 10,500 strike missions dropping 12,000 tons of bombs largely flown by the United States under the NATO banner. In addition to military targets, the war destroyed about 50 percent of Serbia's productive capacity. The blow squeezed a nation already reeling in the aftermath of the nearly decadelong Balkan wars. **In the aftermath, some reviewers remained mystified over NATO's air power success.** **After all, no other air campaign** - the dropping of the atomic bomb in World War II excluded - **successfully delivered a knockout blow without an effective ground war**. **The Blitz over Britain in World War II failed. Likewise, the extended bombing of Germany. The fire bombings of Tokyo also stumbled**. **After World War II, other conflicts repeatedly demonstrated the limits of air power**. **In the Cold War's hot wars, air campaigns could only help prevent defeat in Korea. It did not even achieve that in Vietnam. The Soviets found the same in Afghanistan. Israel's 1967 successful air assault on Egypt's air force still required ground forces to win the war. Air power supplemented the 1991 and 2003 wars in Iraq, the Bosnia war and the ongoing war in Afghanistan**. So why did Kosovo prove different? The answer lies less in unconvincing threats of ground intervention or Russia's displeasure with Serbia that some suggest than in the Milosevic regime's conclusion that it could afford to lose the province as long as regime change in Belgrade did not follow. That is not the case in Libya. Despite the [Security Council](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Security+Council%22)'s humanitarian resolution, the leaders of Britain, France and the United States call for Qadhafi's removal. The repeated bombardment of the Libyan leader's residential compound brings the point home. And the colonel has gotten the message and drawn the logical conclusion: Surrender is not an option. **This places NATO in a quandary. Absent a coup or lucky air strike** that takes out Qadhafi, **success requires what all other wars demanded: a competent, reasonably armed and well-led ground capacity. In the Libya case, this will require time, money, equipment and leadership with far more on-the-ground NATO assistance.** For those who think otherwise, they would do well to recall the conclusion [Johns Hopkins](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Johns+Hopkins%22) University strategist [Eliot Cohen](http://www.seattlepi.com/?controllerName=search&action=search&channel=national%2Fpolitico&search=1&inlineLink=1&query=%22Eliot+Cohen%22) - the director of the U.S. government's Persian Gulf War evaluation - made in Foreign Affairs in 1994: "**Air power is an unusually seductive form of military strength, in part because, like modern courtship, it appears to offer gratification without commitment." In Libya, gratification will not suffice**.

**Link—DoD Tradeoff Frontline**

***DoD budget aligned with DoD strategic guidance now—additional tradeoffs collapse the entire package – SPS is super expensive means they undermine the budget – that’s spencer***

***SPS forces budget cuts for decades***

**Cunningham 12**

Nicholas Cunningham, Nicholas is a policy analyst focusing on climate change and next generation energy issues. Before joining ASP, he worked for Global Policy Group, a Washington DC-based consulting company, working on energy and environmental policy and regulation. Prior to that, he worked as an intern on clean energy policy at Third Way, a think tank in D.C. He also lived in Buenos Aires, Argentina from 2008 to 2009, where he taught English. Originally from Rockville, MD, Nicholas earned his B.A. in History from the University of Maryland and a M.A. in International Relations from the Johns Hopkins School of Advanced International Studies (SAIS). While at SAIS, his studies focused on energy policy, international economics, climate change, and the geopolitics of energy. 8/9/12, Billion Year Plan, Is Space-Based Solar Power realistic?, <http://billionyearplan.blogspot.com/2012/08/is-space-based-solar-power-realistic.html>

Ultimately, **whether or not we pursue space-based solar power comes down to** the criticism that Garretson believes is most convincing. That is **the question of opportunity costs**. **Using scarce resources on SBSP means that less is available for other important areas, like** education, **national defense**, or healthcare. More directly, **SBSP will be competing with other energy technologies, and since SBSP’s time horizon is decades away, it will be difficult to justify large-scale investments.**

***Uniquely true of SPS***

**Hsu 11** Jeremy Hsu, Innovation News Daily Senior Writer, March 14 2011, Tech Daily News, Military Scientists Look to Space to Power Bases, <http://www.technewsdaily.com/4918-military-scientists-look-to-space-to-power-bases.html>, jj

However, "despite their shortcomings, **terrestrial solar, wind, nuclear and other possible alternatives enjoy decades of heritage, whereas [space-based solar power] has yet to be demonstrated on any scale**," said Paul Jaffe, electronics engineer and head of systems integration at the Naval Research Laboratory.

**The report did not attempt to come up with a price tag for a military-focused application of space-based solar power**. But it did include an early estimate that **such military use would require more than $10 billion and remains more than five years in the future.**

"**It is** currently **quite unlikely" that the U.S. military would try that approach before civilian projects get off the ground**, Jaffe told InnovationNewsDaily. The latter include European and Japanese project proposals, as well as a private effort by the California-based company Solaren Corp.

**Even if the expensive cost of launching the necessary equipment into space fell to zero, Jaffe pointed to much technological development that still needs to be done before a space-based solar power system could be deployed. To his knowledge, the U.S. Department of Defense has not funded efforts that focus specifically on such systems.**

***Too expensive for SPS***

**David 07** Leonard David, Special Correspondent, Space News, 9-17-07, Space Based Solar Power Fuels Vision of Global Energy Security, <http://www.space.com/4371-space-based-solar-power-fuels-vision-global-energy-security.html>, jj

"Energy may well be the first tangible commodity returned from space," said Joseph Rouge, Associate Director of the National Security Space Office. "Geopolitics in general is going to be a large issue. I don?t think there?s any question that energy is going to be one of the key next issues, along with water ... that?s going to be the competition we?re going to fight." Rouge said that **moving out on the proposed SBSP effort would be the largest space venture yet, making the Apollo Moon landing project "look like just a small little program." As a caveat, however, he noted that the U.S. Department of Defense is cash-strapped and is not the financial backer for such an endeavor.**

***DOD doesn’t have ability to develop, and lacks funds anyways***

**Garretson 12** Peter Garretson, Lieutenant Colonel, USAF, Lt Col Peter Garretson is an airpower strategist currently serving on the CSAF’s Strategic Studies Group (HAF/CK). His previous assignment was at the Institute for Defence Studies and Analyses in New Delhi as an Air Force Fellow examining Indo–US long-term space collaboration under the sponsorship of the Council on Foreign Relations. Prior to that he was the chief of future science and technology exploration for the HQ USAF Directorate of Strategic Planning (AF/A8XC). Strategic Studies Quarterly ♦ Spring 2012, Solar Power in Space?, <http://www.au.af.mil/au/ssq/2012/spring/garretson.pdf>, jj

Right now **there is no organization with a mandate to do SBSP**. NASA’s internal constituencies are for manned and robotic exploration. It sees a massive industrial energy project as the reason we have a Department of Energy (DOE). The DOE says it supports the vision of infinite green energy, but that the essential technology problems involve space technology, and that is why we have a national space agency. **The DoD has interests in all supporting technologies**—space access, in-space maneuver, on-orbit construction, beamed energy—**but it is neither America’s department of energy nor its civil space agency and already is underfunded to meet the core requirements of its chief customer, the war fighter**