# T Not Procurement

## 1NC

## 2NC

#### They explode limits

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

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

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#### Financial incentives excludes government purchasing---that’s voluntary or regulatory support

**Menz, 5 -** Faculty of Economics and Finance, School of Business, Clarkson University, Bertrand H. Snell Hall, Potsdam, NY, also from the Center for International Climate and Environmental Research, Oslo (CICERO), Norway (Fredric, “Green electricity policies in the United States: case study,” Energy Policy, December, Science Direct) **Italics in original**

There is considerable variation among states in both their regulatory environments and the policies that have been implemented to promote green electricity. In the following discussion, state and local policy instruments are categorized as financial incentives, rules and regulations, and voluntary measures.[7](http://www.sciencedirect.com.proxy.lib.umich.edu/science/article/pii/S0301421504001648#fn7)Financial incentives include various subsidies and/or funding in direct support of green electricity projects, tax incentives (credits, deductions, or exemptions), and provisions for zero-interest or low-interest loans. Rules and regulations include requirements that utilities distribute a minimum share of electricity from renewable or green energy sources, green power purchase requirements for government entities, and net-metering requirements for consumers with small renewable generating facilities. Voluntary measures include green power products aimed at electricity consumers, green power certificate programs, and other programs to increase market support for renewable energy technologies.

#### More evidence

**DSIRE, 12 –** Database of State Incentives for Renewables & Efficiency (Glossary, “Financial Incentives”

http://www.dsireusa.org/glossary/)

**DSIRE organizes incentives and policies that promote renewable energy** and energy efficiency **into two general categories** -- (1**) Financial Incentives and (2) Rules, Regulations & Policies --** and roughly 30 specific types of incentives and policies. This glossary provides a description of each specific incentive and policy type.¶ **FINANCIAL INCENTIVES** *(click to expand section)*¶ hide Corporate Tax Incentives¶ Corporate tax incentives include tax credits, deductions and exemptions. These incentives are available in some states to corporations that purchase and install eligible renewable energy or energy efficiency equipment, or to construct green buildings. In a few cases, the incentive is based on the amount of energy produced by an eligible facility. Some states allow the tax credit only if a corporation has invested a minimum amount in an eligible project. Typically, there is a maximum limit on the dollar amount of the credit or deduction. In recent years, the federal government has offered corporate tax incentives for renewables and energy efficiency. *(Note that corporate tax incentives designed to support manufacturing and the development of renewable energy systems or equipment, or energy efficiency equipment, are categorized as “Industry Recruitment/Support” in DSIRE.)*¶ hide Grant Programs¶ States offer a variety of grant programs to encourage the use and development of renewables and energy efficiency. Most programs offer support for a broad range of technologies, while a few programs focus on promoting a single technology, such as photovoltaic (PV) systems. Grants are available primarily to the commercial, industrial, utility, education and/or government sectors. Most grant programs are designed to pay down the cost of eligible systems or equipment. Others focus on research and development, or support project commercialization. In recent years, the federal government has offered grants for renewables and energy efficiency projects for end-users. Grants are usually competitive.¶ hide Green Building Incentives¶ Green buildings are designed and constructed using practices and materials that minimize the impacts of the building on the environment and human health. Many cities and counties offer financial incentives to promote green building. The most common form of incentive is a reduction or waiver of a building permit fee. The U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) is a popular point-based certification program for green buildings. The LEED system awards points for site selection and development; material, energy and water efficiency; indoor air quality; innovation; and the application of renewable technologies. *(Note that this category includes green building incentives that do not fall under other DSIRE incentive categories, such as tax incentives and grant programs.)*¶ hide Industry Recruitment/Support¶ To promote economic development and the creation of jobs, some states offer financial incentives to recruit or cultivate the manufacturing and development of renewable energy systems and equipment. These incentives commonly take the form of tax credits, tax exemptions and grants. In some cases, the amount of the incentive depends on the quantity of eligible equipment that a company manufactures. Most of these incentives apply to several renewable energy technologies, but a few states target specific technologies, such as wind or solar. These incentives are usually designed as temporary measures to support industries in their early years. They commonly include a sunset provision to encourage the industries to become self-sufficient.¶ hide Loan Programs¶ Loan programs provide financing for the purchase of renewable energy or energy efficiency systems or equipment. Low-interest or zero-interest loans for energy efficiency projects are a common demand-side management (DSM) practice for electric utilities. State governments also offer low-interest loans for a broad range of renewable energy and energy efficiency measures. These programs are commonly available to the residential, commercial, industrial, transportation, public and/or non-profit sectors. Loan rates and terms vary by program; in some cases, they are determined on an individual project basis. Loan terms are generally 10 years or less. In recent years, the federal government has offered loans and/or loan guarantees for renewables and energy efficiency projects.¶ hide PACE Financing¶ Property-Assessed Clean Energy (PACE) financing effectively allows property owners to borrow money to pay for renewable energy and/or energy-efficiency improvements. The amount borrowed is typically repaid over a period of years via a special assessment on the owner's property. In general, local governments (such as cities and counties) that choose to offer PACE financing must be authorized to do so by state law.¶ hide Performance-Based Incentives¶ Performance-based incentives (PBIs), also known as production incentives, provide cash payments based on the number of kilowatt-hours (kWh) or BTUs generated by a renewable energy system. A "feed-in tariff" is an example of a PBI. To ensure project quality, payments based on a system’s actual performance are generally more effective than payments based on a system’s rated capacity. *(Note that tax incentives based on the amount of energy produced by an eligible commercial facility are categorized as “Corporate Tax Incentives” in DSIRE.)*¶ hide Personal Tax Incentives¶ Personal tax incentives include income tax credits and deductions. Many states offer these incentives to reduce the expense of purchasing and installing renewable energy or energy efficiency systems and equipment. The percentage of the credit or deduction varies by state, and in most cases, there is a maximum limit on the dollar amount of the credit or deduction. An allowable credit may include carryover provisions, or it may be structured so that the credit is spread out over a certain number of years. Eligible technologies vary widely by state. In recent years, the federal government has offered personal tax credits for renewables and energy efficiency.¶ hide Property Tax Incentives¶ Property tax incentives include exemptions, exclusions, abatements and credits. Most property tax incentives provide that the added value of a renewable energy system is excluded from the valuation of the property for taxation purposes. For example, if a new heating system that uses renewable energy costs more than a conventional heating system, the additional cost of the renewable energy system is not included in the property assessment. In a few cases, property tax incentives apply to the additional cost of a green building. Because property taxes are collected locally, some states have granted local taxing authorities the option of allowing a property tax incentive for renewables.¶ hide Rebate Programs¶ States, utilities and a few local governments offer rebates to promote the installation of renewables and energy efficiency projects. The majority of rebate programs that support renewables are administered by states, municipal utilities and electric cooperatives; these programs commonly provide funding for solar water heating and/or photovoltaic (PV) systems. Most rebate programs that support energy efficiency are administered by utilities. Rebate amounts vary widely by technology and program administrator.¶ hide Sales Tax Incentives¶ Sales tax incentives typically provide an exemption from, or refund of, the state sales tax (or sales and use tax) for the purchase of a renewable energy system, an energy-efficient appliance, or other energy efficiency measures. Several states have established an annual “sales tax holiday” for energy efficiency measures by annually allowing a temporary exemption – usually for one or two days – from the state sales tax.¶ RULES, REGULATIONS & POLICIES*(click to expand section)*¶ hide Appliance/Equipment Efficiency Standards¶ Many states have established minimum efficiency standards for certain appliances and equipment. In these states, the retail sale of appliances and equipment that do not meet the established standards is prohibited. The federal government has also established efficiency standards for certain appliances and equipment. When both the federal government and a state have adopted efficiency standards for the same type of appliance or equipment, the federal standard overrides the state standard (even if the state standard is stricter).¶ hide Building Energy Codes¶ Building energy codes adopted by states (and some local governments) require commercial and/or residential construction to adhere to certain energy standards. While some government entities have developed their own building energy codes, many use existing codes (sometimes with state-specific amendments), such as the International Energy Conservation Code (IECC), developed and published by the International Code Council (ICC); or ASHRAE 90.1, developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). A few local building energy codes require certain commercial facilities to meet green building standards.¶ hide Contractor Licensing¶ Some states have adopted a licensing process for renewable energy contractors. Several states have adopted contractor licensing requirements for solar water heating, active and passive solar space heating, solar industrial process heat, solar-thermal electricity, and photovoltaics (PV). These requirements are designed to ensure that contractors have the necessary knowledge and experience to install systems properly. Solar licenses typically take the form of either a separate, specialized solar contractor’s license, or of a specialty classification under a general electrical or plumbing license.¶ hide Energy Efficiency Resource Standards (EERS**)**¶ Energy efficiency resource standards (EERS) are state policies that require utilities to meet specific targets for energy savings according to a set schedule. EERS policies establish separate reduction targets for electricity sales, peak electric demand and/or natural gas consumption. In most cases, utilities must achieve energy savings by developing demand-side management (DSM) programs, which typically provide financial incentives to customers to install energy-efficient equipment. An EERS policy is sometimes coupled with a state’s renewables portfolio standard (RPS). In these cases, energy efficiency is typically included as a lower-tier resource.¶ hide Energy Standards for Public Buildings¶ Many states and local governments, as well as the federal government, have chosen to lead by example by requiring new government buildings to meet strict energy standards. DSIRE includes policies that have established green building standards, energy-reduction goals, equipment-procurement requirements, and/or the use of on-site renewable energy. Many of these policies require that new government buildings (and renovated buildings, in some cases) attain a certain level of certification under the U.S. Green Building Council’s Leadership in Energy and Environmental Design (LEED) program. Equipment-procurement policies often mandate the use of the most efficient equipment, including equipment that meets federal Energy Star criteria. Policies designed to encourage the use of on-site renewables generally establish conditional requirements tied to life-cycle cost analysis.¶ hide Equipment Certification Requirements¶ Policies requiring renewable energy equipment to meet certain standards serve to protect consumers from buying inferior equipment. These requirements not only benefit consumers; they also protect the renewable energy industry by keeping substandard systems out of the market.¶ hide Generation Disclosure¶ Some states require electric utilities to provide their customers with specific information about the electricity that the utility supplies. This information, which generally must be shared with customers periodically, usually includes the utility's fuel mix percentages and emissions statistics. In states with restructured electricity markets, generation disclosure policies are designed to help consumers make informed decisions about the electricity and suppliers they choose. A few states that have not fully restructured their electricity markets require generation disclosure by utilities.¶ hide Green Power Purchasing Policies¶ Government entities, businesses, residents, schools, non-profits and others can play a significant role in supporting renewable energy by buying electricity from renewable resources, or by buying renewable energy credits (RECs). Many state and local governments, as well as the federal government, have committed to buying green power to account for a certain percentage of their electricity consumption. Green power purchases are typically executed through contracts with green power marketers or project developers, through utility green power programs, or through community aggregation.¶ hide Interconnection Standards¶ Interconnection standards specify the technical and procedural process by which a customer connects an electricity-generating to the grid. Such standards include the technical and contractual terms that system owners and utilities must abide by. State public utilities commissions typically establish standards for interconnection to the distribution grid, while the Federal Energy Regulatory Commission (FERC) has adopted standards for interconnection to the transmission level. Many states have adopted interconnection standards, but some states’ standards apply only to investor-owned utilities -- not to municipal utilities or electric cooperatives. (Several states have adopted interconnection guidelines, which are weaker than standards and generally apply only to net-metered systems.)¶ hide Line Extension Analysis¶ When a prospective customer requests electric service for a home or facility that is not currently served by the electric grid, the customer usually must pay a distance-based fee for the cost of extending power lines to the home or facility. In some cases, it is cheaper to use an on-site renewable energy system to meet a prospective customer’s electricity needs. A few states require utilities to provide information regarding renewable energy options when a line extension is requested.¶ hide Mandatory Utility Green Power Option¶ Several states require electric utilities to offer customers the option to buy electricity generated from renewable resources, commonly known as “green power.” Typically, utilities offer green power generated using renewable resources that the utilities own (or for which they contract), or they buy renewable energy credits (RECs) from a provider certified by a state public utilities commission.¶ hide Net Metering¶ For electric customers who generate their own electricity, net metering allows for the flow of electricity both to and from the customer – typically through a single, bi-directional meter. When a customer’s generation exceeds the customer’s use, electricity from the customer flows back to the grid, offsetting electricity consumed by the customer at a different time during the same billing cycle. In effect, the customer uses excess generation to offset electricity that the customer otherwise would have to purchase at the utility’s full retail rate. Net metering is required by law in most U.S. states, but these policies vary widely.¶ hide Public Benefit Funds¶ Most public benefit funds (PBFs) were developed by states during the electric utility restructuring era, in the late 1990s, to ensure continued support for renewable energy, energy efficiency and low-income energy programs. These funds are commonly supported through a very small surcharge on electricity consumption (e.g., $0.002/kWh). This charge is sometimes referred to as a "system benefits charge" (SBC). PBFs commonly support rebate programs, loan programs, research and development, and energy education programs.¶ hide Renewables Portfolio Standards (RPS)¶ Renewable portfolio standards (RPSs) require utilities to use renewable energy or renewable energy credits (RECs) to account for a certain percentage of their retail electricity sales -- or a certain amount of generating capacity -- according to a specified schedule. (Renewable portfolio goals are similar to RPS policies, but renewable portfolio goals are not legally binding.) Most U.S. states have established an RPS. The term “set-aside” or “carve-out” refers to a provision within an RPS that requires utilities to use a specific renewable resource (usually solar energy) to account for a certain percentage of their retail electricity sales (or a certain amount of generating capacity) according to a set schedule.¶ hide Solar & Wind Access Policies¶ Solar and wind access policies are designed to establish a right to install and operate a solar or wind energy system at a home or other facility. Some solar access laws also ensure a system owner’s access to sunlight. These laws may be implemented at both the state and local levels. In some states, access rights prohibit homeowners associations, neighborhood covenants and local ordinances from restricting a homeowner’s right to use solar energy. Easements, the most common form of solar access policy, allow for the rights to existing access to a renewable resource on the part of one property owner to be secured from an owner whose property could be developed in such a way as to restrict that resource. An easement is usually transferred with the property title. At the local level, communities use several policies to protect solar access, including solar access ordinances, development guidelines requiring proper street orientation, zoning ordinances that contain building height restrictions, and solar permits.¶ hide Solar & Wind Permitting Standards¶ Permitting standards can facilitate the installation of wind and solar energy systems by specifying the conditions and fees involved in project development. Some local governments have adopted simplified or expedited permitting standards for wind and/or solar. “Top-of-the-stack” permitting (or fast-track permitting) saves system owners and project developers time and money. Some states have capped fees that local governments may charge for a permit for a solar or wind energy system. In addition, some states have developed (or have supported the development of) model wind ordinances for use by local governments.

#### Webb is Canadian and means his distinctions on incentives don’t apply

MacNevin 93, Alex -Tax Evaluation Division – Federal Department of Finance, 31 Alta. L. Rev. 539

Not surprisingly, Mr. Webb's perspective is primarily legal in focus; he is concerned with what he views as deficiencies in legal structure and channels of legal authority and recourse. As an economist, I am not qualified to discuss the legal issues raised by Mr. Webb. However, his passing reference, in a related paper to be delivered at this conference, refers to the Auditor General's estimates that there are $41 billion and $28 billion in, respectively, direct expenditure incentives and tax expenditure incentives.1 Incentives are thus ultimately about money -- that is, who gets it, why, how, how much, what is the effect and how is this accounted for -- and therefore have important economic as well as legal dimensions. While Mr. Webb's paper deals with both expenditure and tax incentives, my comments concentrate on the latter, with which I am most familiar.¶ II. THE IDENTIFICATION OF TAX INCENTIVES¶ One fundamental problem with respect to accountability in the area of taxation arises because of difficulties in defining what is or is not a tax expenditure or a tax incentive. A central aspect of accountability relates to the seemingly simple basic requirement for documenting the amounts of money foregone through various incentives. Mr. Webb notes that information on the costs of tax incentives are reported only sporadically in tax expenditure accounts, the last of which was put out by the Minister of Finance in 1985. He also points out that tax incentives are removed from the normal budgeting and estimating procedures that apply to many other incentives on the expenditure side (which, incidentally, he views as generally deficient).¶ The infrequent release of tax expenditures (or, as they were called in the 1985 document, selective tax measures) tables may in part reflect the absence of a legal requirement that they be produced on a regular basis.2 They also, however, reflect significant conceptual difficulties encountered in constructing such accounts as well as prevailing concerns about the extent of their usefulness, including their interpretation. Difficulties in this regard were highlighted in a 1988 conference on tax expenditures and accountability in taxation that was jointly sponsored by the Department of Finance and the John Deutsch Institute of Queen's University.3¶ In the opinion of many of the public finance experts who participated in the conference, tax expenditures often cannot easily be distinguished from structural parameters of the tax system. Identification of tax incentives necessitates comparison of the actual tax system with an ideal "benchmark" tax system. This is entirely different from the case of direct expenditures where no comparable reference base is required. One practical difficulty confronting tax expenditure accounting is that any view about what the tax base should be is essentially a value judgement and hence will vary from individual to individual. The result is that items which may be viewed as tax expenditures under one particular benchmark tax system may not be viewed as such under another benchmark. For example, tax deductions for retirement savings plans are a tax expenditure under an annual income tax benchmark, but are not tax expenditures under lifetime income tax or consumption tax benchmarks. Since the federal tax system contains a mixture of elements of all three of these tax regimes, considerable difficulties in identifying tax expenditures exist.¶ Related additional complexities arise because an actual tax system can only approximate the desirable characteristics of any particular normative view as to what should be taxed. For example, while economists may be able to define fairly precisely what real economic income is over a particular period of time under an income tax base, it is impractical to design an income tax system that has the actual characteristics dictated by theory. The result of is that in some instances, it is not clear how a particular tax measure or group of related tax measures should be viewed under an actual tax system that is inevitably only an imperfect approximation of a chosen "benchmark" tax system.4¶ Many examples can be given to illustrate the difficulties that arise in this respect. For example, considerable uncertainty arises about how the various provisions relating to the taxation of capital gains should be treated for tax expenditure accounting purposes under an income tax regime that taxes nominal gains on a realization basis rather than real gains on an accrual basis. The integration of the personal and corporate income tax systems gives rise to other examples. Under a view that treats the integrated personal and corporated tax systems as the benchmark, the dividend tax credit is not a tax expenditure. Under one that treats the personal and corporate tax systems as separate benchmark systems, it is.¶ The tax expenditure treatment of cash accounting for farmers and fishermen provides another example. Economists are uncomfortable on tax principle grounds with the deductibility of expenditures on inventory because such expenditures merely reflect the transfer of one asset (cash) into another asset (inventory). Accrual accounting rules, which are required of other types of businesses, effectively result in unsold inventories being added back into income at the end of the year so that no deduction in the year is permitted. Past tax expenditure accounts have identified cash accounting as a tax expenditure, although it is far from obvious that, at least for full-time farmers and fishermen, cash accounting on balance results in lower tax liabilities over time or that from their perspective it is anything more than a peculiar tax wrinkle. It is notable that there is no dollar estimate of the value of cash accounting in previous tax expenditure accounts.¶ III. THE ACCOUNTABILITY OF TAX INCENTIVES¶ One common theme that emerged from the conference on tax expenditures and accountability was that, in light of the many difficulties in identifying tax expenditures, it might be desirable to present tax expenditure information from the perspective of a number of different normative benchmark systems. This would highlight aspects of the tax system from these different perspectives. It would, however, achieve this at the cost of considerable added complexity in interpreting the accounts, particularly to users of the accounts who were not tax experts. There may, therefore, be somewhat of a conflict between the usefulness of tax expenditure accounts in their role as an instrument of tax analysis versus their role as an accountability instrument where clarity and simplicity of presentation and interpretation have high priority. It may be possible to strike a compromise by, for example, ensuring that tax expenditure accounts clearly identify the key tax measures that most reasonably could be substituted for direct expenditure programs. This would facilitate comparisons of tax expenditures data with those for comparable programs on the direct expenditure side in the Public Accounts and thereby permit a more complete assessment of the incentives and subsidies applying to particular sectors, geographical regions, and so on. Such an approach would foster the accountability objective of "functional equivalence" identified by Mr. Webb.¶ Problems with compiling tax expenditures accounts are highlighted when the very structure of the tax system undergoes major changes, such as with the income tax reform of 1988 and with the introduction of the GST to replace the manufacturers sales tax. In such circumstances, presentation of tax expenditure information must be thoroughly reformulated to reflect the revised tax regimes and, indeed, the changing benchmark norms. This can give rise to problems of lack of continuity and comparability of data over time. As an additional practical matter, significant lags in the availability of taxation data may delay the release of tax expenditure tables that reflect the new regimes. There are two and three year lags for, respectively, personal income tax data and corporate income tax data.¶ Delays in the availability of taxation data are particularly problematic since it is typically much more difficult to forecast the ultimate cost of tax incentives than is the case for direct expenditure incentives. The main reason for this is that tax incentives are almost always open-ended while direct expenditure incentives are typically subject to an overall budget constraint. The total cost of a tax incentive thus depends entirely on the usually difficult to predict take-up response of taxpayers, which can give rise to considerable uncertainty in budgeting.5¶ There are thus significant difficulties with tax expenditure analysis even as an accounting device for providing estimates of the cost of individual tax measures. Judged by the other criteria identified above they are substantially more deficient since they provide no insight whatsoever into the questions of who benefits from tax incentives, why, and what are their effects. Analytical techniques, (such as full evaluations) in addition to accounting techniques, are required in order to provide a complete picture of both the cost and the efficacy of tax measures. I would note, however, that the problems in identifying tax expenditures, particularly in an environment of changing tax structures or norms, make it difficult to systematically evaluate tax expenditures or incentives on a routine cyclical basis as is done for direct expenditure programs.¶ The limitations of tax expenditures information naturally raise questions about the appropriate amount of scarce analytical resources that should be devoted to the preparation of tax expenditure tables, rather than to alternative or complementary tools of accountability such as in-depth studies of the rationale and cost-effectiveness of particular tax measures and related groupings of tax measures; irrespective of whether there is a consensus as to their tax expenditure status under any particular benchmark tax system. The Department of Finance has long wrestled with the practical difficulties and trade-offs involved in compiling tax expenditure data and other accountability information that is, on balance, most revealing with respect to the underlying structure of the tax system. The proceedings of the John Deutsch Conference indicate clearly that there are no easy solutions to the problems.¶ IV. CONCLUSION¶ As noted earlier, Mr. Webb also makes reference to the adequacy of current budgeting procedures for tax incentives. The problem of identifying and measuring tax incentives separately from the "normal" parameters of the tax system hints at the intimate relationship between tax expenditures or (tax incentives) policy and the more limited process of modifying and improving the tax system -- that is the strict design of tax policy. This latter process is a natural component of the government's routine budget procedures and is subject to well-known budget conventions. Procedures relating to the introduction or modification of tax incentives must therefore inevitably be conducted within that somewhat restrictive environment. Can improvements be made which reflect both the need for improved budgeting procedures for tax incentives and the unique environment in which tax measures are designed and modified? I am sure they can but I am considerably less sure that such procedures can be routinized through legislative structure or guidelines.¶ In summary, I fully support the general thrust of Mr. Webb's paper of the need for improved structures and instruments of accountability. In my view, however, the pursuit of that objective must be tempered by recognition of the significant practical obstacles that arise because of the unique characteristics of tax incentives.

#### Waxman def is based on DOE order 5700.5

Waxman, 98 **–** Solicitor General of the US (Seth, Brief for the United States in Opposition for the US Supreme Court case HARBERT/LUMMUS AGRIFUELS PROJECTS, ET AL., PETITIONERS v. UNITED STATES OF AMERICA, http://www.justice.gov/osg/briefs/1998/0responses/98-0697.resp.opp.pdf)

2 On November 15, 1986, Keefe was delegated “the authority, with respect to actions valued at $50 million or less, to approve, execute, enter into, modify, administer, closeout, terminate and take any other necessary and appropriate action (collectively, ‘Actions’) with respect to Financial Incentive awards.” Pet. App. 68, 111-112. Citing DOE Order No. 5700.5 (Jan. 12, 1981), the delegation defines “Financial Incentives” as the authorized financial incentive programs of DOE, “including direct loans, loan guarantees, purchase agreements, price supports, guaranteed market agreements and any others which may evolve.” The delegation proceeds to state, “[h]owever, a separate prior written approval of any such action must be given by or concurred in by Keefe to accompany the action.” The delegation also states that its exercise “shall be governed by the rules and regulations of [DOE] and policies and procedures prescribed by the Secretary or his delegate(s).” Pet. App. 111-113.

#### That’s no longer statute

DOE 00, 5/8/00 “DOE N 251.35, Cancellation of Directives,” [https://www.directives.**doe**.gov/directives/0251.035-CNotice](https://www.directives.doe.gov/directives/0251.035-CNotice)

Effective immediately the following directives are canceled:

• DOE Order 5484.1, ENVIRONMENTAL PROTECTION, SAFETY AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS, dated 2-24-81;

• DOE Order 1332.2, UNIFORM REPORTING SYSTEM FOR FEDERAL ASSISTANCE, dated 10-31-83;

• DOE Order 5700.5A, POLICY AND MANAGEMENT PROCEDURES FOR FINANCIAL INCENTIVE PROGRAMS, dated 6-8-92; and

• HQ 1325.1, ACTION COORDINATION AND TRACKING SYSTEM, dated 7-30-79.

# ASPEC

#### Agency discussions are essential to education about energy policy

Valentine 10 Scott Victor Valentine - Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore, “Canada’s constitutional separation of (wind) power” Energy Policy, Volume 38, Issue 4, April 2010,

http://www.sciencedirect.com/science/article/pii/S0301421509009227

Should policymakers facilitate renewable energy capacity development **through distributive policies (i.e. subsidies), regulatory policies** (i.e. CO2 emission caps), redistributive policies (i.e. carbon taxes) or constituent policies (i.e. green energy campaigns) (Lowi, 1972)? A preponderance of research has gone into addressing this question from **various conceptual perspectives**, which include popular themes such as comparing the efficacy of various policy instruments (cf. Blakeway and White, 2005; EWEA, 2005; Menza and Vachona, 2006; cf. Lipp, 2007), championing the efficacy of one specific instrument (cf. Sorrell and Sijm, 2003; cf. Mathews, 2008), assessing the impact that socio-economic dynamics have on the selection or design of policy instruments (cf. Maruyama et al., 2007; cf. Huang and Wu, 2009), investigating policy instrument selection in stakeholder networks (cf. Rowlands, 2007; cf. Mander, 2008), investigating hurdles to effective policy instruments implementation (cf. Alvarez-Farizo and Hanley, 2002), and examining challenges associated with evaluating policy instrument efficacy (cf. Mallon, 2006; cf. Vine, 2008).

**Despite the proliferation of studies on policy instruments in the** renewable **energy policy field**, there are no prominent examples of studies which investigate the impact that the federal form of government has on strategic selection of policy instruments. Federal government systems are characterized by power-sharing between the central authority and the regions comprising the federation. For federal policymakers, the manner in which power is divided can pose significant policy-making problems (Thorlakson, 2003). Specifically, federal attempts to apply coercive policy instruments in policy areas of regional or concurrent (shared) authority can generate political, legal or operational resistance by regional authorities. Even when developing policy for areas under federal jurisdiction, regional authorities have to avail their various “thrust and riposte” tactics to undermine the efficacy of disagreeable federal policies (Braun et al., 2002). Given that there are 24 nations with a federal government structure (including the major economies of the United States, Germany, Canada, Australia, Russia, India, Spain, Brazil and Mexico), a **formal enquiry into the impact that federal structure has on renewable energy policy instrument development is merited.**

# Politics

#### Fiscal cliff will pass but PC’s key

Kimberly Atkins 11-8, Boston Herald columnist, “Prez returns to D.C. with more clout,” 11/8/12, http://bostonherald.com/news/columnists/view/20221108prez\_returns\_to\_dc\_with\_more\_clout

When President Obama returned yesterday to the White House, he brought with him political capital earned in a tough re-election fight as well as a mandate from voters — which means bold changes and bruising fights could lie ahead. ¶ The first agenda item is already waiting for him: reaching an agreement with lawmakers to avert the looming fiscal cliff. GOP lawmakers have previously shot down any plan involving tax increases. Obama’s win — based in part on a message of making the wealthiest Americans pay more — may already be paying dividends.¶ In remarks at the Capitol yesterday, House Speaker John Boehner seemed to acknowledge the GOP has to take a different tack than the obstructionism that has marred progress in the past.¶ “The president has signaled a willingness to do tax reform with lower rates. Republicans have signaled a willingness to accept new revenue if it comes from growth and reform,” Boehner said. “Let’s start the discussion there.” ¶ Obama’s fresh political clout could extend to longer term fiscal policies beyond the fiscal cliff, though don’t expect GOP pushback to vanish. House Republicans still have plenty of fight in them. ¶ Comprehensive immigration reform — designed to smooth the path to citizenship while also strengthening the nation’s borders — also will be high on the president’s priority list. But unlike in his first term, when such a plan got little more than lip service in the face of staunch GOP opposition, Obama’s 3-to-1 support from Latinos on Election Day gives him the incentive to get it done. It also robs Republicans, who learned firsthand that dwindling support from Hispanics and other minority groups is costing them dearly, of any reason to stand in the way. ¶ An influx of new female voices in the Senate could also make Obama’s next four years the “Term of the Woman,” putting a new focus on equal pay and reproductive rights. ¶ U.S. Sen. Patty Murray of Washington state, who chairs the Democratic Senatorial Campaign Committee, told reporters yesterday that having a historically high 20 women in the Senate in January won’t just mean more attention to women’s issues. She said the Senate will function better overall with “great women who have really strong voices” on board, such as U.S. Sen.-elect Elizabeth Warren. “There is no stronger advocate for middle-class Americans,” Murray said of Warren. ¶ None of this, of course, will be a cakewalk, but unlike his first term, Obama will have more power to push back.

#### SMRs drain capital

Fairley 10 Peter, IEEE Spectrum, May, "Downsizing Nuclear Power Plants,” [spectrum.ieee.org/energy/nuclear/downsizing-nuclear-power-plants/0](http://spectrum.ieee.org/energy/nuclear/downsizing-nuclear-power-plants/0)

However, there are political objections to SMRs. Precisely because they are more affordable, they may well increase the risk of proliferation by bringing the cost and power output of nuclear reactors within the reach of poorer countries.¶ Russia’s first SMR, which the nuclear engineering group Rosatom expects to complete next year, is of particular concern. The Akademik Lomonosov is a floating nuclear power plant sporting two 35-MW reactors, which Rosatom expects to have tethered to an Arctic oil and gas operation by 2012. The reactor’s portability prompted Greenpeace Russia to call this floating plant **the world’s most dangerous nuclear project in a decade.¶ SMRs may be smaller than today’s reactors.** But, politically at least, they’re just as nuclear.

#### Going over the fiscal cliff causes a second great depression

Morici 8/7 Peter, PhD, is a "recognized expert on economic policy and international economics." He is a Professor of International Business at the R.H. Smith School of Business at the University of Maryland. "Fix fiscal cliff now or face next Great Depression," 2012, http://www.foxnews.com/opinion/2012/08/07/fix-fiscal-cliff-now-or-face-next-great-depression/

President Obama and Republicans are engaging in dangerous brinksmanship. Putting off a political solution to the looming “fiscal cliff” until after the election **risks a** second Great Depression.¶ Without a compromise by January, $400 billion in mandatory spending cuts and more than $100 billion in tax increases will immediately go into effect. **With our economy only growing by only $300 billion annually, such a shock would thrust it into a prolonged contraction.**

#### Global nuclear war

Harris & Burrows 9 Mathew, PhD European History @ Cambridge, counselor of the U.S. National Intelligence Council (NIC) and Jennifer, member of the NIC’s Long Range Analysis Unit “Revisiting the Future: Geopolitical Effects of the Financial Crisis” http://www.ciaonet.org/journals/twq/v32i2/f\_0016178\_13952.pdf

Of course, the report encompasses more than economics and indeed believes the future is likely to be the result of a number of intersecting and interlocking forces. With so many possible permutations of outcomes, each with ample Revisiting the Future opportunity for unintended consequences, there is a growing sense of insecurity. Even so, history may be more instructive than ever. While we continue to believe that the Great Depression is not likely to be repeated, the lessons to be drawn from that period include the **harmful effects on fledgling democracies** and multiethnic societies (think Central Europe in 1920s and 1930s) and on the sustainability of multilateral institutions (think League of Nations in the same period). There is no reason to think that this would not be true in the twenty-first as much as in the twentieth century. For that reason, the ways in which **the potential for** greater **conflict could grow** would seem to be even more apt in a constantly volatile economic environment as they would be if change would be steadier. In surveying those risks, the report stressed the likelihood that terrorism and nonproliferation will remain priorities even as resource issues move up on the international agenda. **Terrorism**’s appeal will decline if economic growth continues in the Middle East and youth unemployment is reduced. For those terrorist groups that remain active in 2025, however, the diffusion of technologies and scientific knowledge will place some of the world’s most dangerous capabilities within their reach. Terrorist groups in 2025 will likely be a combination of descendants of long established groups\_inheriting organizational structures, command and control processes, and training procedures necessary to conduct sophisticated attacks and newly emergent collections of the angry and disenfranchised that become self-radicalized, particularly in the absence of economic outlets that would become narrower in an economic downturn. The most dangerous casualty of any **economically-induced drawdown** of U.S. military presence would almost certainly be the Middle East. Although Iran’s acquisition of nuclear weapons is not inevitable, worries about a nuclear-armed Iran could lead states in the region to develop new security arrangements with external powers, **acquire additional weapons**, and consider pursuing their own **nuclear ambitions**. It is not clear that the type of stable deterrent relationship that existed between the great powers for most of the Cold War would emerge naturally in the Middle East with a nuclear Iran. Episodes of low intensity conflict and terrorism taking place under a nuclear umbrella could lead to an **unintended escalation** and **broader conflict** if clear red lines between those states involved are not well established. The close proximity of potential **nuclear rivals** combined with underdeveloped surveillance capabilities and mobile dual-capable Iranian missile systems also will produce inherent difficulties in achieving reliable indications and warning of an impending nuclear attack. The lack of strategic depth in neighboring states like Israel, short warning and missile flight times, and uncertainty of Iranian intentions may place more focus on **preemption** rather than defense, potentially leading to **escalating crises**. 36 Types of conflict that the world continues to experience, such as over resources, could reemerge, particularly if protectionism grows and there is a resort to neo-mercantilist practices. Perceptions of renewed energy scarcity will drive countries to take actions to assure their future access to energy supplies. In the worst case, this could result in **interstate conflicts** if government leaders deem assured access to energy resources, for example, to be essential for maintaining domestic stability and the survival of their regime. Even actions short of war, however, will have important geopolitical implications. Maritime security concerns are providing a rationale for naval buildups and modernization efforts, such as China’s and India’s development of blue water naval capabilities. If the fiscal stimulus focus for these countries indeed turns inward, one of the most obvious funding targets may be military. Buildup of regional naval capabilities could lead to increased tensions, rivalries, and counterbalancing moves, but it also will create opportunities for multinational cooperation in protecting critical sea lanes. With water also becoming scarcer in Asia and the Middle East, cooperation to manage changing water resources is likely to be increasingly difficult both within and between states in a more dog-eat-dog world.

# HTGRs PIC

#### The United States federal government should obtain, through Other Transactions authority, electricity from light water reactors and liquid-metal cooled fast reactors with generating capacities of 300 megawatts or less

#### Competes and solves the case:

#### The term “small modular reactors” includes three reactor designs---light water, liquid metal-cooled, and high-temperature gas-cooled reactors---the CP excludes HTGRs

NEI 11 – Nuclear Energy Institute, November 2011, “Small Reactor Development Advances Energy, Environmental Benefits in New Markets,” <http://www.nei.org/resourcesandstats/documentlibrary/newplants/policybrief/small-reactor-development-advances-energy-environmental-benefits-in-new-markets/>

The three major types of small reactors are:

Light Water Reactors. These designs are the most compatible with the existing federal regulatory framework. They could be used to replace older power stations, benefitting from infrastructure, cooling water, rail and transmission facilities already in place, or for greenfield applications, including energy park concepts.

High-Temperature Gas-Cooled Reactors. These reactors are especially well-suited for providing process heat for the industrial and transport sectors in the medium term and hydrogen in the longer term while reducing the carbon footprint of these activities. It is in America’s strategic national interest to increase sources of energy by using these innovative small reactors to develop new domestic sources of liquid fuel.

Liquid Metal and Gas-Cooled Fast Reactors. Liquid metal and gas-cooled fast-reactor technologies also share attributes suitable for distributed nuclear applications for electricity, water purification and district heating in remote communities. These types of reactors also could provide nuclear fuel cycle services, such as improving the efficiency of nuclear fuel utilization and consuming recycled nuclear fuel. They could also support government-sponsored nonproliferation efforts by consuming material from nuclear weapons, thus eliminating it as a threat.

#### SMRs are 300 megawatts or less

Micah J. Loudermilk 11, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, 5/31/11, “Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs,” http://www.ensec.org/index.php?option=com\_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375

As the EBR-II demonstrates, the concept of small reactors is not new, but has resurfaced recently. The United States Navy has successfully utilized small reactors to power many of its vessels for over fifty years, and the earliest power reactors placed on land in the US were mostly similar, though larger, iterations of the Navy’s reactors. Eventually, due to siting and licensing issues affecting economies of scale, reactor outputs were pushed ever higher to between 800 and 1200 MW and new reactors constructed today—such as the ones under construction at the Olkiuoto plant in Finland—approach as much as 1600 MW. In contrast, the International Atomic Energy Agency (IAEA) defines a small reactor as generating under 300 MW of power. On the surface, a move in this direction may appear to be a step backwards in development, however, amid concerns over issues including safety, proliferation risks, and cost, many in the industry are beginning to seriously examine the possible applications of widespread and distributed nuclear power from low-output reactors.

\*\*\*MAYBE DON’T READ\*\*\*

#### Light water and liquid metal reactors are sufficient to solve the case

Ioannis N. Kessides 12, Lead Economist in the World Bank's Development Research Group, and Vladimir Kuznetsov, Consultant, the World Bank, 2012, “Small Modular Reactors for Enhancing Energy Security in Developing Countries,” Sustainability, Vol. 4, No. 8, p. 1806-1832

Small modular reactors can be classified according to the reactor technology and coolant. They include [5]:

 Pressurized water reactors (PWRs). Designs based on light water reactor technologies are similar to most of today’s large pressurized water reactors and as such they have the lowest technological risk. Several are considered to be very close to commercial deployment. Still these designs incorporate innovative technologies and novel components to achieve simplicity, improved operational performance, and enhanced safety. They are typically less than 300 MW(e) and could be used to replace older fossil-fired power stations of similar size.

 Gas cooled reactors (mostly high-temperature gas-cooled reactors (HTGRs)). These designs provide broad flexibility in application and in the utilization of the fuel. One of the key advantages of HTGRs is the high outlet coolant temperatures compared to conventional reactors. Core outlet temperatures can range from around 650 °C to 1000 °C for very advanced reactors—these high operating temperatures allow for greater thermal efficiencies. The HTGR can be used with either steam cycle or gas turbine generating equipment, and as a source of high temperature process heat. High reactor outlet temperatures can also drive endothermic reactions to produce hydrogen. Fuel cycle options include: (i) low enrichment, where enriched uranium fuel is burned and Pu is recycled; (ii) Th-233, where enriched uranium and Th is burned and U-233 (and U-235) is recycled; (iii) Pu utilization in Th -U-233, where Pu and Th fuel is burned and Pu and U-233 is recycled [6].

 Sodium-cooled fast reactors (SFRs). The SFR design features a fast-spectrum, sodium-cooled reactor and a closed fuel cycle. It is designed for efficient management of high-level wastes—in particular the management of plutonium and other actinides. The reactor’s key safety features include a long thermal response time, increased margin to coolant boiling, a primary system that operates near atmospheric pressure, and an intermediate sodium system between the radioactive sodium in the primary system and the water and steam in the power plant.

 Lead and Lead-bismuth cooled fast reactors (LFRs). The LFR design features a fast-spectrum lead or lead/bismuth eutectic liquid-metal-cooled reactor and a closed fuel cycle. Since it operates in the fast-neutron spectrum, it has has excellent materials management capabilities. The LFR can also be used as a burner to consume actinides from spent LWR fuel and as a burner/breeder with thorium matrices. An important feature of this design is the enhanced safety that results from the choice of molten lead as a relatively inert coolant. It does not react with water or air exothermically and, therefore, the reactor needs no intermediate heat transport system. In terms of sustainability, lead is abundant and hence available, even in case of deployment of a large number of reactors. More importantly, as with other fast systems, fuel sustainability is greatly enhanced by the conversion capabilities of the LFR fuel cycle.

# HTGRs DA

#### HTGRs cause massive spikes in helium demand

Mark Haynes 12, President, Concordia Power, 7/20/12, “Helium: Supply Shortages Impacting our Economy, National Defense and Manufacturing,” Congressional Documents and Publications, p. lexis

Mr. Chairman and Members of the Subcommittee, my name is Mark Haynes, I am President of Concordia Power, a small company that works with the NGNP Industry Alliance. The NGNP Industry Alliance is comprised of a number of major companies including Dow Chemical, ConocoPhilips, Entergy, AREVA, Westinghouse, SGL Group, Graftech, Mersen, Toyo Tanso, Ultra-Safe Nuclear, Technology Insights and the Petroleum Technology Alliance Canada.

Our Alliance’s purpose is to help ensure the commercialization of High Temperature Gas Cooled Reactors (HTGRs) as an extremely important energy option for the future. HTGRs, which are helium cooled, are unique in both their very high outlet temperatures and their intrinsic safety characteristics. Although these reactors will include multiple safety features, they will require no active or passive safety systems or operator intervention to ensure the safety of the public. Taken together, these characteristics make HTGRs not only very desirable electric power generators with extraordinarily high efficiency and safety, but they also allow HTGRs to be co-located with major industrial and extraction facilities where their high temperature output can substitute for the very large amounts of fossil fuels these facilities currently consume in the production of process heat.

In addition, HTGRs can also play an unmatched role in greatly improving the efficiency and environmental performance of converting coal or other indigenous carbon sources to liquid fuels with an extremely small carbon footprint. As explained in more detail later in this testimony, a relatively conservative estimate is that in North America, there is a market for 600 or more HTGR modules in this century. To the point of this hearing, the unique characteristics of helium are key to making this technology possible.

I believe it’s correct to say that our invitation to testify here today does not relate to any particular expertise we might have with regard to either the Federal Helium Reserve or the current helium markets. Rather, our presence here relates more to the fact that HTGRs are a unique and important example of an emerging energy technology that is very dependent on a reliable and affordable supply of helium in the future.

Why Helium is Important to HTGRs

Helium coolant is a key element of HTGR design. Helium has four characteristics that make it a superior reactor coolant:

- It is chemically inert in the HTGR process. Hence, during reactor operations, extraordinary event or interruption by natural cause (as a flood or earthquake) or a human error or equipment event that affects the plant normal operations, it does not corrode reactor internals nor does it contribute to the spread of significant amounts of radioactive particles around the plant or the environment;

- It is itself “invisible” to radiation: it does not become radioactive in the course of cooling the reactor core and the reactivity of the core is not impacted by its presence or non-presence. This second characteristic is an important added safety feature in the event of even its complete loss from the reactor core in an accident; and

- It is always in a gaseous phase at any temperature in the core. This ensures that in an extraordinary accident event there is no extreme pressure conditions created, such as can occur in a light water reactor where the flashing of coolant water into steam requires a very robust containment in the event of a loss of coolant.

- It is an efficient heat transport fluid. This allows a more economical design and efficient plant operation. It is also important to note that the other materials (graphite and ceramic coated fuel) are also non-corrosive and very chemically compatible with helium. This combination of materials is stable at extremely high temperatures. So, in a worst-case scenario loss of helium accident, the reactor core structure remains stable and the fuel stays well within its design limits. This is additional insurance that a Fukushima-type scenario cannot happen with an HTGR.

Helium Use and HTGRs

Although it is difficult to predict with precision how much helium will be required in the future for HTGRs, our Alliance, in concert with the Idaho National Laboratory estimates that in North America, there could be a future demand for several hundred 600 Megawatt thermal modules. This includes meeting needs in petrochemical production, refining, liquid fuel production, electric power generation and other markets.

Each reactor module in a fleet of HTGRs would require an initial inventory of helium when it enters service as well as replenishment helium during subsequent years of operation for the helium consumed each year in the supporting auxiliary equipment. The initial operating inventory for each of these 600 MWt modules would be approximately 2000 kg of helium. The annual need for makeup helium is assumed to be 10% of the operating inventory which is the upper design limit. So the annual helium requirement for a whole fleet of HTGRs is the total of the initial inventory required for new modules going into service plus the makeup supply for the existing modules already in service. As the first HTGRs are deployed, the initial inventory requirement governs the HTGR fleet helium consumption. But as the fleet grows, the makeup supply for the existing fleet quickly dominates the helium demand.

#### Supply’s on the brink now---no excess global capacity

Walter Nelson 12, Director, Helium Sourcing and Supply Chain Air Products and Chemicals, Inc, 7/20/12, Helium: Supply Shortages Impacting our Economy, National Defense and Manufacturing, Congressional Documents & Publications, p. lexis

There have been planned and unplanned maintenance outages at natural gas processing plants, as well as continuing pipeline allocations on the BLM system during well maintenance that have restricted the supply of crude helium to the U.S. refiners. In Algeria and Qatar, production of helium has decreased due to the fragile worldwide economy, as well as maintenance work at gas palnts. In addition, new helium refining projects have been slow to develop. The delayed start-up of one particular plant in Wyoming has postponed access to major new supplies of helium. Combined, these issues have reduced the global helium supply by as much as 5% to 10%.

On top of this, the industry will experience an unprecedented helium shortage this summer. Beyond the developments cited above, there are currently three US plant outages or curtailments that are severely limiting the short-term supply of helium today. First, one company reduced its helium production in Wyoming by approximately 20% beginning early June while performing critical maintenance activities. Full production is not expected to resume until sometime later this summer. The impact of this curtailment is almost five percent of global supply capacity. Second, the crude helium enrichment plant that supplies the BLM pipeline system was shut down July 15th for a planned 10 day safety critical outage. During this outage helium deliveries are limited to pipeline inventory reducing global supply capacity by an additional 25%. Third, a nautral gas plant in Kansas experienced an unplanned helium equipment outage at the end of June and that outage continued through this week. The impact of this outage was another five percent reduction in global supply capacity. In helium circles this has been "the perfect storm."

The combination of these issues has resulted in a significant short-term reduction in global helium supply capacity over the summer months. Global inventories would have normally served as a buffer during short-term outage events, minimizing the supply impacts. Unfortunately that's not the case this time. Air Products has had to allocate our customers and I suspect that all helium suppliers have had to do the same. We are caught in a cruch not of our making.

We expect some relief soon. Most of the maintenance outages will be completed within weeks, in the U.S. and abroad.That said, it will most probably take months for the global helium supply chains to recover from these summer outages.

Helium supplies will continue to remain tight through 2012 and into 2013, when new helium production is expected in Wyoming and Qatar. The Wyoming project is expected to add four percent helium capacity and the Qatar II project may add up to 18% capacity. Only after these two new plants are operational in 2013 and existing plants are running back at full output will the global supply begin to fully stabilize.

#### Helium supply constraints destroy U.S. leadership in basic scientific discovery

Phuan Ong 12, the Eugene Higgins Professor of Physics Director, Princeton Center for Complex Materials Department of Physics Princeton University, 7/20/12, Helium: Supply Shortages Impacting our Economy, National Defense and Manufacturing, Congressional Documents & Publications, p. lexis

The 2 main reasons why liquid helium is vital for research are:

1) Helium is the only fluid available for cooling samples to temperatures close to absolute zero. All objects follow the universal laws of quantum mechanics. However, at room temperature, large thermal agitations of molecules and atoms largely obscure or destroy the manifestations of quantum physics. Hence quantum behavior seems bizarre and unfamiliar to all of us. Cooling a sample suppresses the thermal agitations, allowing the quantum phenomena to become apparent. Put more directly, liquid helium is the "royal road" to discovery.

2) Helium is used to cool the superconducting wires in superconducting magnets. At present, superconducting magnets using niobium-tin (and tentatively high-Tc cuprates) provide the only known means for producing intense magnetic fields over human-sized volumes. They have to be cooled to 4 Kelvin above absolute zero to remain superconducting. With increasing demands worldwide (in research, MRI machines and in future transport), the demand for liquid helium is expected to rise sharply.

To mix metaphors, we may say that liquid helium is the vital "oxygen" that nourishes the large, dynamic U.S. research community. Disrupting this vital flow will deliver a crippling body blow to a large segment of the community, and jeopardize the leadership role of the U.S. in the coming decades. Increasingly, the pre-eminence of the U.S. in this field of physics has come under stiff challenges from groups in Germany, Japan, Netherlands, China and S. Korea. These countries have steeply increased their investments in these areas and "grown" a new generation of physicists, mostly trained in the U.S. The investment stems from the universal consensus that, in contrast to many other fundamental scientific areas, the results here underpin important future technologies.

In an increasingly flat world, it is prudent for the U.S. to safeguard the availability of this valuable national resource. From the RandD viewpoint, strong fluctuations in the price of helium or in the supply would be very harmful to the U.S. national interest.

#### Science leadership’s key to the sustainability and perceived legitimacy of U.S. hegemony---it blunts resentment of the power gap

Damon Coletta 9, Professor of Political Science at the United States Air Force Academy, September 2009, “Science, Technology, and the Quest for International Influence,” http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA536133&Location=U2&doc=GetTRDoc.pdf

Less appreciated is how scientific progress facilitates diplomatic strategy in the long run, how it contributes to Joseph Nye‘s soft power, which translates to staying power in the international arena. One possible escape from the geopolitical forces depicted in Thucydides‘ history for all time is for the current hegemon to maintain its lead in science, conceived as a national program and as an enterprise belonging to all mankind.

Beyond the new technologies for projecting military or economic power, the scientific ethos conditions the hegemon‘s approach to social-political problems. It effects how the leader organizes itself and other states to address well-springs of discontent—material inequity, religious or ethnic oppression, and environmental degradation. The scientific mantle attracts others‘ admiration, which softens or at least complicates other societies‘ resentment of power disparity. Finally, for certain global problems—nuclear proliferation, climate change, and financial crisis—the scientific lead ensures robust representation in transnational epistemic communities that can shepherd intergovernmental negotiations onto a conservative, or secular, path in terms of preserving international order.

In today‘s order, U.S. hegemony is yet in doubt even though military and economic indicators confirm its status as the world‘s lone superpower. America possesses the material wherewithal to maintain its lead in the sciences, but it also desires to bear the standard for freedom and democracy. Unfortunately, patronage of basic science does not automatically flourish with liberal democracy.

The free market and the mass public impose demands on science that tend to move research out of the basic and into applied realms. Absent the lead in basic discovery, no country can hope to pioneer humanity‘s quest to know Nature. There is a real danger U.S. state and society could permanently confuse sponsorship of technology with patronage of science, thereby delivering a self-inflicted blow to U.S. leadership among nations.

#### Legitimacy of U.S. hegemony’s key to global stability---prevents great power war

Kevin Fujimoto 12, Lt. Colonel, U.S. Army, January 11, 2012, “Preserving U.S. National Security Interests Through a Liberal World Construct,” online: <http://www.strategicstudiesinstitute.army.mil/index.cfm/articles/Preserving-US-National-Security-Interests-Liberal-World-Construct/2012/1/11>

The emergence of peer competitors, not terrorism, presents the greatest long-term threat to our national security. Over the past decade, while the United States concentrated its geopolitical focus on fighting two land wars in Iraq and Afghanistan, China has quietly begun implementing a strategy to emerge as the dominant imperial power within Southeast Asia and the Indian Ocean. Within the next 2 decades, China will likely replace the United States as the Asia-Pacific regional hegemonic power, if not replace us as the global superpower.1 Although China presents its rise as peaceful and non-hegemonic, its construction of naval bases in neighboring countries and military expansion in the region contradict that argument.

With a credible threat to its leading position in a unipolar global order, the United States should adopt a grand strategy of “investment,” building legitimacy and capacity in the very institutions that will protect our interests in a liberal global construct of the future when we are no longer the dominant imperial power. Similar to the Clinton era's grand strategy of “enlargement,”2 investment supports a world order predicated upon a system of basic rules and principles, however, it differs in that the United States should concentrate on the institutions (i.e., United Nations, World Trade Organization, ASEAN, alliances, etc.) that support a world order, as opposed to expanding democracy as a system of governance for other sovereign nations.

Despite its claims of a benevolent expansion, China is already executing a strategy of expansion similar to that of Imperial Japan's Manchukuo policy during the 1930s.3 This three-part strategy involves: “(i) (providing) significant investments in economic infrastructure for extracting natural resources; (ii) (conducting) military interventions (to) protect economic interests; and, (iii) . . . (annexing) via installation of puppet governments.”4 China has already solidified its control over neighboring North Korea and Burma, and has similarly begun more ambitious engagements in Africa and Central Asia where it seeks to expand its frontier.5

Noted political scientist Samuel P. Huntington provides further analysis of the motives behind China's imperial aspirations. He contends that “China (has) historically conceived itself as encompassing a “‘Sinic Zone'. . . (with) two goals: to become the champion of Chinese culture . . . and to resume its historical position, which it lost in the nineteenth century, as the hegemonic power in East Asia.”6 Furthermore, China holds one quarter of the world's population, and rapid economic growth will increase its demand for natural resources from outside its borders as its people seek a standard of living comparable to that of Western civilization.

The rise of peer competitors has historically resulted in regional instability and one should compare “the emergence of China to the rise of. . . Germany as the dominant power in Europe in the late nineteenth century.”7 Furthermore, the rise of another peer competitor on the level of the Soviet Union of the Cold War ultimately threatens U.S. global influence, challenging its concepts of human rights, liberalism, and democracy; as well as its ability to co-opt other nations to accept them.8 This decline in influence, while initially limited to the Asia-Pacific region, threatens to result in significant conflict if it ultimately leads to a paradigm shift in the ideas and principles that govern the existing world order.

A grand strategy of investment to address the threat of China requires investing in institutions, addressing ungoverned states, and building legitimacy through multilateralism. The United States must build capacity in the existing institutions and alliances accepted globally as legitimate representative bodies of the world's governments. For true legitimacy, the United States must support these institutions, not only when convenient, in order to avoid the appearance of unilateralism, which would ultimately undermine the very organizations upon whom it will rely when it is no longer the global hegemon.

The United States must also address ungoverned states, not only as breeding grounds for terrorism, but as conflicts that threaten to spread into regional instability, thereby drawing in superpowers with competing interests. Huntington proposes that the greatest source of conflict will come from what he defines as one “core” nation's involvement in a conflict between another core nation and a minor state within its immediate sphere of influence.9 For example, regional instability in South Asia10 threatens to involve combatants from the United States, India, China, and the surrounding nations. Appropriately, the United States, as a global power, must apply all elements of its national power now to address the problem of weak and failing states, which threaten to serve as the principal catalysts of future global conflicts.11

Admittedly, the application of American power in the internal affairs of a sovereign nation raises issues. Experts have posed the question of whether the United States should act as the world's enforcer of stability, imposing its concepts of human rights on other states. In response to this concern, The International Commission on Intervention and State Sovereignty authored a study titled, The Responsibility to Protect,12 calling for revisions to the understanding of sovereignty within the United Nations (UN) charter. This commission places the responsibility to protect peoples of sovereign nations on both the state itself and, more importantly, on the international community.13 If approved, this revision will establish a precedent whereby the United States has not only the authority and responsibility to act within the internal affairs of a repressive government, but does so with global legitimacy if done under the auspices of a UN mandate.

Any effort to legitimize and support a liberal world construct requires the United States to adopt a multilateral doctrine which avoids the precepts of the previous administration: “preemptive war, democratization, and U.S. primacy of unilateralism,”14 which have resulted in the alienation of former allies worldwide. Predominantly Muslim nations, whose citizens had previously looked to the United States as an example of representative governance, viewed the Iraq invasion as the seminal dividing action between the Western and the Islamic world. Appropriately, any future American interventions into the internal affairs of another sovereign nation must first seek to establish consensus by gaining the approval of a body representing global opinion, and must reject military unilateralism as a threat to that governing body's legitimacy.

Despite the long-standing U.S. tradition of a liberal foreign policy since the start of the Cold War, the famous liberal leviathan, John Ikenberry, argues that “the post-9/11 doctrine of national security strategy . . . has been based on . . . American global dominance, the preventative use of force, coalitions of the willing, and the struggle between liberty and evil.”15 American foreign policy has misguidedly focused on spreading democracy, as opposed to building a liberal international order based on universally accepted principles that actually set the conditions for individual nation states to select their own system of governance. Anne-Marie Slaughter, the former Dean of the Woodrow Wilson School of Public and International Affairs, argues that true Wilsonian idealists “support liberal democracy, but reject the possibility of democratizing peoples . . .”16 and reject military primacy in favor of supporting a rules-based system of order.

Investment in a liberal world order would also set the conditions for the United States to garner support from noncommitted regional powers (i.e., Russia, India, Japan, etc.), or “swing civilizations,” in countering China's increasing hegemonic influence.17 These states reside within close proximity to the Indian Ocean, which will likely emerge as the geopolitical focus of the American foreign policy during the 21st century, and appropriately have the ability to offset China's imperial dominance in the region.18

Critics of a liberal world construct argue that idealism is not necessary, based on the assumption that nations that trade together will not go to war with each other.19 In response, foreign affairs columnist Thomas L. Friedman rebukes their arguments, acknowledging the predicate of commercial interdependence as a factor only in the decision to go to war, and argues that while globalization is creating a new international order, differences between civilizations still create friction that may overcome all other factors and lead to conflict.20

Detractors also warn that as China grows in power, it will no longer observe “the basic rules and principles of a liberal international order,” which largely result from Western concepts of foreign relations. Ikenberry addresses this risk, citing that China's leaders already recognize that they will gain more authority within the existing liberal order, as opposed to contesting it. China's leaders “want the protection and rights that come from the international order's . . . defense of sovereignty,”21 from which they have benefitted during their recent history of economic growth and international expansion.

Even if China executes a peaceful rise and the United States overestimates a Sinic threat to its national security interest, the emergence of a new imperial power will challenge American leadership in the Indian Ocean and Asia-Pacific region. That being said, it is more likely that China, as evidenced by its military and economic expansion, will displace the United States as the regional hegemonic power. Recognizing this threat now, the United States must prepare for the eventual transition and immediately begin building the legitimacy and support of a system of rules that will protect its interests later when we are no longer the world's only superpower.

# Coal DA

## 1NC

#### U.S. coal exports to China are low, but downward pressure on domestic demand expands them massively

Bryan Walsh 12, Senior Editor at TIME, May 31, 2012, “Drawing Battle Lines Over American Coal Exports to Asia,” online: http://science.time.com/2012/05/31/drawing-battle-lines-over-american-coal-exports-to-asia/

But across the Pacific Ocean, the demand for coal has never been hotter, with China burning 4.1 billion tons in 2010 alone, far more than any other country in the world. That insatiable demand forced China in 2009 to become a net coal importer for the first time, in part because congested rail infrastructure raised the cost of transporting coal from the mines of the country’s northwest to its booming southern cities. In April, Chinese coal imports nearly doubled from a year earlier. Right now Australia and Indonesia supply much of China’s foreign coal. U.S. coal from the Powder River Basin could be a perfect addition to the Chinese market. Montana and Wyoming are just short train trips to ports on the Pacific Northwest coast, and from there it’s a container ship away from Asian megacities where coal doesn’t have to compete with cheap natural gas and air-pollution regulations are far weaker than in the U.S. To a wounded Big Coal, China is a potential savior.¶ As I write in the new edition of TIME, there’s just one problem: right now, ports on the West Coast lack the infrastructure needed to transfer coal from railcars into container ships. (Just 7 million of the 107 million tons of U.S.-exported coal left the country via Pacific Ocean ports last year.) That’s why coal companies like Peabody and Ambre Energy are ready to spend millions to build coal-export facilities at a handful of ports in Washington and Oregon. If all those plans go forward, as much as 150 million tons of coal could be exported from the Northwest annually—-nearly all of it coming from the Powder -River -Basin and headed to Asia. Even if the U.S. kept burning less and less coal at home, it would have a reason to keep mining it.

#### SMRs cause coal plant retiring

Marcus King et al 11, Associate Director of Research, Associate Research Professor of International Affairs, Elliot School of International Affairs, The George Washington University, et al., March 2011, “Feasibility of Nuclear Power on U.S. Military Installations,” http://www.cna.org/sites/default/files/research/Nuclear%20Power%20on%20Military%20Installations%20D0023932%20A5.pdf

SMRs have potential advantages over larger plants because they provide owners more flexibility in financing, siting, sizing, and end-use applications. SMRs can reduce an owner's initial capital outlay or investment because of the lower plant capital cost. Modular components and factory fabrication can reduce construction costs and schedule duration. Additional modules can be added incrementally as demand for power increases. SMRs can provide power for applications where large plants are not needed or may not have the necessary infrastructure to support a large unit such as smaller electrical markets, isolated areas, smaller grids, or restricted water or acreage sites. Several domestic utilities have expressed considerable interest in SMRs as potential replacements for aging fossil plants to increase their fraction of non-carbon-emitting generators. Approximately 80 percent of the 1174 total operating U.S. coal plants have power outputs of less than 500 MWe; 100 percent of coal plants that are more than 50 years old have capacities below 500 MWe [3]. SMRs would be a viable replacement option for these plants.

#### U.S. exports lock in expanded Chinese coal capacity---causes warming over the tipping point---it’s unique because absent U.S. exports the rising cost of coal will cause a shift to renewables

Thomas M. Power 12, Research Professor and Professor Emeritus, Department of Economics, University of Montana; Principal, Power Consulting; February 2012, “The Greenhouse Gas Impact of Exporting Coal from the West Coast: An Economic Analysis,” <http://www.sightline.org/wp-content/uploads/downloads/2012/02/Coal-Power-White-Paper.pdf>

The cumulative impact of these coal port proposals on coal consumption in Asia could be much larger than even that implied by the two pending proposals. If Arch, Peabody, and other western U.S. coal producers’ projections of the competitiveness of western coal in Asia are correct, facilitating the opening of the development of West Coast coal ports could have a very large impact on the supply of coal to China and the rest of Asia.

6.4 The Long-term Implications of Fueling Additional Coal-Fired Electric Generation

Although the economic life of coal-fired generators is often given as 30 or 35 years, a permitted, operating, electric generator is kept on line a lot longer than that, as long as 50 or more years through ongoing renovations and upgrades. Because of that long operating life, the impact of the lower Asian coal prices and costs triggered by PRB coal competing with other coal sources cannot be measured by the number of tons of coal exported each year. Those lower coal costs will lead to commitments to more coal being burned for a half-century going forward.

That time-frame is very important. During exactly this time frame, the next half-century, the nations of the world will have to get their greenhouse gas emission stabilized and then reduced or the concentrations of greenhouse gases in the atmosphere may pass a point that will make it very difficult to avoid massive, ongoing, negative climate impacts. Taking actions now that encourage fifty-years of more coal consumption around the world is not a minor matter. Put more positively, allowing coal prices to rise (and more closely approximate their full cost, including “external” costs) will encourage extensive investments in improving the efficiency with which coal is used and the shift to cleaner sources of energy. This will lead to long-term reductions in greenhouse gas emissions that will also last well into the next half-century. 57

#### Extinction

Flournoy 12 – Citing Feng Hsu, PhdD NASA Scientist @ the Goddard Space Flight Center, Don FLournoy, PhD and MA from UT, former Dean of the University College @ Ohio University, former Associate Dean at SUNY and Case Institute of Technology, Former Manager for Unviersity/Industry Experiments for the NASA ACTS Satellite, currently Professor of Telecommunications @ Scripps College of Communications, Ohio University, “Solar Power Satellites,” January 2012, Springer Briefs in Space Development, p. 10-11

In the Online Journal of Space Communication , Dr. Feng Hsu, a  NASA scientist at Goddard Space Flight Center, a research center in the forefront of science of space and Earth, writes, “The evidence of global warming is alarming,” noting the potential for a catastrophic planetary climate change is real and troubling (Hsu 2010 ) . Hsu and his NASA colleagues were engaged in monitoring and analyzing climate changes on a global scale, through which they received first-hand scientific information and data relating to global warming issues, including the dynamics of polar ice cap melting. After discussing this research with colleagues who were world experts on the subject, he wrote: I now have no doubt global temperatures are rising, and that global warming is a serious problem confronting all of humanity. No matter whether these trends are due to human interference or to the cosmic cycling of our solar system, there are two basic facts that are crystal clear: (a) there is overwhelming scientific evidence showing positive correlations between the level of CO2 concentrations in Earth’s atmosphere with respect to the historical fluctuations of global temperature changes; and (b) the overwhelming majority of the world’s scientific community is in agreement about the risks of a potential catastrophic global climate change. That is, if we humans continue to ignore this problem and do nothing, if we continue dumping huge quantities of greenhouse gases into Earth’s biosphere, humanity will be at dire risk (Hsu 2010 ) . As a technology risk assessment expert, Hsu says he can show with some confidence that the planet will face more risk doing nothing to curb its fossil-based energy addictions than it will in making a fundamental shift in its energy supply. “This,” he writes, “is because the risks of a catastrophic anthropogenic climate change can be potentially the extinction of human species, a risk that is simply too high for us to take any chances” (Hsu 2010 )

#### Chinese emissions are sufficient to cause extinction

John Copeland Nagle 11, the John N. Matthews Professor, Notre Dame Law School, Spring 2011, “How Much Should China Pollute?,” Vermont Journal of Environmental Law, 12 Vt. J. Envtl. L. 591

Third, the rest of the world suffers because of the inability of China and the United States to agree on a method for reducing their greenhouse gas emissions. Even if the rest of the world were to reach such an agreement, the failure to include China and the United States would doom the project from the start. Together, China and the United States account for forty-one percent of the world's greenhouse gas emissions. [FN19] Left unchecked, China's emissions alone could result in many of the harms associated with climate change. [FN20] That is why many observers believe that “[t]he decisions taken in Beijing, more than anywhere else, [will] determine whether humanity thrive[s] or perishe[s].”

## 1NR

### AT: DOE Grants

#### DOE SMR grants haven’t been appropriated by Congress yet

Jeffrey Tomich 12, energy and environment reporter for the St. Louis Post-Dispatch, 4/25/12, “Small nuclear reactors generate hype, questions about cost,” http://www.stltoday.com/business/local/small-nuclear-reactors-generate-hype-questions-about-cost/article\_39757dba-8e5c-11e1-9883-001a4bcf6878.html#ixzz1tTlcQ1Jt

The Obama administration, which is pushing for development of low-carbon energy technologies, sees potential, too. And the president wants the United States to take the lead in developing the industry.

Last month, Obama proposed $452 million to help speed up development of small modular reactors. The funding availability would come on top of $8 billion in loan guarantees for the Vogtle twin-reactor nuclear project in Georgia.

The federal funding, which has yet to be appropriated by Congress, would support engineering, design certification and licensing of up to two plant designs that have the potential to be licensed and in commercial operation in a decade.

#### Recipients haven’t even been announced

SLPD 11-2 – St. Louis Post-Dispatch, 11/2/12, “Ameren, Westinghouse still waiting for decision on nuclear grant,” http://www.stltoday.com/business/local/ameren-westinghouse-still-waiting-for-decision-on-nuclear-grant/article\_1b46d35b-eda4-5c15-9b08-b0ed80caf2bf.html

The whole plan hinged on getting at least a share of a $452 million federal grant to advance commercialization of next-generation nuclear technology.

Today, a month after the Department of Energy was supposed to announce who would share the federal money, Ameren and Westinghouse are still waiting. And with the presidential election just days away, heightened scrutiny of energy technology subsidies, a growing budget deficit and a potential change in administrations are looming.

An Energy Department spokeswoman said applications are still under review. She didn’t say when a decision would be made.

### AT: Nuclear Too Expensive

#### SMRs only displace coal generation---they can’t compete with cheap natural gas

SLPD 11-2 – St. Louis Post-Dispatch, 11/2/12, “Ameren, Westinghouse still waiting for decision on nuclear grant,” http://www.stltoday.com/business/local/ameren-westinghouse-still-waiting-for-decision-on-nuclear-grant/article\_1b46d35b-eda4-5c15-9b08-b0ed80caf2bf.html

Perhaps a bigger question is whether small-scale nuclear can compete economically, particularly in a world of relatively inexpensive natural gas.

While Westinghouse executives say it’s still early to say exactly what the 225 megawatt reactors will cost, they expect them to run about $1 billion. That’s competitive on a dollars per kilowatt-hour basis with larger nuclear plants. But it would be tough to justify today, given that natural gas prices are below $4 per thousand cubic feet.

“As gas prices go up and get to the $6-$7 range, then this starts to look very attractive,” said John Goosen, Westinghouse’s vice president of innovation and SMR development.

Ameren says its partnership with Westinghouse doesn’t commit the utility to building a nuclear plant. Officials maintain that they want to keep the option open and shorten the potential timeline if electricity demand warrants a new power plant.

Most likely, a new reactors would be a way for a utility to replace aging coal plants and diversify away from coal, which now fuels 80 percent of the state’s electricity.

#### Magnitude of the link is huge---70 gigawatts get replaced, the timeframe is fast

Robert Rosner 11, the William E. Wrather Distinguished Service Professor in the departments of Astronomy & Astrophysics and Physics at the University of Chicago; and Stephen Goldberg, Special Assistant to the Director at Argonne National Laboratory, November 2011, “Small Modular Reactors – Key to Future Nuclear Power Generation in the U.S.,” <http://epic.uchicago.edu/sites/epic.uchicago.edu/files/uploads/SMRWhite_Paper_Dec.14.2011copy.pdf>

SMRs have the potential to replace existing coal generation that may be retired in light of pending environmental regulations. Several industry studies indicate the potential for retirements of up to 70 GW of existing coal generation plants in the U.S. These plants are old, small (i.e., less than 500 MW), and energy inefficient. They also lack the environmental controls needed to meet emerging requirements for air quality, water quality, and coal ash management. Many of these plants could be retired by 2020. Current regulatory proposals would require utilities to make planning decisions on replacement capacity in the next few years, lending further impetus to the need for a robust SMR commercialization effort. The study team plans to further investigate the potential for SMR deployment as a Clean Air Act compliance strategy in follow-up work.

### Yes Military Spillover

#### Yes commercialization

Marqusee 12 Jeffrey, Executive director at the Strategic Environmental Research and Development Program at the DOD, “Military Installations and Energy Technology Innovations”, Energy Innovation at the Department of Defense: Assessing the Opportunities, March, PDF online

Conclusion¶ DoD has been an enormous engine of innovation in America, driving the development of both defense technologies and, ultimately, very large sectors of commercial activity. In addition to its traditional focus on conventional military hardware, there is now great interest in applying those capabilities to energy innovation, an area of activity that can have enormous benefits both to the United States military and to the country as a whole. In thinking about this question, it is worth considering the two different (but complementary) models of innovation at DoD: the well-known Defense Advanced Research Projects Agency (DARPA) model, which has produced extraordinary technological breakthroughs (at great cost) that have allowed America to dominate the battlefield; and the more recent SERDP and ESTCP model, which focuses less on cost-insensitive breakthroughs and more on developing and demonstrating cost-effective technologies that can enhance the effectiveness of the overall fighting force. The SERDP and ESTCP’s test bed cost-consciousness and ability to work across the spectrum from basic to applied research and demonstration makes it uniquely effective at assisting innovative technologies across the Valley of Death and into commercial viability. While the extraordinary “leap-ahead” innovations of DARPA more easily capture the imagination, the ability of the ESTCP’s test bed program to improve the overall energy efficiency of the United States military—and the civilian economy—should not be overlooked. ESTCP offers both the military and the nation an effective approach that can leverage the large investments in energy technology developments at DOE and the private sector, and result in a real energy revolution.

#### More ev

Andres and Breetz 11 Richard B, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies, at the National Defense University and Hanna L, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

If DOD wants to ensure that its preferred reactors are developed and available in the future, it should take a leadership role now. Taking a first mover role does not necessarily mean that DOD would be “picking a winner” among small reactors, as the market will probably pursue multiple types of small reactors. Nevertheless, DOD leadership would likely have a profound effect on the industry’s timeline and trajectory.¶ Domestic Nuclear Expertise. From the perspective of larger national security issues, if DOD does not catalyze the small reactor industry, there is a risk that expertise in small reactors could become dominated by foreign companies. A 2008 Defense Intelligence Agency report warned that the United States will become totally dependent on foreign governments for future commercial nuclear power unless the military acts as the prime mover to reinvigorate this critical energy technology with small, distributed power reactors.38 Several of the most prominent small reactor concepts rely on technologies perfected at Federally funded laboratories and research programs, including the Hyperion Power Module (Los Alamos National Laboratory), NuScale (DOE-sponsored research at Oregon State University), IRIS (initiated as a DOE-sponsored project), Small and Transportable Reactor (Lawrence Livermore National Laboratory), and Small, Sealed, Transportable, Autonomous Reactor (developed by a team including the Argonne, Lawrence Livermore, and Los Alamos National Laboratories). However, there are scores of competing designs under development from over a dozen countries. If DOD does not act early to support the U.S. small reactor industry, there is a chance that the industry could be dominated by foreign companies.¶ Along with other negative consequences, the decline of the U.S. nuclear industry decreases the NRC’s influence on the technology that supplies the world’s rapidly expanding demand for nuclear energy. Unless U.S. companies begin to retake global market share, in coming decades France, China, South Korea, and Russia will dictate standards on nuclear reactor reliability, performance, and proliferation resistance.

#### Revitalizes industry fast

Andres and Loudermilk 10 Richard B, Senior Fellow at the Institute for National Strategic Studies at National Defense University and a Professor of National Security Strategy at the National War College and Micah J, researcher at the Institute for National Strategic Studies at National Defense University, "Small Reactors and the Military's Role in Securing America's Nuclear Industry", 8/23, sitrep.globalsecurity.org/articles/100823646-small-reactors-and-the-militar.htm

Faced with the dual-obstacles of growing worldwide energy demand and a renewed push for clean energy, the stage is set for a vibrant revival of the nuclear power industry in the United States. During his 2008 campaign, President Barack Obama committed to setting the country on the road to a clean, secure, and independent energy future - and nuclear power can play a vital role in that. With abundant energy resources available and near-zero emission levels, nuclear power offers a domestically-generated, clean, and long-term solution to America's energy dilemma.¶ While countries around the world are building new reactors though, the U.S. nuclear power industry has remained dormant - and even borders on extinction - as no new plants have been approved for construction in the more than three decades following the Three Mile Island accident in 1979. Although Congress and the Executive Branch have passed laws and issued proclamations over the years, little actual progress has been made in the nuclear energy realm. A number of severe obstacles face any potential entrant into the reactor market - namely the Nuclear Regulatory Commission (NRC), which lacks the budget and manpower necessary to seriously address nuclear power expansion. Additionally, public skepticism over the safety of nuclear power plants has impeded serious attempts at new plant construction. However, despite the hurdles facing private industry, the U.S. military is in a position to take a leading role in the advancement of nuclear reactor technology through the integration of small reactors on its domestic bases.¶ While the Obama Administration has pledged $8 billion in federal loan guarantees to the construction of two new reactors in Georgia and an additional $36 billion in new guarantees to the nuclear industry, this comes on top of $18.5 billion budgeted, but unspent, dollars. Despite this aid, it is still improbable that the U.S. will see any new large reactors now or in the foreseeable future as enormous cost, licensing, construction, and regulatory hurdles must be overcome. In recent years though, attention in the nuclear energy sphere has turned in a new direction: small-scale reactors. These next-generation reactors seek to revolutionize the nuclear power industry and carry a host of benefits that both separate them from their larger cousins and provide a legitimate opportunity to successfully reinvigorate the American nuclear industry.¶ When compared to conventional reactors, small reactors have a number of advantages. First, the reactors are both small and often scalable - meaning that sites can be configured to house one to multiple units based on power needs. Although they only exist on paper and the military has yet to embrace a size or design, the companies investing in these technologies are examining a range of possibilities. Hyperion, for example, is working on a so-called "nuclear battery" - a 25 MWe sealed and transportable unit the size of a hot tub. Similarly, Babcock & Wilcox - the company which built many of the Navy's reactors - is seeking licensing for its mPower reactor, which is scalable and produces 125 MWe of power per unit. Other designs, such as Westinghouse's International Reactor Innovative and Secure (IRIS) model, have a generating capacity of up to 335 MWe.¶ Second, large reactors come with enormous price tags - often approaching $10 billion in projected costs. The costs associated with building new reactors are so astronomical that few companies can afford the capital outlay to finance them. Additionally, the risks classically associated with the construction of nuclear reactors serve as an additional deterrent to interested utilities. As a result, companies must be willing to accept significant financial risks since ventures could potentially sink them or result in credit downgrades - as evidenced by the fact that 40 of 48 utilities issuing debt to nuclear projects suffered downgrades following the accident at Three Mile Island. All of this adds up to an environment that is not conducive to the sponsorship of new reactor plants.¶ On the other hand, small reactors are able to mostly circumvent the cost hurdles facing large reactors. During the construction of large reactors, utilities face "single-shaft risk" - forced to invest and tie up billions of dollars in a single plant. However, small reactors present the opportunity for utilities to buy and add reactor capacity as needed or in a step-by-step process, as opposed to an all-or-nothing approach. Small reactors are also factory-constructed and shipped, not custom-designed projects, and can be built and installed in half the time - all of which are cost-saving measures.¶ Additionally, despite concerns from critics over the proliferation and safety risks that a cadre of small reactors would potentially pose, the reality is considerably different. On the safety side, the new designs boast a number of features - including passive safety measures and simpler designs, thus reducing the number of systems to monitor and potential for system failure, enhancing the safety of the reactors. Small reactors can often be buried underground, are frequently fully contained and sealed (complete with a supply of fuel inside), can run longer between refueling cycles, and feature on-site waste storage - all of which serve to further insulate and secure the units. Finally, due to their small size, the reactors do not require the vast water resources needed by large reactors and in the event of an emergency, are far easier to isolate, shut off, and cool down if necessary.¶ Notwithstanding all of these benefits, with a difficult regulation environment, anti-nuclear lobbying groups, and skeptical public opinion, the nuclear energy industry faces an uphill - and potentially unwinnable - battle in the quest for new reactors in the United States. Left to its own devices it is unlikely, at best, that private industry will succeed in bringing new reactors to the U.S. on its own. However, a route exists by which small reactors could potentially become a viable energy option: the U.S. military.¶ Since 1948, the U.S. Navy has deployed over 500 reactors and possesses a perfect safety record in managing them. At the same time, grave concern exists over the fact that U.S. military bases are tied to and entirely dependent upon the civilian electric grid - from which they receive 99% of their power. Recently, attention has turned to the fact that the civilian grid, in addition to accidents, is vulnerable to cyber or terrorist attacks. In the event of a deliberate attack on the United States that knocks out all or part of the electric grid, the assets housed at the affected bases would be unavailable and U.S. global military operations potentially jeopardized. The presence of small-scale nuclear reactors on U.S. military bases would enable these facilities to effectively become "islands" - insulating them from the civilian grid and even potentially deterring attacks if the opponent knows that the military network would be unaffected.¶ Unlike private industry, the military does not face the same regulatory and congressional hurdles to constructing reactors and would have an easier time in adopting them for use. By integrating small nuclear reactors as power sources for domestic U.S. military bases, three potential energy dilemmas are solved at the same time. First, by incorporating small reactors at its bases, the military addresses its own energy security quandary. The military has recently sought to "island" its bases in the U.S. -protecting them from grid outages, be they accidental or intentional. The Department of Defense has promoted this endeavor through lowering energy consumption on bases and searching for renewable power alternatives, but these measures alone will prove insufficient. Small reactors provide sufficient energy output to power military installations and in some cases surrounding civilian population centers.¶ Secondly, as the reactors become integrated on military facilities, the stigma on the nuclear power industry will ease and inroads will be created for the adoption of small-scale reactors as a viable source of energy. Private industry and the public will see that nuclear reactors can indeed be utilized safely and effectively, resulting in a renewed push toward the expansion of nuclear power. Although many of the same hurdles will still be in place, a shift in public opinion and a stronger effort by utilities, coupled with the demonstrated success of small reactors on military bases, could prove the catalysts necessary for the federal government and the NRC to take more aggressive action.¶ Finally, while new reactors are not likely in the near future, the military's actions will preserve, for a while longer, the badly ailing domestic nuclear energy industry. Nuclear power is here to stay around the globe, and the United States has an opportunity to take a leading role in supplying the world's nuclear energy and reactor technology. With the U.S. nuclear industry dormant for three decades, much of the attention, technology, and talent have concentrated overseas in countries with a strong interest in nuclear technology. Without the United States as a player in the nuclear energy market, it has little say over safety regulations of reactors or the potential risks of proliferation from the expansion of nuclear energy. If the current trend continues, the U.S. will reach a point where it is forced to import nuclear technology and reactors from other countries. Action by the military to install reactors on domestic bases will both guarantee the survival of the American nuclear industry in the short term, and work to solidify support for it in the long run.¶ Ultimately, between small-scale nuclear reactors and the U.S. military, the capability exists to revitalize America's sleeping nuclear industry and promoting energy security and clean energy production. The reactors offer the ability to power domestic military bases, small towns, and other remote locations detached from the energy grid. Furthermore, reactor sites can house multiple units, allowing for greater energy production - rivaling even large reactors. Small reactors offer numerous benefits to the United States and a path initiated by the military presents a realistic route by which their adoption can be achieved.

### U.S. Domestic Coal Up---2NC

#### Uniqueness is goldilocks---U.S. coal demand will grow slowly now---but declines cause a shift to production for export markets

Anthony Fensom 10-23, experienced business writer and communication consultant with more than a decade's experience in the financial and media industries of Australia and Asia, 10/23/12, “Don’t Write the Obituary Just Yet: ‘King Coal’ Still Reigns,” The Diplomat, http://thediplomat.com/pacific-money/2012/10/23/despite-short-term-pain-king-coal-still-reigns/

Yet despite softer demand, strong production rates in Australia, Indonesia and the United States along with the emerging coal producer of Mongolia have lifted supply. Broker UBS expects top-grade thermal coal prices to drop from U.S.$105-110 per ton in 2012 to US$90 per ton in 2015/16, with coking coal prices also to decline.

As the world’s largest exporter of coking coal and second-largest exporter of thermal coal, Australia’s industry has suffered disproportionately from the slowdown, with low prices and high costs sparking a wave of layoffs.

Among recent retrenchments, Xstrata Coal has cut 600 jobs, Ensham 350 and BHP Billiton Mitsubishi Alliance (BMA) 300, with a number of coal projects either wound back or deferred.

Queensland’s coal industry has also been hit with increased royalties from a cash-strapped state government, prompting warnings by the Queensland Resources Council that more industry cost-cutting was likely.

Coal reporter Lou Caruana, editor of International Longwall News, told The Diplomat that additional cutbacks might be in the pipeline should prices fall further.

“Mining companies have been crunching the numbers on their operations, taking into account the lower coal prices and rising costs such as labor, transport and new government charges.

"Margins are being squeezed so mine management teams are taking a worst case scenario. If there were to be further softening of prices then you would expect further cutbacks in the future,” he said.

According to Caruana, the fall in prices was attributed to both slowing growth in the eurozone and China, along with the entry of the United States and Indonesia into the coal export market.

“U.S. coal producers have sought out export markets such as China and India because their domestic market has slowed down and it has been switching to gas for power generation. Indonesia has ramped up coal production and exports of thermal coal to supply the Chinese market over the last few years,” he said.

While demand in the region having lagged due to “sub-optimal” growth, new supply was still preparing to enter the market.

“For example, in Queensland there are major new projects slated for the Surat and Galilee basins, and in New South Wales [state] the Gunnedah basin. Added to this are the new coal mining developments in Mongolia,” he said.

While Chinese officials are now forecasting a recovery, Caruana said a rebound in prices would also require a significant pick up in the U.S. economy or the eurozone.

“Once the global economic outlook stabilizes, there will be growing demand for coal as a safe and affordable power source for newly emerging economies,” he said.

Despite environmental concerns, coal still accounts for 40 percent of global electricity needs and absolute consumption is expected to double over the next two decades due to demand from industrializing nations such as China and India.

“For all the talk about natural gas and renewables, coal unquestionably won the energy race in the first decade of the 21st century,” reported the International Energy Association (IEA).

Should such growth continue, reports of the death of “King Coal” appear to have been greatly exaggerated, at least for now.

#### No U.S. coal exports now---but they’d have a massive impact on Asian coal consumption if they increased

Thomas M. Power 12, Research Professor and Professor Emeritus, Department of Economics, University of Montana; Principal, Power Consulting; February 2012, “The Greenhouse Gas Impact of Exporting Coal from the West Coast: An Economic Analysis,” <http://www.sightline.org/wp-content/uploads/downloads/2012/02/Coal-Power-White-Paper.pdf>

In evaluating the impact of coal exports on Asian coal consumption, the region will not only be considering the two pending coal export plans—there are very likely to be others. In Oregon, Ambre Energy, through its subsidiary Coyote Island Terminal LLC, has entered into a one year lease option agreement with the Port of Morrow for potential coal handling. 56 Other Wyoming and Montana coal mines are exploring coal exports Oregon, Washington and British Columbia. Two Washington ports that have been approached by coal exporters, Tacoma and Kalama, have decided, for now, not to open their ports to coal exports. To the extent that Washington ports begin competing with each other for coal exports, Tacoma and Kalama may reconsider. There is also evidence that other ports and counties are actively negotiating with coal exporters, including St. Helens, OR, Coos Bay, OR, and Everett, WA.

The cumulative impact of these coal port proposals on coal consumption in Asia could be much larger than even that implied by the two pending proposals. If Arch, Peabody, and other western U.S. coal producers’ projections of the competitiveness of western coal in Asia are correct, facilitating the opening of the development of West Coast coal ports could have a very large impact on the supply of coal to China and the rest of Asia.

#### Coal export capacity’s low---they’re less than 10% of U.S. production

Jon Sharp 8-31, investor in natural resource, energy, diversified blue chip stocks, and bonds (not the debate coach), August 31, 2012, “New EPA Regulations Not Driving Coal Demand,” Seeking Alpha, online: http://seekingalpha.com/article/839701-new-epa-regulations-not-driving-coal-demand

Other articles have mentioned exports as a possible bullish driver for coal stocks going forward. There is a question, though, about port capacity: a project of Ambre Energy Ltd, a tightly-held Australian mining company that is making a foray into coal mining and infrastructure in the US, may be instructive.

In 2010 and 2011 Ambre Energy began leasing and developing port infrastructure to handle the export of thermal coal (among other purposes). It was slow going -- apparently for air permit and environmental reasons as described on their website. It is difficult to reconcile these projects with the claim that coal export capacity is abundant -- if it is indeed abundant, then these ongoing port investments seem very silly.

Additionally, coal exports account for less than 10% of domestic production (domestic production was over 1 billion short tons of coal in 2010), so to make a difference exports must produce very high margins. But cited mine closures abroad appear to be a reaction to falling prices. The thesis of exports as a driver for coal stocks in the near term depends on rapid growth in Asia, a prompt resolution of the Euro crisis, and a rapid increase in port coal export capacity: an unlikely combination.

#### Gas prices are rising which will cause switching back to coal from gas generation---domestic demand will spike next year

David Wagman 11-1, Power Magazine, 11/1/12, “Coal Burn Rebounds in the Third Quarter, but Economics Still Favor Natural Gas,” http://www.powermag.com/POWERnews/Coal-Burn-Rebounds-in-the-Third-Quarter-but-Economics-Still-Favor-Natural-Gas\_5091.html

Natural gas–fired generation gave up some ground to coal during the third quarter, and coal producers are optimistic that higher natural gas prices will benefit coal, especially coal sourced from the Powder River Basin in Wyoming. Even so, at least one Midwest utility expects natural gas to power what could be as much as 1,500 MW of new generating capacity it may add over the next several years.

“Overall, our generation from natural gas has increased approximately 50% year-to-date,” said Brian X. Tierney, CFO of American Electric Power (AEP) during the company’s third-quarter earnings conference call last week. With the addition of the Dresden gas-fired facility to AEP’s existing Waterford and Lawrenceburg plants, the utility’s combined cycle generation in the East was up 114% for the quarter and 160% for the year-to-date period.

Tierney said that with year-to-date capacity factors for those plants approaching 70% and with the recent increases in forward natural gas prices, the ability for more coal-to-gas switching within the company’s eastern fleet is minimal. “Because of the hot weather, our coal units were in more in the third quarter than in the second quarter,” Tierney said. AEP’s coal inventory fell from 48 days at the end of the second quarter to 45 days at the end of the third quarter. The utility’s target is 35 to 40 days.

Greg Boyce, CEO of Peabody Energy, a major coal producer, told an earnings conference call that his company continues to expect a decline of approximately 120 million tons in coal use for power generation this year. “The worst of this impact has already occurred, with the U.S. down some 100 million tons, mostly from coal-to-gas switching that was front-loaded in the first half of the year,” he said.

Boyce said that since last spring, natural gas prices have shown “robust” price increases. Weekly gas storage injections remain below average, and prompt gas prices are above $3.50 per million Btu, with the forward strip above $4. He called those factors “favorable” for demand for Powder River Basin and Illinois Basin coal.

Boyce said Powder River Basin plants are at 70 to 80 days’ burn, with Central Appalachia above 120 days. Peabody projects an increase in domestic coal consumption of some 40 million to 60 million tons in 2013, which Boyce said would help rebalance stockpiles to more normal levels.

John Eaves, president and CEO of Arch Coal, told his company’s earnings conference call that 2011 heating degree days were nearly 25% below normal, which “dramatically impacted” coal and gas demand. He said a near-normal winter this year could lead to a “sizable step down in coal stockpiles” and “meaningful gas-to-coal switching.” The St. Louis–based company remains cautious, however, and is taking steps to manage through a “potentially challenging” 2013, he said.

### Warming – AT: No Impact

#### Warming is real, anthropogenic and causes extinction---the tipping point’s 500 ppm

Hansen 12 James, directs the NASA Goddard Institute for Space Studies, "Game Over for the Climate", New York Times, May 9, www.nytimes.com/2012/05/10/opinion/game-over-for-the-climate.html?\_r=2

GLOBAL warming isn’t a prediction. It is happening. That is why I was so troubled to read a recent interview with President Obama in Rolling Stone in which he said that Canada would exploit the oil in its vast tar sands reserves “regardless of what we do.”¶ If Canada proceeds, and we do nothing, it will be game over for the climate.¶ Canada’s tar sands, deposits of sand saturated with bitumen, contain twice the amount of carbon dioxide emitted by global oil use in our entire history. If we were to fully exploit this new oil source, and continue to burn our conventional oil, gas and coal supplies, concentrations of carbon dioxide in the atmosphere eventually would reach levels higher than in the Pliocene era, more than 2.5 million years ago, when sea level was at least 50 feet higher than it is now. That level of heat-trapping gases would assure that the disintegration of the ice sheets would accelerate out of control. Sea levels would rise and destroy coastal cities. Global temperatures would become intolerable. Twenty to 50 percent of the planet’s species would be driven to extinction. Civilization would be at risk.¶ That is the long-term outlook. But near-term, things will be bad enough. Over the next several decades, the Western United States and the semi-arid region from North Dakota to Texas will develop semi-permanent drought, with rain, when it does come, occurring in extreme events with heavy flooding. Economic losses would be incalculable. More and more of the Midwest would be a dust bowl. California’s Central Valley could no longer be irrigated. Food prices would rise to unprecedented levels.¶ If this sounds apocalyptic, it is. This is why we need to reduce emissions dramatically. President Obama has the power not only to deny tar sands oil additional access to Gulf Coast refining, which Canada desires in part for export markets, but also to encourage economic incentives to leave tar sands and other dirty fuels in the ground.¶ The global warming signal is now louder than the noise of random weather, as I predicted would happen by now in the journal Science in 1981. Extremely hot summers have increased noticeably. We can say with high confidence that the recent heat waves in Texas and Russia, and the one in Europe in 2003, which killed tens of thousands, were not natural events — they were caused by human-induced climate change.¶ We have known since the 1800s that carbon dioxide traps heat in the atmosphere. The right amount keeps the climate conducive to human life. But add too much, as we are doing now, and temperatures will inevitably rise too high. This is not the result of natural variability, as some argue. The earth is currently in the part of its long-term orbit cycle where temperatures would normally be cooling. But they are rising — and it’s because we are forcing them higher with fossil fuel emissions.¶ The concentration of carbon dioxide in the atmosphere has risen from 280 parts per million to 393 p.p.m. over the last 150 years. The tar sands contain enough carbon — 240 gigatons — to add 120 p.p.m. Tar shale, a close cousin of tar sands found mainly in the United States, contains at least an additional 300 gigatons of carbon. If we turn to these dirtiest of fuels, instead of finding ways to phase out our addiction to fossil fuels, there is no hope of keeping carbon concentrations below 500 p.p.m. — a level that would, as earth’s history shows, leave our children a climate system that is out of their control.

#### Even 1% risk justifies action - the consequences are too big

Podesta and Ogden 7 – \*President of the Center for American Progress and \*\* Senior National Security Analyst at the Center for American Progress (John and Peter, The Security Implications of Climate Change, The Washington Quarterly 31.1, Winter 2007)

Consequently, even though the IPCC projects that temperature increases at higher latitudes will be approximately twice the global average, it will be the developing nations in the earth's low latitudinal bands, as well as sub-Saharan African countries, that will be most adversely affected by climate change. In the developing world, even a relatively small climatic shift can trigger or exacerbate food shortages, water scarcity, destructive weather events, the spread of disease, human migration, and natural resource competition. These crises are all the more dangerous because they are interwoven and self-perpetuating: water shortages can lead to food shortages, which can lead to conflict over remaining resources, which can drive human migration, which can create new food shortages in new regions. Once underway, this chain reaction becomes increasingly difficult to stop. It is therefore critical that policymakers do all they can to prevent the domino of the first major climate change consequence, whether it be food scarcity or the outbreak of disease, from toppling. The most threatening first dominos, where they are situated, and their cascading geopolitical implications are identified in this essay.

### Clean Tech Leadership Impact

#### U.S. coal exports destroy Chinese renewable energy development and energy efficiency

Brad Plumer 12, Washington Post Reporter on Energy and Environment Issues, May 1, 2012, “How the U.S. could influence China’s coal habits — with exports,” online: http://www.washingtonpost.com/blogs/ezra-klein/post/can-the-united-states-influence-chinas-coal-habits/2012/05/01/gIQAgqUpuT\_blog.html

So here’s a question: Would blocking these export terminals have any impact on the staggering growth in coal use in places such as China? Actually, yes: There’s some evidence that it could matter a fair bit at the margins.¶ At first glance, it may look like the United States couldn’t possibly have much sway over China’s coal-hungry habits. China, after all, has plenty of its own coal, boasting the second-largest reserves in the world. In 2010, the country imported less than 5 percent of the coal it used from overseas. And the United States makes up a tiny sliver of this market — because of how Chinese ports and rail networks are set up, China still gets most of its imported coal from Indonesia and Australia:¶ Still, as a recent and fascinating report (pdf) from the Carnegie Endowment explains, Chinese coal imports are likely to grow enormously in the coming years. For one, Chinese coal use has been growing at a rate of nearly 6 percent each year. And China’s domestic production can’t keep pace, thanks to railroad and shipping bottlenecks from mining centers in Shanxi, Shaanxi and Inner Mongolia provinces.¶ What’s more, the Carnegie report notes, the Chinese government is becoming increasingly sensitive to the ecological damage wrought by domestic coal mining — as well as to the growing number of protests over unsafe mining conditions. According to official statistics, 6,027 Chinese miners died in 2004, though the real number is probably higher. There are real costs to ramping up production in China.¶ As a result, China will likely try to import a growing share of its coal in the coming years. Much of that will likely come from Indonesia and Australia, since China’s import infrastructure is geared toward those two regions. But many analysts expect the United States to play an increasingly crucial role in coming years. (To date, the U.S. has been supplying China with just small amounts of coking coal, which is used for iron and steel production and which is less readily available in China.)¶ And if American coal starts pouring into China, that will help keep prices down. If that happens, Chinese power plants and factories will burn even more coal and use the stuff less efficiently than they otherwise would. Grist’s David Roberts points to a recent paper (pdf) by Thomas M. Power, a former economics professor at the University of Montana, finding that Chinese coal habits are highly sensitive to prices:¶ Opening the Asian import market to dramatic increases in U.S. coal will drive down coal prices in that market. Several empirical studies of energy in China have demonstrated that coal consumption is highly sensitive to cost. One recent study found that a 10 percent reduction in coal cost would result in a 12 percent increase in coal consumption. Another found that over half of the gain in China’s “energy intensity” improvement during the 1990s was a response to prices. In other words, coal exports will mean cheaper coal in Asia, and cheaper coal means more coal will be burned than would otherwise be the case¶ To some extent, U.S. exports are already having an impact. Coal prices in Asia hit a 16-month low recently, thanks to an overflow of coal from the United States and Colombia. And the Pacific Northwest hasn’t even seriously ramped up its exports yet. (India is another possible market for U.S. producers: As the New York Times recently reported, Indian power companies have been trying to import coal from abroad rather than deal with India’s dysfunctional mining industry, but they’ve been deterred in the past by high prices.)¶ Now, the global coal markets are complex and it’s still not clear exactly how important U.S. coal will prove to be for countries like India or China. As Michael Levi of the Council on Foreign Relations points out, a lot depends on whether U.S. coal augments or displaces production from countries like Indonesia.¶ Still, at the margins, supply and demand matters. The point of Thomas Power’s paper is that a deluge of coal from the United States will, in the end, cause Asia to use more coal. Countries like China will have less incentive to develop alternative energy sources or become more efficient. And that, in turn, will mean more heat-trapping greenhouse gases in the atmosphere than there otherwise would be. To put this in perspective, 150 million tons of coal produces about as much carbon dioxide as 60 million cars.

#### Transition from coal to renewables is key to China’s overall clean tech leadership

The Guardian 8 – “China pays high environmental and social price for reliance on coal,” 10/27/8, http://www.guardian.co.uk/environment/2008/oct/27/carbonemissions-energy

"To ensure its energy security, environmental protection and healthy economic and societal development, China must reduce its reliance on coal."

The report catalogues the effects of the industry across a wide range of areas. According to official figures, coal is responsible for 70% of soot, 85% of sulphur dioxide, 67% of nitrogen oxides and 80% of carbon dioxide emitted in the country — leading to respiratory diseases and contributes to global warming.

Thousands die annually in the country's mines, despite a safety drive in recent years. Wastewater and solid residue damage water systems and agricultural land.

Land subsidence caused by mining damages road, railway lines and power lines and results in the relocation of 2,000 people for every 10m tonnes of coal produced.

Each tonne of coal consumed in 2007 cost China an extra 150yuan in environmental damage, the study shows.

The authors — from well-regarded research institutes in China — show how the government could ensure those costs are internalised, suggesting the price of coal would rise by 23%.

They accept that would reduce GDP by 0.07%, but argue it would increase China's long-term international competitiveness and increase social wealth by 940bn yuan.

"Environmental and social damages are underestimated while using coal in China, as a result of market failures and weakness in government regulations," said economist Mao Yushi, lead author of the report.

The report suggests that imposing environmental taxes, improving compensation schemes and other restructuring the coal industry could all slash coal use.

"Recognising the true cost of coal would create incentives to developing cleaner, sustainable energy sources. The government should introduce an effective price signal for coal, which would ensure a massive improvement in energy efficiency and large-scale implementation of renewable energy.

"This would reduce China's environmental pollution and show its leadership in fighting climate change," urged Yang Ailun, climate and energy campaign manager of Greenpeace China.

#### Chinese clean tech leadership is key to their economy, internal stability, and solves extinction

Paul Denlinger 10, consultant specializing in the China market who is based in Hong Kong, 7/20/10, “Why China Has To Dominate Green Tech,” http://www.forbes.com/sites/china/2010/07/20/why-china-has-to-dominate-green-tech/

On the policy level, the Chinese government has to perform a delicate balancing act, it has to balance the desire of many Chinese to live a Western lifestyle, together with its high energy consumption and waste, with the need to preserve the environment, since China, and the world, would suffer enormous damage if 1.3 billion people got all their energy needs from coal and oil, the two most widely used fossil fuels. China’s political and social stability depends on finding the right balance, since the party has an implicit mandate: it will deliver economic growth to the Chinese people.

This is why the Chinese government has chosen to invest in developing new green energy technology.

The country is very fortunate in that most of the discovered deposits of rare earths used in the development of new technologies are found in China. While these deposits are very valuable, up until recently, the industry has not been regulated much by the Chinese central government. But now that Beijing is aware of their importance and value, it has come under much closer scrutiny. For one, Beijing wants to consolidate the industry and lower energy waste and environmental damage. (Ironically, the rare earth mining business is one of the most energy-wasteful and highly polluting industries around. Think Chinese coal mining with acid.)

At the same time, Beijing wants to cut back rare earth exports to the rest of the world, instead encouraging domestic production into wind and solar products for export around the world. With patents on the new technology used in manufacturing, China would control the intellectual property and licensing on the products that would be used all over the world. If Beijing is able to do this, it would control the next generation of energy products used by the world for the next century.

That is the plan. It would be like if the oil-producing nations in the 1920s and 1930s said that they didn’t need Western oil exploration firms and refineries to distribute oil products; they would do all the processing themselves, and the Western countries would just order the finished oil products from them. This is how China obviously plans to keep most of the value-added profits within China’s borders.

Before any Western readers snap into “evil Chinese conspiracy to take over the world” mode, it’s worth pointing out that Chinese rare earth experts and government officials have repeatedly warned Western visitors that this policy change would be introduced. Unfortunately, these warnings have gone largely unheeded and ignored by the Western media and politicians who, it seems, have been largely preoccupied by multiple financial crises and what to do about the West’s debt load.

The debt crisis in the West means that it is very hard for Western green energy companies to find financing for their technologies, then to market them as finished products. New energy technologies are highly risky, and initial investments are by no means guaranteed. Because they are considered high-risk and require high capital expenditure (unlike Internet technologies which are very cheap and practically commoditized), banks are reluctant to finance them unless they are able to find government-secured financing. Because most U.S. banks are recapitalizing their businesses after the debt bubble burst, there are very few, if any western banks who will finance new green energy technologies.

This has opened a window of opportunity for the Chinese government to finance, and for Chinese technology companies to develop, then manufacture these new green products. But just making these technologies is not enough; they need to be competitive against traditional fossil fuels. When it comes to the amount of energy released when coal or oil is burned, the new green technologies are still way behind. This means that, at least in the early stages of adoption, Chinese businesses will still be reliant on coal and oil to bridge that energy chasm before the new energy technologies become economically competitive. Much depends on how much the Chinese government is willing to spend to promote and incentivize these new technologies, first in China, then overseas.

Because of China’s growing energy demands, we are in a race for survival. The 21st century will be remembered as the resurgent coal and oil century, or as the century humanity transitioned to green technologies for energy consumption. While China is investing heavily now in green tech, it is still consuming ever larger amounts of coal and oil to drive its economic growth. Right now, we all depend on China’s success to make the transition to green energy this century.

For all practical purposes, we’re all in the same boat.

## 2NR

### Commerciailization

#### Empirically proven

Hayward et al 10 Steven F, Resident Scholar AEI, Mark Muro, Senior Fellow at Metropolitan Policy Program at Brookings, Ted Nordhaus and Michael Shellenberger, Cofounders Breakthrough Institute, October, "HOW A LIMITED AND DIRECT APPROACH TO ENERGY INNOVATION CAN DELIVER CLEAN, CHEAP ENERGY, ECONOMIC PRODUCTIVITY AND NATIONAL PROSPERITY", www.aei.org/files/2010/10/13/Post-Partisan-Power-Hayward-101310.pdf

The public sector, therefore, has a critical role to play in accelerating the demonstration of promising new clean energy technologies.33 Throughout America’s history, the federal government, particularly the DOD, has played a pivotal role in demonstrating high-risk technologies through direct procurement. In 1954, for example, the federal government created the modern nuclear power industry when the Atomic Energy Commission announced the Power Demonstration Reactor Program to demonstrate a first generation commercial nuclear reactor in Pennsylvania.34 Similar models must be employed today.¶ More must also be done to accelerate the early commercialization of promising energy technologies with high potential to reduce American dependence on oil, lower carbon emissions, and strengthen America’s economic competitiveness. As new technologies are deployed at scale, they routinely come down in price as they gain economies of scale, supply chain efficiencies, and market experience that further inform ongoing technology research efforts. Here, federal and military procurement efforts can also play a key role, as they have throughout the nation’s history. The DOD and NASA were central to the birth of the modern semiconductor industry, acting as an early demanding customer for microchips. Throughout the early 1960s, the federal government bought virtually every microchip that firms could produce. The price of a chip fell from $1,000 per unit to between $20 and $30 in a matter of years, spurring the birth of Silicon Valley and laying the foundation for the Information Technology Revolution decades later.35¶ Unfortunately, today’s hodgepodge of energy subsidies and deployment policies remain disconnected from research activities and provide weak incentives for innovation. Current federal tax incentives for wind and solar power, for example, are primarily focused on supporting the deployment of existing energy technologies at current prices, rather than on driving technology improvements to reduce their unsubsidized cost. Renewable portfolio standards, which require utilities to purchase a certain percentage of electricity generation from renewable sources, encourage deployment of the lowest-cost renewable energy technology available — generally wind power — while doing little to drive down the price of other, higher-cost clean energy technologies, such as solar panels, that may have the potential to become much cheaper in the long-term.¶ New federal efforts to commercialize innovative clean energy technologies should not take the form of open-ended subsidies. In contrast to current clean energy deployment policies, new “competitive deployment” efforts should be disciplined around a clear goal of reducing the costs and improving the performance of advanced energy technologies. In this way, this effort should be considered part of the technology innovation process with explicit technology improvement objectives, and it should be distinguished from the morass of existing energy subsidies.¶ Lastly, the federal government must help facilitate the transfer of new technologies from the laboratory to the marketplace, as well as strengthen linkages between government and the private sector in order to accelerate technology commercialization. Too often, it is assumed that basic research is effortlessly translated into commercial products. Unfortunately, commercialization does not happen so easily and the process is plagued by multiple barriers, including information breakdowns, institutional inertia, and coordination problems.36 The government can help remove these barriers by more closely integrating research efforts and military procurement needs, and facilitating the development of clean energy clusters—dense networks of firms, suppliers, universities, and local government officials that enhance collaboration in clean energy R&D and production activities and increase the commercialization of new technologies.37¶ With pervasive policy deficiencies and substantive technological barriers to widespread clean energy adoption, there is little wonder that the United States remains dependent on the same fossil energy sources that have powered our nation since the 19th century.

#### Procurement catalyzes innovation and commercialization of energy sources---other subsidies fail

Hayward et al 10 Steven F, Resident Scholar AEI, Mark Muro, Senior Fellow at Metropolitan Policy Program at Brookings, Ted Nordhaus and Michael Shellenberger, Cofounders Breakthrough Institute, October, "HOW A LIMITED AND DIRECT APPROACH TO ENERGY INNOVATION CAN DELIVER CLEAN, CHEAP ENERGY, ECONOMIC PRODUCTIVITY AND NATIONAL PROSPERITY", www.aei.org/files/2010/10/13/Post-Partisan-Power-Hayward-101310.pdf

The government has a long history of successfully driving innovation and price declines in emerging technologies by acting directly as a demanding customer to spur the early commercialization and large scale deployment of cutting-edge technologies. From radios and microchips to lasers and camera lenses, the federal government, in particular the DOD, has helped catalyze the improvement of countless innovative technologies and supported the emergence of vibrant American industries in the process.67 Yet today’s mess of open-ended energy subsidies reward production of more of the same product, not innovation. The federal government showers subsidies across many energy options, from oil and coal to ethanol and wind power. None of these efforts, however, are designed or optimized to drive and reward innovation and ensure the prices of these technologies fall over time, making the subsidies effectively permanent. This must change.

### Warming Impact

# Microgrids CP

### 1NC

#### The United States Federal Government should substantially increase investment in smart microgrid technology for its military bases in the United States via a diverse portfolio tailored to individual installation circumstances, including non-nuclear renewable energies for on-site generation, increased backup generation capacity, improvements in energy efficiency and energy storage, intelligent local energy management, and accelerated implementation of the SPIDERS project.

#### Smart microgrids solve DOD grid vulnerability---the combination of the CP’s mechanisms resolves the problems with each individual component

SERDP 12 – the Strategic Environmental Research and Development Program, DoD’s environmental science and technology program, executed in partnership with DOE and EPA, 7/10/12, “DoD Study Finds Microgrids Offer Improved Energy Security for DoD Installations,” http://www.serdp.org/News-and-Events/News-Announcements/Program-News/DoD-study-finds-microgrids-offer-improved-energy-security-for-DoD-installations

Advanced microgrids offer a cost-effective solution to military installations' growing vulnerability to the fragile electric grid, according to a study released today by DoD’s Office of Installations and Environment. The study performed by MIT Lincoln Laboratory looked at different microgrid architectures and characteristics and compared their relative cost-effectiveness. The report provides insight into increasing energy security and reducing energy costs through the incorporation of renewable energy resources into microgrids, as well as new market opportunities for DoD in the area of demand response and ancillary services.

The study highlights the extent of ongoing microgrid work across DoD. It identified 44 installations that either had existing microgrids, planned installation of microgrids, or conducted microgrid studies or demonstrations at their facilities. The authors interviewed more than 75 people from the military Services, the Office of the Secretary of Defense, and the Department of Energy. The analysis categorized the ongoing microgrid efforts based on several key attributes including size, maturity, the inclusion of renewable resources, and the ability to operate in a grid-tied manner.

The analysis confirms the value of microgrids to DoD. The combination of on-site energy generation and storage, together with the microgrid’s ability to manage local energy supply and demand, allow installations to shed non-essential loads and maintain mission-critical loads if the electric grid is disrupted.

The report illustrates the largely untapped potential of moving to smarter, next generation microgrids that would accommodate far greater penetration of renewable energy sources, as well as tighter integration with the electrical grid. If solar resources that are increasingly being installed on DoD installations were available during islanded operation of a microgrid, they could significantly extend the islanding time. Moreover, a microgrid that could operate when tied to the grid would offer new opportunities for the DoD to generate cost savings by using backup generation assets during normal operation and generate financial revenue by using advanced ancillary services.

One important finding is that there will be no “one size fits all” solution. The location of a military installation influences the options available for energy generation sources, the options available for interaction with the local utility, the characteristics of the local electricity market, and the regulatory environment. The most effective microgrids will be those that take into account the needs of the local commercial electric grid and are configured so that they can earn value helping to meet those needs.

#### SPIDERS will produce effective renewable-based microgrids that guarantee communications and control survive grid outages

Robert K. Ackerman 12, SIGNAL Magazine, February 2012, “Military Energy Enters SPIDERS Web,” http://www.afcea.org/content/?q=node/2877

No man may be an island, but each U.S. military base may become an energy island if a joint project among the Department of Energy, the Department of Homeland Security and the Defense Department comes to fruition. The effort aims to develop a microgrid that would supply a base with internal power independent of any external source that might fail as a result of enemy action.

Network security would be a key element of this energy microgrid. Facing the possibility of a cyberattack on the nation’s power grid, military bases must be able to sustain internal power with a degree of immunity from the online tactics employed by cybermarauders.

This program also seeks to blend a host of conventional and alternative energy sources into a single entity that would respond seamlessly to internal base power demands. Complicating the endeavor to link these energy sources is the requirement to provide secure network control that could interoperate with the public power grid but still be immune to cyberthreats that menace the larger network.

Known as the Smart Power Infrastructure Demonstration for Energy Reliability and Security, or SPIDERS, the project is a Defense Department joint capability technology demonstration (JCTD). It already is underway at Joint Base Pearl Harbor-Hickam, Oahu, Hawaii, and later phases will evaluate progressively sophisticated systems at Fort Collins, Colorado, and Camp Smith, Hawaii.

Melanie Johnson, an electrical engineer with the Army Corps of Engineers Construction Engineering Research Laboratory, explains that SPIDERS is designed to develop a template for bringing microgrid technology to military installations in the United States. Its success would have implications for installations outside the United States, particularly in operational settings, she points out.

Part of the SPIDERS technical management team, Johnson explains that a key element in SPIDERS is to provide network security for the communications and control systems within that microgrid environment. That security would be vital if a base loses power because of a cyberattack on the local power grid.

What sets SPIDERS apart from other microgrid efforts is its emphasis on cybersecurity and network communications. Security is a primary SPIDERS objective, Johnson says, adding that this includes information assurance certification and implementing emerging standards from the National Institute of Standards and Technology (NIST), the North American Electric Reliability Corporation (NERC) and Department of Energy organizations.

Adding cybersecurity to the microgrid complicates the picture and requires “a little critical thinking,” Johnson observes. However, SPIDERS is not employing the traditional approach of first developing a control system and then overlaying security. Instead, security will be integrated into the system as it is developed. The result will be a comprehensive security solution that is tailored to the system, she offers.

The microgrid control system continually will monitor power quality and conditions in the regional power grid. If it detects instability or significant quality issues, it can alert monitors who would decide to disconnect the base from the external grid. The microgrid would continue to provide power to critical missions.

Johnson shares that planners are examining the relationship between the interface with the microgrid control system and the base’s enterprise network. Of particular interest is how that relationship would open the microgrid to vulnerabilities from outside the installation. Issues include the types of communications traffic that would be allowed in and out of the microgrid control system network.

According to its guidance, SPIDERS’ primary objectives are to protect task-critical assets from power loss due to cyberattack; integrate renewable and other distributed generational electricity to power task-critical assets in times of emergency; sustain critical operations during prolonged power outages; and manage installation electrical power consumption to reduce petroleum demand and carbon footprint.

SPIDERS will exploit existing energy assets such as solar arrays, wind generators and other renewable technologies as well as diesel generators to provide electricity more efficiently than if backup diesel generators alone were used. Renewable energy generators remain online constantly, providing electricity from alternate sources during opportune conditions such as windy or sunny days. Johnson points out, however, that most renewable energy resources trip offline when the main grid crashes. The microgrid allows the renewable power to stay online while maintaining necessary safety measures.

The program might tweak the bases’ energy sources by upgrading a legacy generator that lacks the necessary capacity, for example. Otherwise, it will focus on existing assets. Johnson emphasizes that SPIDERS will be energy-source agnostic.

### AT Perm do Both

#### Text amendment:

#### The United States Federal Government should substantially increase investment in smart microgrid technology for its military bases in the United States

#### *not supplied by small modular nuclear reactors*

#### via a diverse portfolio tailored to individual installation circumstances, including non-nuclear renewable energies for on-site generation, increased backup generation capacity, improvements in energy efficiency and energy storage, intelligent local energy management, and accelerated implementation of the SPIDERS project.

#### obtain electricity”---the word “obtain” is defined as receiving the transfer of property or securing the actual performance of a service

NRS 9 – Nevada Revised Statutes, 2009, CHAPTER 205 - CRIMES AGAINST PROPERTY, http://www.leg.state.nv.us/NRS/NRS-205.html

NRS 205.0827 “Obtain” defined. “Obtain” means to bring about or receive the transfer of any interest in property, or to secure performance of a service. (Added to NRS by 1989, 1204)

#### ---no room for the CP’s actions

Andres and Breetz 11 - Richard B Andres, Professor of National Security Strategy at the National War College and a Senior Fellow and Energy and Environmental Security and Policy Chair in the Center for Strategic Research, Institute for National Strategic Studies at the National Defense University; and Hanna L Breetz, doctoral candidate in the Department of Political Science at The Massachusetts Institute of Technology, February 2011, "Small Nuclear Reactors for Military Installations: Capabilities, Costs, and Technological Implications", www.ndu.edu/press/lib/pdf/StrForum/SF-262.pdf

Unlike other alternative sources of energy, small reactors have the potential to solve DOD’s vulnerability to grid outages. Most bases have relatively light power demands when compared to civilian towns or cities. Small reactors could **easily support bases’ power demands** separate from the civilian grid during crises. In some cases, the reactors could be designed to produce enough power not only to supply the base, but also to provide critical services in surrounding towns during long-term outages.

### Solvency

#### None of their answers presume the combination of mechanisms---the full CP altogether resolves deficiencies of any single plank---that solves islanding, and DOD will remedy any failures in the system

Dr. Dorothy Robyn 12, Deputy Under Secretary of Defense for Installations and Environment, 3/27/12, Testimony before the Senate Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies, Congressional Documents & Publications, lexis

The first two elements of our facility energy strategy contribute indirectly to installation energy security; in addition, we are addressing the problem directly. A major focus of my office is smart microgrid technology. Smart microgrids and energy storage offer a more robust and cost effective approach to ensuring installation energy security than the current one--namely, back-up generators and (limited) supplies of on-site fuel. Although microgrid systems are in use today, they are relatively unsophisticated, with limited ability to integrate renewable and other distributed energy sources, little or no energy storage capability, uncontrolled load demands and "dumb" distribution that is subject to excessive losses. By contrast, we envision microgrids as local power networks that can utilize distributed energy, manage local energy supply and demand, and operate seamlessly both in parallel to the grid and in "island" mode.

Advanced microgrids are a "triple play" for DoD's installations. Such systems will reduce installation energy costs on a day-to-day basis by allowing for load balancing and demand response. They will also facilitate the incorporation of renewable and other on-site energy generation. Most important, the combination of on-site energy and storage, together with the microgrid's ability to manage local energy supply and demand, will allow an installation to shed non-essential loads and maintain mission-critical loads if the grid goes down.

The Installation Energy Test Bed, discussed below, has funded ten demonstrations of microgrid and storage technologies to evaluate the benefits and risks of alternative approaches and configurations. Demonstrations are underway at Twentynine Palms, CA; Fort Bliss, TX; Joint Base McGuire-Dix-Lakehurst, NJ; Fort Sill, OK; and several other installations.

Although microgrids will address the grid security problem over time, we are taking steps to address near-term concerns. Together with the Assistant Secretary of Defense for Homeland Defense and Americas' Security Affairs, I co-chair DoD's Electric Grid Security Executive Council (EGSEC), which works to improve the security, adequacy and reliability of electricity supplies and related infrastructure key to the continuity of critical defense missions. In addition to working across DoD, the EGSEC works with the Departments of Energy and Homeland Security. The three agencies recently created an Energy Surety Public Private Partnership (ES3P) to work with the private sector. As an initial focus, the ES3P is collaborating with four utilities in the National Capital Region to improve energy security at mission critical facilities.

#### ) U.S. bases are positioned in exactly the right locations to utilize renewables

Dr. Dorothy Robyn 10, Deputy Under Secretary of Defense for Installations and Environment, 1/27/10, Statement before the Senate Homeland Security and Governmental Affairs Committee, Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security, http://www.acq.osd.mil/ie/download/robyn\_testimony\_27jan10.pdf

With respect to fixed installations, the Department has pursued a two-part investment strategy that is designed to (1) reduce the demand for traditional energy while (2) increasing the supply of renewable energy sources. In addition to the Department’s military construction budget, financing for these investments has come from our Energy Conservation Investment Program, Energy Savings Performance Contracts and mechanisms such as Enhanced Use Leases and Power Purchase Agreements.

Efforts to curb demand—through conservation measures and improved energy efficiency—are by far the most cost-effective way to improve an installation’s energy profile. A large fraction of our energy efficiency investments go to retrofit existing buildings; typical retrofit projects install high efficiency HVAC systems, energy management control systems, new roofs and improved lighting. We are also taking advantage of new construction to incorporate more energy efficient designs, material and equipment, using LEED Silver standards as a guide. From 2005 to 2008, we reduced the energy intensity of our facilities by 11 percent through conservation and investment in energy efficiency.

On the supply side, military installations—which are large and disproportionately located in the Southwest and on our coasts—are well-situated to support solar, wind, geothermal and other forms of renewable energy. For example, Nellis Air Force Base in southern Nevada built a 14- megawatt (MW) photovoltaic solar array using a public-private partnership. More than 72,000 solar panels track the sun to generate 30 million kilowatt-hours of electricity per year— equivalent to a quarter of the total power used at the 12,000-person base. Nellis saves $1 million a year in electricity costs and avoids 24,000 tons of carbon dioxide emissions. In October, the U.S. Army Corps of Engineers signed an agreement with two private companies to develop a 500-MW solar power plant at Fort Irwin in California’s Mojave Desert. The plant will be built using an Enhanced Use Lease—a mechanism that allows the private partners to finance the estimated $1.5 billion in capital costs. The military’s interest in renewable energy is nothing new. Naval Air Weapons Center China Lake in California has been operating a 270-MW geothermal plant since 1987. The heat from 166 wells, some of them 12,000 feet deep, is sufficient to light up 180,000 homes. The Navy is helping the Army tap into geothermal resources at its Weapons Depot in Hawthorne, Nevada, and that project will be capable of producing 30 MW of clean power.

#### b) On-site renewable generation is feasible and solves islanding at bases throughout the country---DOD leadership makes the tech viable

Schuyler Null 10, Research Assistant at Global Green USA's Security and Sustainability Program, February 2010, “Defense Sustainability: Energy Efficiency and the Battlefield,” http://www.globalgreen.org/docs/publication-112-1.pdf

Many of the initiatives, technologies, and systems that have the potential to greatly improve Department of Defense energy security are either entirely new practices for the military or involve technologies that are tied up in ongoing systems development and demonstration (SDD) contracts. As with many military projects, these efforts need Congressional support and the backing of senior Pentagon leadership if they are to ever break out of the often perpetual development and demonstration phase and into regular DOD practice. If the Department is to curb its consumption habits senior Pentagon leadership must place focus on these four critical areas.

The advantages to the Department encouraging on-site renewable energy projects on domestic bases are all gains that accrue over time— freedom from the volatility of oil prices, much lower maintenance costs, a cleaner environment, and reduced impact on global warming. Much like how the fully burdened cost of fuel program aims to one day show that petroleum-based tactical vehicles carry with them costs that are not simply reflected by the price of gasoline, renewable energy solutions have advantages over conventional power generation that a basic price per kilowatt-hour comparison will not show. The Department’s current REC purchasing policy uses a simple short-term cost/benefit analysis and therefore ignores these long-term advantages. As a result, the Pentagon’s current domestic energy practices greatly undervalue the worth of renewable energy. DOD has the land (see Appendix for Army renewable energy maps), the funding, and the mandate to put into place renewable energy construction projects on domestic bases that could provide reliable clean energy and even improved security for decades to come. All that is needed is leadership.

One of the most important advantages to developing DOD-run renewable projects is their potential to decrease the Department’s dependence on the civilian energy grid. The Defense Science Board and the DOD Energy Security Task Force have both recognized that a key vulnerability in current practices is that Defense Department facilities are simply far too dependent on a power grid, which, as illustrated by events like the Northeast blackout during the summer of 2003, is remarkably fragile. 57 During the Northeast blackout, 50 million people lost power and over 250 power plants shut down including 22 nuclear power plants. The massive blackout turned out to be the result of a cascade of failures that was eventually traced to a utility in Ohio failing to trim trees properly. 58 Currently, Department of Defense facilities across the nation are no more immune to the effects of such blunders than anyone else.

By encouraging the on-site development of renewable energy, the Pentagon could greatly increase its bases’ protection against possible disruptions to the civilian power infrastructure. “Islanding” DOD sites in this way ensures that the nation’s most critical security facilities would have reliable power generation available on-site in case of any catastrophic disruption. There has been some recognition of this problem but efforts to fix the substantial vulnerability of most sites have so far been far too limited and scattered. An emphasis on encouraging the development of DOD-run renewable power projects across the county could provide a reliable counter to the Department’s current reliance on the civilian grid while also insulating the domestic energy budget from fluctuations in world energy markets and making a considerable dent in Department carbon emissions.

#### 3) None of their “tech fails” arguments presume DOD leadership---it’s key to improving and commercializing next-gen renewable tech

Dr. Dorothy Robyn 12, Deputy Under Secretary of Defense for Installations and Environment, 3/27/12, Testimony before the Senate Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies, Congressional Documents & Publications, lexis

As the discussion of microgrids illustrates, one of the ways DoD can lower its energy costs and improve its energy security is by leveraging advanced technology. Technology has been DoD's comparative advantage for 200 years, as evidenced by the military's leadership in the development of everything from interchangeable machine made parts for musket production to the Internet. This advantage is no less important when it comes to facility energy.

To leverage advanced technology relevant to facility energy, three years ago my office created the Installation Energy Test Bed, as part of the existing Environmental Security Technology Certification Program (ESTCP). The rationale is straightforward. Emerging technologies offer a way to cost effectively reduce DoD's facility energy demand by a dramatic amount (50 percent in existing buildings and 70 percent in new construction) and provide distributed generation to improve energy security. Absent outside validation, however, these new technologies will not be widely deployed in time for us to meet our energy requirements. Among other problems, the first user bears significant costs but gets the same return as followers. These barriers are particularly problematic for new technologies intended to improve energy efficiency in the retrofit market, which is where DoD has the greatest interest.

As the owner of 300,000 buildings, it is in DoD's direct self-interest to help firms overcome the barriers that inhibit innovative technologies from being commercialized and/or deployed on DoD installations. We do this by using our installations as a distributed test bed to demonstrate and validate the technologies in a real-world, integrated building environment.8 Projects conduct operational testing and assessment of the life cycle costs of new technology while addressing DoD unique security issues. For example, the Test Bed is doing a demonstration of an advanced control system that could increase boiler efficiency by 10 percent; if the technology proves out, DoD can deploy it on thousands of boilers and see a meaningful energy savings. More generally, by centralizing the risk and distributing the benefits of new technology to all DoD installations, the Test Bed can provide a significant return on DoD's investment.

#### SMRs cause the civilian smart grid but the CP doesn’t because renewables can’t power large population centers---means their offense only links to them

Micah J. Loudermilk 11, Research Associate for the Energy & Environmental Security Policy program with the Institute for National Strategic Studies at National Defense University, 5/31/11, “Small Nuclear Reactors and US Energy Security: Concepts, Capabilities, and Costs,” http://www.ensec.org/index.php?option=com\_content&view=article&id=314:small-nuclear-reactors-and-us-energy-security-concepts-capabilities-and-costs&catid=116:content0411&Itemid=375

Small nuclear reactors, however, like renewable sources, can provide enhanced, distributed, and localized power generation. As the US moves towards embracing smart grid technologies, power production at this level becomes a critical piece of the puzzle. Especially since renewable sources, due to sprawl, are of limited utility near crowded population centers, small reactors may in fact prove instrumental to enabling the smart grid to become a reality.

#### Microgrids avoid the problem of renewables shutting down when the base loses macro-grid power

Stephanie Hobby 12, Sandia National Laboratory, 3/23/12, “SPIDERS microgrid project secures military installations,” http://www.sandia.gov/LabNews/120323.html

The goal for SPIDERS microgrid technology is to provide secure control of on-base generation.

“If there is a disruption to the commercial utility power grid, a secure microgrid can isolate from the grid and provide backup power to ensure continuity of mission-critical loads. The microgrid can allow time for the commercial utility to restore service and coordinate reconnection when service is stabilized,” says Col. Nancy Grandy, oversight executive of the SPIDERS Joint Capability Technology Demonstration (JCTD). “This capability provides much-needed energy security for our vital military missions.”

SPIDERS is addressing the challenge of tying intermittent clean energy sources such as solar and wind to a grid.

“People run single diesel generators all the time to support buildings, but they don’t run interconnected diesels with solar, hydrogen fuel cells, and so on, as a significant energy source. It’s not completely unheard of, but it’s a real integration challenge,” says Jason Stamp (6111), Sandia’s lead project engineer for SPIDERS.

Currently, when power is disrupted at a military base, individual buildings switch to backup diesel generators, but that approach has several limitations. Generators might fail to start, and if a building’s backup power system doesn’t start, there is no way to use power from another building’s generator. Most generators are oversized for the load and run at less-than-optimal capacity, and excess fuel is consumed. Furthermore, safety requirements state that all renewable energy sources on base must disconnect when off-site power is lost.

A smart, cybersecure microgrid addresses these issues by allowing renewable energy sources to stay connected and run in coordination with diesel generators, which can all be brought online as needed. Such a system would dramatically help the military increase power reliability, lessen its need for diesel fuel, and reduce its “carbon bootprint.”

“The military has indicated it wants to be protected against disruptions, to integrate renewable energy sources, and to reduce petroleum demand,” Jason says. “SPIDERS is focused on accomplishing those tasks. The end result is having better energy delivery for critical mission support, and that is important for every American.”

SPIDERS uses existing, commercially available technologies for implementation, so the individual technologies are not novel. “What’s novel is the system integration of the various technologies, and demonstrating them in an operational field environment,” says Bill Waugaman (6512), SPIDERS operational lead. “Microgrid concepts are still fairly new, and that’s where Sandia’s microgrid design expertise is coming into play.”

#### Microgrids are more effective on FOBs than domestic bases---they’re already being deployed so no offense is unique

Peter Asmus 11, Senior Analyst at Pike Research, September 2011, “Military Microgrids: Aggregation Platforms to Secure Mission-Critical Loads and Achieve Net Zero Energy, Renewable Energy, and Demand Response Goals,” http://www.pikeresearch.com/wordpress/wp-content/uploads/2011/09/MMG-11-Executive-Summary.pdf

The business case for microgrids at stationary military bases is one thing, but an even better business case can be made for forward operating base (FOB) microgrids since there is no legacy grid, utilities do not represent barriers to these deployments. Also known as tactical or mobile microgrids, these typically temporary camps and operations centers can greatly reduce casualties during combat. In most ways, the mobile microgrids mirror their stationary base counterparts. However, mobile microgrids must be portable; therefore, designs must be extremely modular at the most micro levels. (Indeed, Skybuilt Power offers a micro-solar microgrid in a suitcase for military applications.) A few of these mobile microgrids are already being deployed in Afghanistan, where there has been a particularly urgent need for immediate deployment.

Much smaller in scale than U.S. stationary microgrids, mobile microgrids can be deployed in a day. The transient nature of these systems makes them extremely difficult to forecast. Definitional issues also play a role; many mobile power systems may or may not qualify as true “microgrids,” as there is large grey area distinguishing solar PV or small wind/diesel hybrids from a bona fide microgrid. Total capacity in the average scenario is estimated at a mere 20 MW by 2017. However, these systems will multiply quickly and significantly, especially if the DOD engages in additional missions in the highly volatile Middle East. FOBs on islands not engaged in direct combat also represent promising near-term markets. The forecasting of this segment is remarkably problematic, nevertheless, given the unpredictability of both political forces and terrorist attacks.

In the end, there will be some crossover between the two different military markets (stationary base and mobile microgrids). This is especially true in the still emerging area of control systems, where vendors large and small are still exploring synergies, collaborations, and product validations.

#### Microgrids achieve full energy independence for bases---particularly FOBs---and DOD leadership improves renewables tech

Amory B. Lovins 10, Chairman/Chief Scientist of the Rocky Mountain Institute, second quarter 2010, “DOD’s Energy Challenge as Strategic Opportunity,” Joint Force Quarterly, http://www.ndu.edu/press/lib/images/jfq-57/lovins.pdf

The U.S. electric grid was named by the National Academy of Engineering as the top The U.S. electric grid was named by the National Academy of Engineering as the top engineering achievement of the 20th century. It is very capital-intensive, complex, technologically unforgiving, usually reliable, but inherently brittle. It is responsible for ~98–99 percent of U.S. power failures, and occasionally blacking out large areas within seconds—because the grid requires exact synchrony across subcontinental areas and relies on components taking years to build in just a few factories or one (often abroad), and can be interrupted by a lightning bolt, rifle bullet, malicious computer program, untrimmed branch, or errant squirrel. Grid vulnerabilities are serious, inherent, and not amenable to quick fixes; current Federal investments in the “smart grid” do not even require simple mitigations. Indeed, the policy reflex to add more and bigger power plants and power lines after each regional blackout may make the next blackout more likely and severe, much as suppressing forest fires can accumulate fuel loadings that turn the next unsuppressed fire into an uncontrollable conflagration.

Power-system vulnerabilities are even worse in-theater, where infrastructure and the capacity to repair it are often marginal: “attacks on the grid are one of the most common and effective tactics of insurgents in Iraq, and are increasingly seen in Afghanistan.” 39 Thus electric, not oil, vulnerabilities now hazard national and theater energy security. Simple exploitation of domestic electric vulnerabilities could take down DOD’s basic operating ability and the whole economy, while oil supply is only a gathering storm.

The DSB Task Force took electrical threats so seriously that it advised DOD— following prior but unimplemented DOD policy 40 —to replace grid reliance, for critical missions at U.S. bases, with onsite (preferably renewable) power supplies in netted, islandable 41 microgrids. The Department of Energy’s Pacific Northwest National Laboratory found ~90 percent of those bases could actually meet those critical power needs from onsite or nearby and mainly renewable sources, and often more cheaply. This could achieve zero daily net energy need for facilities, operations, and ground vehicles; full independence in hunker-down mode (no grid); and increased ability to help serve surrounding communities and nucleate blackstart of the failed commercial grid.

Implementing these sensible policies merits high priority: probably only DOD can move as decisively as the threat to national security warrants. And as with the Endurance capability, exploiting Resilience—building on DOD’s position as the world’s leading director-indirect buyer of renewable energy—would provide leadership, market expansion, delivery refinement, and training that would accelerate civilian adoption. Already, the 2008 NDAA requires DOD to establish a goal to make or buy at least 25 percent of its electricity from renewables by 2020, and study solar and windpower feasibility for expeditionary forces. Under 2007 Executive Order 13423’s Government-wide mandate, DOD must also reduce energy intensity by FY15 to 30 percent below FY03. The Resilience capability would focus all these efforts on robust architectures and implementation paths, ensuring that bases’ onsite renewables deliver reliable power to critical loads whether or not the commercial grid is working—a goal not achieved by today’s focus on compliance with renewables quotas.

Resilience is even more vital and valuable abroad, in fixed installations and especially in FOBs (whose expeditionary character emphasizes the Endurance logic of Fully Burdened Cost of Electricity). Foreign grids are often less reliable and secure than U.S. grids; protection and social stability may be worse; logistics are riskier and costlier in more remote and austere sites; and civilian populations may be more helped and influenced. Field commanders strongly correlate reliable electricity supplies with political stability. In Sadr City, Army Reserve Major General Jeffrey Talley’s Task Force Gold proved in 2008–2009 that making electricity reliable, and thus underpinning systematic infrastructure-building, is an effective cornerstone of counterinsurgency.

Reconstruction in Iraq and Afghanistan is starting to define and capture this opportunity to build civic cohesion and dampen insurgency, while reducing attacks’ disruption and attractiveness. A resilient, distributed electrical architecture can bring important economic and social side-benefits, as with Afghan microhydropower programs for rural development. Cuba lately showed, too, that aggressively integrating end-use efficiency with micropower can cut national blackouts—caused by decrepit infrastructure, not attacks—by one to two orders of magnitude in a year.

At home, DOD efficiency and micropower echo new domestic energy policy and startling developments in the marketplace. In 2006, micropower 42 delivered one-sixth of the world’s electricity, one-third of its new electricity, and 16 to 52 percent of all electricity in a dozen industrialized countries (the United States lagged with 7 percent). In 2008, for the first time in about a century, the world invested more in renewable than in fossilfueled power supplies; renewables (excluding big hydroelectric dams) added 40 billion watts of global capacity and got $100 billion of private investment. Their competitive and falling costs, short lead times, and low financial risks attract private capital. Shifting to these more resilient energy solutions goes with the market’s flow.

#### Err neg---improvement in renewables for forward bases consistently beats expectations

Christine Parthmore 10, Fellow at the Center for a New American Security; and Dr. John Nagl, President of the Center for a New American Security, September 2010, “Fueling the Future Force Preparing the Department of Defense for a Post-Petroleum Era,” http://www.cnas.org/files/documents/publications/CNAS\_Fueling%20the%20Future%20Force\_NaglParthemore.pdf

There is an array of reliable, renewable fuels that should be considered as alternative supplies to petroleum, including multiple generations of biofuels. Biotechnicians have long proven the technical ability to produce hydrocarbon equivalents to fossil fuels, including the jet fuel blends that DOD requires. Efforts by the National Laboratories, academia and the private sector are focusing on basic science that will enable more efficient use of second-generation biological fuel sources (made from non-food crops) by increasing efficiency in processing plant materials while retaining net energy gains, and by overcoming other technical hurdles. Others are leap-frogging beyond second-generation biofuels to fuels derived from algae. Still other options include displacing petroleum by using electricity or natural gas to power transportation, and using distributed renewable energy at overseas and forward operating bases to displace petroleum in powering generators. It is encouraging that growth in renewable energy supply availability frequently outpaces expectations. Ethanol production grew 164 percent between 2002 and 2006, and biodiesel production expanded from 1 trillion Btu to 32 trillion Btu over the same period. Wind, solar and geothermal supplies also have expanded faster than most analysts predicted over the past decade.12 These supply-side changes show how technical, economic and policy decisions, such as tax regimes that Congress has enacted to even the playing field with fossil fuels, can affect energy trends.

# DoD Adv

#### Status quo solves grid cyber vulnerability

Paul Clark 12, MA Candidate, Intelligence/Terrorism Studies, American Military University; Senior Analyst, Chenega Federal Systems, 4/28/12, “The Risk of Disruption or Destruction of Critical U.S. Infrastructure by an Offensive Cyber Attack,” http://blog.havagan.com/wp-content/uploads/2012/05/The-Risk-of-Disruption-or-Destruction-of-Critical-U.S.-Infrastructure-by-an-Offensive-Cyber-Attack.pdf

An attack against the electrical grid is a reasonable threat scenario since power systems are "a high priority target for military and insurgents" and there has been a trend towards utilizing commercial software and integrating utilities into the public Internet that has "increased vulnerability across the board" (Lewis 2010). Yet the increased vulnerabilities are mitigated by an increased detection and deterrent capability that has been "honed over many years of practical application" now that power systems are using standard, rather than proprietary and specialized, applications and components (Leita and Dacier 2012). The security of the electrical grid is also enhanced by increased awareness after a smart-grid hacking demonstration in 2009 and the identification of the Stuxnet malware in 2010: as a result the public and private sector are working together in an "unprecedented effort" to establish robust security guidelines and cyber security measures (Gohn and Wheelock 2010).

#### Status quo solves islanding---the military figured out their advantage and fixed it

Michael Aimone 9-12, Director, Business Enterprise Integration, Office of the Deputy Under Secretary of Defense (Installations and Environment), 9/12/12, Statement Before the House Committee on Homeland Security, Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies, http://homeland.house.gov/sites/homeland.house.gov/files/Testimony%20-%20Aimone.pdf

DoD’s facility energy strategy is also focused heavily on grid security in the name of mission assurance. Although the Department’s fixed installations traditionally served largely as a platform for training and deployment of forces, in recent years they have begun to provide direct support for combat operations, such as unmanned aerial vehicles (UAVs) flown in Afghanistan from fixed installations here in the United States. Our fixed installations also serve as staging platforms for humanitarian and homeland defense missions. These installations are largely dependent on a commercial power grid that is vulnerable to disruption due to aging infrastructure, weather-related events, and potential kinetic, cyber attack. In 2008, the Defense Science Board warned that DoD’s reliance on a fragile power grid to deliver electricity to its bases places critical missions at risk.1

Standby Power Generation

Currently, DoD ensures that it can continue mission critical activities on base largely through its fleet of on-site power generation equipment. This equipment is connected to essential mission systems and automatically operates in the event of a commercial grid outage. In addition, each installation has standby generators in storage for repositioning as required. Facility power production specialists ensure that the generators are primed and ready to work, and that they are maintained and fueled during an emergency. With careful maintenance these generators can bridge the gap for even a lengthy outage. As further back up to this installed equipment, DoD maintains a strategic stockpile of electrical power generators and support equipment that is kept in operational readiness. For example, during Hurricane Katrina, the Air Force transported more than 2 megawatts of specialized diesel generators from Florida, where they were stored, to Keesler Air Force Base in Mississippi, to support base recovery.

#### Zero impact to grid failures, even ones caused by cyber attacks

Douglas Birch 10-1, former foreign correspondent for the Associated Press and the Baltimore Sun who has written extensively on technology and public policy, 10/1/12, “Forget Revolution,” Foreign Policy, http://www.foreignpolicy.com/articles/2012/10/01/forget\_revolution?page=full

Government officials sometimes describe a kind of Hieronymus Bosch landscape when warning of the possibility of a cyber attack on the electric grid. Imagine, if you will, that the United States is blindsided by an epic hack that interrupts power for much of the Midwest and mid-Atlantic for more than a week, switching off the lights, traffic signals, computers, water pumps, and air conditioners in millions of homes, businesses, and government offices. Americans swelter in the dark. Chaos reigns!

Here's another nightmare scenario: An electric grid that serves two-thirds of a billion people suddenly fails in a developing, nuclear-armed country with a rich history of ethnic and religious conflict. Rail transportation is shut down, cutting off travel to large swathes of the country, while many miners are trapped underground.

Blackouts on this scale conjure images of civil unrest, overwhelmed police, crippled hospitals, darkened military bases, the gravely injured in the back of ambulances stuck in traffic jams.

The specter of what Defense Secretary Leon Panetta has called a "digital Pearl Harbor" led to the creation of U.S. Cyber Command, which is tasked with developing both offensive and defensive cyber warfare capabilities, and prompted FBI Director Robert Mueller to warn in March that cyber attacks would soon be "the number one threat to our country." Similar concerns inspired both the Democrats and Republicans to sound the alarm about the cyber threat in their party platforms.

But are cyber attacks really a clear and present danger to society's critical life support systems, capable of inflicting thousands of casualties? Or has fear of full-blown cybergeddon at the hands of America's enemies become just another feverish national obsession -- another of the long, dark shadows of the 9/11 attacks?

Worries about a large-scale, devastating cyber attack on the United States date back several decades, but escalatedfollowing attacks on Estonian government and media websites during a diplomatic conflict with Russia in 2007. That digital ambush was followed by a cyber attack on Georgian websites a year later in the run-up to the brief shooting war between Tbilisi and Moscow, as well as allegations of a colossal, ongoing cyber espionage campaign against the United States by hackers linked to the Chinese army.

Much of the concern has focused on potential attacks on the U.S. electrical grid. "If I were an attacker and I wanted to do strategic damage to the United States...I probably would sack electric power on the U.S. East Coast, maybe the West Coast, and attempt to cause a cascading effect," retired Admiral Mike McConnell said in a 2010 interview with CBS's 60 Minutes.

But the scenarios sketched out above are not solely the realm of fantasy. This summer, the United States and India were hit by two massive electrical outages -- caused not by ninja cyber assault teams but by force majeure. And, for most people anyway, the results were less terrifying than imagined.

First, the freak "derecho" storm that barreled across a heavily-populated swath of the eastern United States on the afternoon of June 29 knocked down trees that crushed cars, bashed holes in roofs, blocked roads, and sliced through power lines.

According to an August report by the U.S. Department of Energy, 4.2 million homes and businesses lost power as a result of the storm, with the blackout stretching across 11 states and the District of Columbia. More than 1 million customers were still without power five days later, and in some areas power wasn't restored for 10 days. Reuters put the death tollat 23 people as of July 5, all killed by storms or heat stroke.

The second incident occurred in late July, when 670 million people in northern India, or about 10 percent of the world's population, lost power in the largest blackout in history. The failure of this huge chunk of India's electric grid was attributed to higher-than-normal demand due to late monsoon rains, which led farmers to use more electricity in order to draw water from wells. Indian officials told the media there were no reports of deaths directly linked to the blackouts.

But this cataclysmic event didn't cause widespread chaos in India -- indeed, for some, it didn't even interrupt their daily routine. "[M]any people in major cities barely noticed the disruption because localized blackouts are so common that many businesses, hospitals, offices and middle-class homes have backup diesel generators," the New York Timesreported.

The most important thing about both events is what didn't happen. Planes didn't fall out of the sky. Governments didn't collapse. Thousands of people weren't killed. Despite disruption and delay, harried public officials, emergency workers, and beleaguered publics mostly muddled through.

The summer's blackouts strongly suggest that a cyber weapon that took down an electric grid even for several days could turn out to be little more than a weapon of mass inconvenience.

That doesn't mean the United States can relax. James Lewis, director of the technology program at the Center for Strategic and International Studies, believes that hackers threaten the security of U.S. utilities and industries, and recently penned an op-ed for the New York Times calling the United States "defenseless" to a cyber-assault. But he told Foreign Policy the recent derecho showed that even a large-scale blackout would not necessarily have catastrophic consequences.

#### The Carribean is protected from terrorism

NewsMax 4 Wires, “Countries Prepare for Possible Attack Against Panama Canal,” Aug. 16, 2004, http://archive.newsmax.com/archives/articles/2004/8/15/144655.shtml

Panama has taken steps to ensure that the canal is protected. In May, it signed an agreement allowing U.S. officials to board Panamanian flagships and search them for weapons of mass destruction.

The nation is the world's largest shipping registry, with Panamanian flags flying on 21 percent of all registered ships. Of those 10,400 ships, more than half - about 5,700 - are cargo ships, the Panama Maritime Authority said.

The agreement was similar to an accord the U.S. State Department reached in February with Liberia, the world's No. 2 registry.

The canal training exercises began a week ago with planning, and advanced Tuesday to land and water exercises. They included hundreds of personnel from the army, navy, air force and coast guard.

Four merchant ships were contracted as mock threatening vessels.

Colombian ship commander Pablo Romero, whose crew helped search for the suspicious ships, said the training was important because Panama has a very small naval force.

The canal also is vital to Colombia, which uses the waterway to move ships from coast to coast.

The exercise also demonstrated the worldwide effort at fighting terrorism.

#### No impact

John Mueller and Mark G. Stewart 12, Senior Research Scientist at the Mershon Center for International Security Studies and Adjunct Professor in the Department of Political Science, both at Ohio State University, and Senior Fellow at the Cato Institute AND Australian Research Council Professorial Fellow and Professor and Director at the Centre for Infrastructure Performance and Reliability at the University of Newcastle, "The Terrorism Delusion," Summer, International Security, Vol. 37, No. 1, politicalscience.osu.edu/faculty/jmueller//absisfin.pdf

In 2009, the U.S. Department of Homeland Security (DHS) issued a lengthy report on protecting the homeland. Key to achieving such an objective should be a careful assessment of the character, capacities, and desires of potential terrorists targeting that homeland. Although the report contains a section dealing with what its authors call “the nature of the terrorist adversary,” the section devotes only two sentences to assessing that nature: “The number and high profile of international and domestic terrorist attacks and disrupted plots during the last two decades underscore the determination and persistence of terrorist organizations. Terrorists have proven to be relentless, patient, opportunistic, and flexible, learning from experience and modifying tactics and targets to exploit perceived vulnerabilities and avoid observed strengths.”8¶ This description may apply to some terrorists somewhere, including at least a few of those involved in the September 11 attacks. Yet, it scarcely describes the vast majority of those individuals picked up on terrorism charges in the United States since those attacks. The inability of the DHS to consider this fact even parenthetically in its fleeting discussion is not only amazing but perhaps delusional in its single-minded preoccupation with the extreme.¶ In sharp contrast, the authors of the case studies, with remarkably few exceptions, describe their subjects with such words as incompetent, ineffective, unintelligent, idiotic, ignorant, inadequate, unorganized, misguided, muddled, amateurish, dopey, unrealistic, moronic, irrational, and foolish.9 And in nearly all of the cases where an operative from the police or from the Federal Bureau of Investigation was at work (almost half of the total), the most appropriate descriptor would be “gullible.”¶ In all, as Shikha Dalmia has put it, would-be terrorists need to be “radicalized enough to die for their cause; Westernized enough to move around without raising red flags; ingenious enough to exploit loopholes in the security apparatus; meticulous enough to attend to the myriad logistical details that could torpedo the operation; self-sufficient enough to make all the preparations without enlisting outsiders who might give them away; disciplined enough to maintain complete secrecy; and—above all—psychologically tough enough to keep functioning at a high level without cracking in the face of their own impending death.”10 The case studies examined in this article certainly do not abound with people with such characteristics. ¶ In the eleven years since the September 11 attacks, no terrorist has been able to detonate even a primitive bomb in the United States, and except for the four explosions in the London transportation system in 2005, neither has any in the United Kingdom. Indeed, the only method by which Islamist terrorists have managed to kill anyone in the United States since September 11 has been with gunfire—inflicting a total of perhaps sixteen deaths over the period (cases 4, 26, 32).11 This limited capacity is impressive because, at one time, small-scale terrorists in the United States were quite successful in setting off bombs. Noting that the scale of the September 11 attacks has “tended to obliterate America’s memory of pre-9/11 terrorism,” Brian Jenkins reminds us (and we clearly do need reminding) that the 1970s witnessed sixty to seventy terrorist incidents, mostly bombings, on U.S. soil every year.12¶ The situation seems scarcely different in Europe and other Western locales. Michael Kenney, who has interviewed dozens of government officials and intelligence agents and analyzed court documents, has found that, in sharp contrast with the boilerplate characterizations favored by the DHS and with the imperatives listed by Dalmia, Islamist militants in those locations are operationally unsophisticated, short on know-how, prone to making mistakes, poor at planning, and limited in their capacity to learn.13 Another study documents the difficulties of network coordination that continually threaten the terrorists’ operational unity, trust, cohesion, and ability to act collectively.14¶ In addition, although some of the plotters in the cases targeting the United States harbored visions of toppling large buildings, destroying airports, setting off dirty bombs, or bringing down the Brooklyn Bridge (cases 2, 8, 12, 19, 23, 30, 42), all were nothing more than wild fantasies, far beyond the plotters’ capacities however much they may have been encouraged in some instances by FBI operatives. Indeed, in many of the cases, target selection is effectively a random process, lacking guile and careful planning. Often, it seems, targets have been chosen almost capriciously and simply for their convenience. For example, a would-be bomber targeted a mall in Rockford, Illinois, because it was nearby (case 21). Terrorist plotters in Los Angeles in 2005 drew up a list of targets that were all within a 20-mile radius of their shared apartment, some of which did not even exist (case 15). In Norway, a neo-Nazi terrorist on his way to bomb a synagogue took a tram going the wrong way and dynamited a mosque instead.15

#### No impact

O’Neill 4O’Neill 8/19/2004 [Brendan, “Weapons of Minimum Destruction” http://www.spiked-online.com/Articles/0000000CA694.htm]

David C Rapoport, professor of political science at University of California, Los Angeles and editor of the Journal of Terrorism and Political Violence, has examined what he calls 'easily available evidence' relating to the historic use of chemical and biological weapons. He found something surprising - such weapons do not cause mass destruction. Indeed, whether used by states, terror groups or dispersed in industrial accidents, they tend to be far less destructive than conventional weapons. 'If we stopped speculating about things that might happen in the future and looked instead at what has happened in the past, we'd see that our fears about WMD are misplaced', he says. Yet such fears remain widespread. Post-9/11, American and British leaders have issued dire warnings about terrorists getting hold of WMD and causing mass murder and mayhem. President George W Bush has spoken of terrorists who, 'if they ever gained weapons of mass destruction', would 'kill hundreds of thousands, without hesitation and without mercy' (1). The British government has spent £28million on stockpiling millions of smallpox vaccines, even though there's no evidence that terrorists have got access to smallpox, which was eradicated as a natural disease in the 1970s and now exists only in two high-security labs in America and Russia (2). In 2002, British nurses became the first in the world to get training in how to deal with the victims of bioterrorism (3). The UK Home Office's 22-page pamphlet on how to survive a terror attack, published last month, included tips on what to do in the event of a 'chemical, biological or radiological attack' ('Move away from the immediate source of danger', it usefully advised). Spine-chilling books such as Plague Wars: A True Story of Biological Warfare, The New Face of Terrorism: Threats From Weapons of Mass Destruction and The Survival Guide: What to Do in a Biological, Chemical or Nuclear Emergency speculate over what kind of horrors WMD might wreak. TV docudramas, meanwhile, explore how Britain might cope with a smallpox assault and what would happen if London were 'dirty nuked' (4). The term 'weapons of mass destruction' refers to three types of weapons: nuclear, chemical and biological. A chemical weapon is any weapon that uses a manufactured chemical, such as sarin, mustard gas or hydrogen cyanide, to kill or injure. A biological weapon uses bacteria or viruses, such as smallpox or anthrax, to cause destruction - inducing sickness and disease as a means of undermining enemy forces or inflicting civilian casualties. We find such weapons repulsive, because of the horrible way in which the victims convulse and die - but they appear to be less 'destructive' than conventional weapons. 'We know that nukes are massively destructive, there is a lot of evidence for that', says Rapoport. But when it comes to chemical and biological weapons, 'the evidence suggests that we should call them "weapons of minimum destruction", not mass destruction', he says. Chemical weapons have most commonly been used by states, in military warfare. Rapoport explored various state uses of chemicals over the past hundred years: both sides used them in the First World War; Italy deployed chemicals against the Ethiopians in the 1930s; the Japanese used chemicals against the Chinese in the 1930s and again in the Second World War; Egypt and Libya used them in the Yemen and Chad in the postwar period; most recently, Saddam Hussein's Iraq used chemical weapons, first in the war against Iran (1980-1988) and then against its own Kurdish population at the tail-end of the Iran-Iraq war. In each instance, says Rapoport, chemical weapons were used more in desperation than from a position of strength or a desire to cause mass destruction. 'The evidence is that states rarely use them even when they have them', he has written. 'Only when a military stalemate has developed, which belligerents who have become desperate want to break, are they used.' (5) As to whether such use of chemicals was effective, Rapoport says that at best it blunted an offensive - but this very rarely, if ever, translated into a decisive strategic shift in the war, because the original stalemate continued after the chemical weapons had been deployed. He points to the example of Iraq. The Baathists used chemicals against Iran when that nasty trench-fought war had reached yet another stalemate. As Efraim Karsh argues in his paper 'The Iran-Iraq War: A Military Analysis': 'Iraq employed [chemical weapons] only in vital segments of the front and only when it saw no other way to check Iranian offensives. Chemical weapons had a negligible impact on the war, limited to tactical rather than strategic [effects].' (6) According to Rapoport, this 'negligible' impact of chemical weapons on the direction of a war is reflected in the disparity between the numbers of casualties caused by chemicals and the numbers caused by conventional weapons. It is estimated that the use of gas in the Iran-Iraq war killed 5,000 - but the Iranian side suffered around 600,000 dead in total, meaning that gas killed less than one per cent. The deadliest use of gas occurred in the First World War but, as Rapoport points out, it still only accounted for five per cent of casualties. Studying the amount of gas used by both sides from1914-1918 relative to the number of fatalities gas caused, Rapoport has written: 'It took a ton of gas in that war to achieve a single enemy fatality. Wind and sun regularly dissipated the lethality of the gases. Furthermore, those gassed were 10 to 12 times as likely to recover than those casualties produced by traditional weapons.' (7) Indeed, Rapoport discovered that some earlier documenters of the First World War had a vastly different assessment of chemical weapons than we have today - they considered the use of such weapons to be preferable to bombs and guns, because chemicals caused fewer fatalities. One wrote: 'Instead of being the most horrible form of warfare, it is the most humane, because it disables far more than it kills, ie, it has a low fatality ratio.' (8) 'Imagine that', says Rapoport, 'WMD being referred to as more humane'. He says that the contrast between such assessments and today's fears shows that actually looking at the evidence has benefits, allowing 'you to see things more rationally'. According to Rapoport, even Saddam's use of gas against the Kurds of Halabja in 1988 - the most recent use by a state of chemical weapons and the most commonly cited as evidence of the dangers of 'rogue states' getting their hands on WMD - does not show that unconventional weapons are more destructive than conventional ones. Of course the attack on Halabja was horrific, but he points out that the circumstances surrounding the assault remain unclear. 'The estimates of how many were killed vary greatly', he tells me. 'Some say 400, others say 5,000, others say more than 5,000. The fighter planes that attacked the civilians used conventional as well as unconventional weapons; I have seen no study which explores how many were killed by chemicals and how many were killed by firepower. We all find these attacks repulsive, but the death toll may actually have been greater if conventional bombs only were used. We know that conventional weapons can be more destructive.' Rapoport says that terrorist use of chemical and biological weapons is similar to state use - in that it is rare and, in terms of causing mass destruction, not very effective. He cites the work of journalist and author John Parachini, who says that over the past 25 years only four significant attempts by terrorists to use WMD have been recorded. The most effective WMD-attack by a non-state group, from a military perspective, was carried out by the Tamil Tigers of Sri Lanka in 1990. They used chlorine gas against Sri Lankan soldiers guarding a fort, injuring over 60 soldiers but killing none. The Tamil Tigers' use of chemicals angered their support base, when some of the chlorine drifted back into Tamil territory - confirming Rapoport's view that one problem with using unpredictable and unwieldy chemical and biological weapons over conventional weapons is that the cost can be as great 'to the attacker as to the attacked'. The Tigers have not used WMD since.

# Hydrogen Adv

## 1NC

### IL D

#### Zero chance of supply constraints affecting the military---and fuel-switching doesn’t solve

Daniel Sarewitz 12, Co-Director, Consortium for Science, Policy and Outcomes, Arizona State University; and Samuel Thernstrom Senior Climate Policy Advisor, Clean Air Task Force, March 2012, “Energy Innovation at the Department of Defense: Assessing the Opportunities,” http://bipartisanpolicy.org/sites/default/files/Energy%20Innovation%20at%20DoD.pdf

Liquid fuels are indispensable for the U.S. military. Nuclear reactors power submarines and aircraft carriers; otherwise the Navy’s ships run on petroleum. So do all types of aircraft, trucks, and combat vehicles. Military installations buy electrical power, when they can, from local utilities, but diesel generators provide essential backup—and are the main power source at forward bases that lack grid connections. Direct consumption of petroleum accounted for more than three-quarters of DoD’s energy use in fiscal 2010, costing $13.4 billion.11

Even so, given adequate forward planning, DoD has little reason to fear constraints on supply of petroleum-based fuels for several decades, perhaps many. A tightening international oil market, resulting in continuing price increases, would pose greater difficulties for other segments of the U.S. economy and society, and for other countries. DoD’s expenditures on fuel may seem large, but should be viewed in the context of other routine expenditures. Even for the Air Force, the principal consumer with its fleet of nearly 6,000 planes, fuel accounts for only around one-fifth of operations and maintenance costs. 12 In Afghanistan and Iraq, fuel and water have made up 70 percent (by weight) of the supplies delivered to forward areas. 13 Transport convoys have drawn frequent and deadly attacks, but the only way to reduce risks, casualties, and delivery costs is to cut consumption (of water as well as fuel)—not something that alternative fuels can promise. Alternative fuels might have somewhat lower energy densities than petroleum (less energy content per gallon or per pound), meaning somewhat more fuel would have to be burned for the same power output, but not higher (by any significant amount). Indeed, alternative fuels cannot promise performance advantages of any sort.

#### No military fuel cutoffs and costs won’t undermine power projection

John Alic 12, directed studies on international competitiveness and technology policy at the Congressional Office of Technology Assessment, adjunct at the Johns Hopkins School of Advanced International Studies, March 2012, “Defense Department Energy Innovation: Three Cases,” in Energy Innovation at the Department of Defense: Assessing the Opportunities, http://bipartisanpolicy.org/sites/default/files/Energy%20Innovation%20at%20DoD.pdf

Over 80 percent of the petroleum purchased and consumed by the U.S. military consists of jet fuel designated JP-5 or JP-8; diesel fuel makes up nearly all the rest. 46 By volume, recent purchases peaked in fiscal 2003 with the invasion of Iraq, then declined even as rising oil prices pushed expenditures upward: fuel doubled as a share of DoD outlays, from 1.5 percent to 3 percent, between fiscal years 2004 and 2008. Consumption did not change much, but purchases rose from $7 billion (2004) to $18 billion (2008). Prices then fell back somewhat, but in 2011 DoD paid more for jet fuel just as motorists did for gasoline. Even so, the Energy Information Administration (EIA, part of the Energy Department) predicts relatively flat oil prices over the next quarter century, with inflation-adjusted prices in the range of $120 per barrel.47

Oil prices respond almost instantaneously to international political events (e.g., the threat of supply constrictions) and to economic fluctuations affecting demand. A small number of big suppliers—state-owned or state-controlled enterprises inside and outside the Organization of Petroleum Exporting Countries (OPEC), plus a handful of private multinationals—dominate production. In recent years, most have appeared to pump oil at or near capacity most of the time. By most indications, Saudi Arabia alone retains the ability to affect prices by raising or lowering output. Otherwise suppliers must act together to set prices, and in recent years that has come to seem mostly a theoretical possibility. Periodic fears of disruption linked with political unrest or war have had greater effects, and sharp swings in prices have been common, affected also by asynchronous demand variations in major markets. Price increases have been moderated by declining energy intensity (energy consumption relative to economic output) in most parts of the world. This is the principal reason EIA does not expect the long-term trend to be sharply upward.

Acknowledging the more dramatic scenarios some analysts put forward, there seems little in what is actually known about world oil reserves and the workings of the international market to suggest that the U.S. military faces either intolerably burdensome fuel costs or supply risks in the foreseeable future. DoD buys fuel alongside other purchasers. It is a big customer, but not big enough to affect prices. Long-distance transport of crude oil and refined products is routine and inexpensive. So long as the world market remains effectively integrated, it would take a massive injection of substitutable alternatives to affect prices. Private investors, absent proven capability to produce alternatives in substantial quantities at competitive costs—or a package of subsidies such as those for domestic ethanol, perhaps including binding price guarantees—will find little reason to increase production capacity rapidly. Fuel is fuel, and as output of substitutable alternatives builds it will simply flow into the international market at prices little different from those for other refined petroleum products.

Given U.S. dependence on imported oil, it is reliability of supply, rather than pricing, that might seem the larger issue. But again, the market is international; indeed, DoD buys much of its fuel abroad—in recent years, something like half (box 2.3). Innovations—perhaps sustainable biofuels—would, once proven, migrate to the lowest-cost-production locations, many of them presumably overseas. (The United States has no monopoly on sunshine and arable land.) DoD and the government might support innovation and subsidize production, but it would be difficult to wall off domestic output without some compelling national security rationale. Wartime supply interruptions might be accepted as justifying government ownership and reservation of output for the military, but not indefinite fears of future interruptions. Private ownership coupled with domestic production and export restrictions would more than likely be seen as contravening bedrock principles of U.S. foreign economic policy, which since World War II has been based on borders nominally open to trade.

#### Even if supply disruption happened we’d never let it affect heg, and other countries would be hit worse

John Alic 12, directed studies on international competitiveness and technology policy at the Congressional Office of Technology Assessment, adjunct at the Johns Hopkins School of Advanced International Studies, March 2012, “Defense Department Energy Innovation: Three Cases,” in Energy Innovation at the Department of Defense: Assessing the Opportunities, http://bipartisanpolicy.org/sites/default/files/Energy%20Innovation%20at%20DoD.pdf

In any event, should serious bottlenecks in fuel supplies appear, the United States will be less vulnerable than many other countries, including major allies. The U.S. government can expect to outbid competing customers, beginning with poor countries totally dependent on imported oil and including wealthy economies such as Japan that benefit from the U.S. security umbrella. So long as there is fuel to buy (or commandeer, in war), DoD will be better able to afford it than almost any other customer. The armed forces have first claim on the Strategic Petroleum Reserve. Household consumers and airlines have more to fear from supply constrictions and price rises than DoD.

### Hydrogen Not Viable

#### Zero chance of hydrogen-based military fuels being viable for decades

James T. Bartis 11, senior policy researcher at the RAND Corporation, and Lawrence Van Bibber, researcher, RAND Corporation, 2011, “Alternative Fuels for Military Applications,” http://www.rand.org/content/dam/rand/pubs/monographs/2011/RAND\_MG969.pdf

Nuclear, solar, and wind energy technologies may offer important benefits in the production of military, as well as civilian, alternative fuels. Nuclear, wind, and solar energy offer electric power without emitting appreciable amounts of greenhouse gases. For the near- and mid-term alternative fuel options (i.e., hydrotreated oil from animal fats and vegetable oils, and FT liquids), electric power is not an important input to the production process. Electric power, however, can be used to produce hydrogen via electrolysis of water, and hydrogen is an important input. For example, hydrogen produced from nuclear or renewable power can be used to hydrotreat renewable oils produced from seed crops. If sufficient hydrogen is available, nearly all of the carbon in the coal or biomass feedstock to a Fischer-Tropsch plant would end up in the fuel products and not in the air, eliminating the need to capture and sequester carbon dioxide. In addition, the use of hydrogen in an FT plant could nearly triple yields of liquid fuels.

For hydrotreated oil from algae, a longer-term option, climate-friendly sources of electric power could be used directly in the processes of cultivating the algae and extracting the oil, because electricity is required for mixing, circulation, and management of water and nutrients.

But the beneficial hydrogen derived from nuclear, solar, and wind energy technologies is not an economically viable option over the near- to mid-term. The trade-off is cost: Producing hydrogen from clean sources in capacities large enough to gain the benefits described above requires very large amounts of generating capacity and would significantly increase the costs of producing liquid fuels. Considering the importance of reducing greenhouse gas emissions during the process of generating electric power for traditional uses, investments in climate-friendly power generation are already likely to be very high over the coming decades. In this context, the additional investment required to construct large amounts of generating capacity dedicated to producing alternative fuels is probably not feasible. For at least the next two decades, it is highly unlikely that hydrogen from nuclear or renewable electric-generating technologies will be a commercially viable option for producing alternative fuels.

### AT: Mexico

#### No Mexico collapse

TM 5 (Terrorism Monitor, volume 3 issue 1, published by Jamestown Foundation, http://mexidata.info/id381.html

Al-Qaeda's unlikely allies in Central America and Mexico)

Recently there have been reported sightings of al-Qaeda operatives in Honduras. According to some observers, their alleged presence in that country conforms to their desire to secure land routes to the United States, through collaboration with Central American gangs. This report, compiled with the assistance of Central American diplomats, promotes the view that cooperation between al-Qaeda and Central American gangs – while theoretically possible – is unlikely. To better understand why al-Qaeda could be interested in contacting these loose criminal networks, and to appreciate why these contacts are unlikely to develop into sustained relationships, it is necessary to explore the background of these street gangs.

These gangs are a recent phenomenon, originating in U.S. inner cities, during the Central American migration of the 1980s. The problems and threats encountered by these migrants led them to create their own security networks, which in time came to be recognized as the "Mara Salvatrucha." This name is composed of two slang terms of endearment and loosely translates into "group of streetwise Salvadorans.” At the beginning, the gang was mostly composed of youths from El Salvador, but as the Mara Salvatrucha expanded into other inner cities within the U.S., it started to absorb members of other Central American nationalities. Today, there are two predominant Maras in American inner cities, the Mara Salvatrucha (MS) and Mara 18th street (M18) – they are regarded as deadly rivals. These two Maras cover the whole of the continental U.S. including Alaska [1], and since 1988 have been catalogued by the Los Angeles and New York Police Departments as being among the most dangerous street gangs in the country. [2] The MS and the M18 expanded into Central America and Mexico by means of a vicious, migration-related circle which started around 1992. At that time, the United States began to apply a migratory policy of deporting convicted criminals of foreign nationality to their countries of origin. Among these deportees were thousands of Mareros who arrived in Guatemala, El Salvador and Honduras, and began recruiting and setting up branch operations. In Central America, the problems posed by MS and M18 gradually escalated from local nuisance to national security threat, as their membership and criminal activities increased. The Maras were recognized as an official threat to Central American regional security at the beginning of 2004. [3] A combination of factors propelled the penetration of the Maras into Mexico, thus starting the second half of the vicious circle and their return to the United States. The first Mareros to arrive in Mexico were most likely many of the original U.S.-based gang members of Central American origin who had been deported but wished to return to the inner cities of Los Angeles and Washington D.C. The presence of the Maras in Mexico was consolidated by local recruitment, and an influx of Central American Mareros fleeing from the law enforcement initiatives adopted in their countries since 2003. Once in Mexico, the Maras flourished in the corrupt environment found along the Guatemala–Mexico border in the Mexican state of Chiapas. There they rule over considerable portions of the smuggling networks which transport people, drugs and weapons between these two countries, and into the north of Mexico, by means of a cargo railroad which departs from the border city of Tapachula. The inexorable expansion of Mara activities has not been ignored by the U.S. government. Indeed last summer, U.S. Attorney General John Ashcroft claimed that Adnan G. El Shukrijumah, a known al-Qaeda member and suspect in the planning of 9/11 (and for whom the U.S. has offered a $5 million reward) was allegedly spotted in July 2004 in Honduras meeting with leaders of the Mara Salvatrucha. Shukrijumah was allegedly trying to secure entry routes into the U.S., along the Mexican border, as the MS is purported to have established a major smuggling center in Matamoros, Mexico, just south of Brownsville, Texas. [4] The announcement by Ashcroft was followed by a "confirmation" by U.S. officials on October 5 that Shukrijumah had attempted to acquire radioactive material for the production and smuggling of a "dirty bomb" into the United States. After such declarations, the Maras are likely to be surveilled more closely by the Mexican government, especially since it has signed with its U.S. counterpart a series of bilateral initiatives on shared security responsibilities along their common border. Nevertheless, Central American diplomatic sources consulted for this article claimed that the subject of Shukrijumah's presence has not been raised as an issue in the diplomatic summits recently held in Central America. However, the matter has likely been addressed by the region's intelligence community. The U.S. has also worked at the hemispheric level, in order to develop an institutional framework to address a possible cooperation between the Maras and al-Qaeda. The Special Conference on Security of the Organization of the American States (OAS), held in Mexico City on October 2003, at the request of Mexico and the U.S. government, led to the "Declaration on Security in the Americas.” Through this declaration, the conference recognized that the hemisphere, aside from facing traditional threats, is now confronted with new security threats which merit a multi-dimensional response. [5]

The key question, of course, revolves around the likelihood of Mara/al-Qaeda cooperation. Broadly speaking there are four factors which make such cooperation unlikely. Firstly the Maras are not a centralized organization; on the contrary they are a highly de-centralized transnational criminal network. In short they do not have the central decision-making mechanisms to establish a relationship with a sophisticated, non-indigenous organization like al-Qaeda. Secondly the Maras do not have an anti-American agenda. However, their crimes are becoming more political in Honduras, where Shukrijumah was allegedly spotted. In late December 2004 Honduran Maras committed mass murder by machine-gunning a bus, killing more than 20 people. The perpetrators left a banner justifying the killings as a protest against the anti-Maras policies adopted by the Honduran government. Thirdly the Maras are a public and widely known organization, which makes them unlikely partners for an ultra-secretive network like al-Qaeda. Moreover the Maras' original territories lie in Los Angeles and Washington D.C., and this makes their extended social and criminal networks, not only a collateral target for an al-Qaeda attack, but an easy target of Homeland Security actions. This is especially the case since many of their members are well known to local and federal law enforcement agencies. On the other hand, it is possible for their branches inside Mexico to act independently upon offers of money and provide human smuggling services to al-Qaeda. But this does not explain why Shukrijumah would want to meet Maras members in Honduras. Finally, although the U.S.-Mexico border is vulnerable to penetration – a reality underscored by the many migrants that cross it every day – this fact alone does not make it the first choice of entry to the U.S. for al-Qaeda. The very fact that the border is vulnerable to penetration means that it is subject to constant surveillance by a multitude of U.S. agencies, including the intelligence community. Moreover Canada offers more penetration routes to al-Qaeda since it has a larger division line and shares two borders with the continental U.S. (mainland and Alaska). Furthermore the Canadian borders are not subject to the same intense surveillance as the Mexican borders. The upshot is that the Maras, despite their status as a regional security threat, constitute unlikely and problematic allies for al-Qaeda or any other sophisticated and secretive terrorist network.

### AT: Afghanistan

#### Cooperation prevents war

Hadar 11—former prof of IR at American U and Mount Vernon-College. PhD in IR from American U (1 July 2011, Leon, Saving U.S. Mideast Policy, http://nationalinterest.org/commentary/saving-us-policy-the-mideast-5556)

Indeed, contrary to the warning proponents of U.S. military intervention typically express, the withdrawal of American troops from Iraq and Afghanistan would not necessarily lead to more chaos and bloodshed in those countries. Russia, India and Iran—which supported the Northern Alliance that helped Washington topple the Taliban—and Pakistan (which once backed the Taliban) all have close ties to various ethnic and tribal groups in that country and now have a common interest in stabilizing Afghanistan and containing the rivalries.

### AT: UAVs

#### UAVs inevitable---exist now, don’t need nuclear

#### They didn’t read the impact to this – we get new defense in the block

#### US forces could take out an ASAT launch

Shachtman 8[Noah, Editor of Wired Magazine, "How China Loses the Coming Space War (Pt. 3)" 1-10-08, accessed from Danger Room Blog, http://blog.wired.com/defense/2008/01/inside-the-ch-2.html]

If China was to attack the strategically important deep-space satellites it would give the United States at least an indication of the impending attack two or more weeks prior to launch as it assembled its Long March rockets on their launch pads. There could be few other reasons for China to assemble so many rockets at its satellite launch centers for near-simultaneous launches. The US could, if it wished to initiate hostilities, destroy the rockets before they were launched using either stealth bombers or cruise missiles. Alternatively, it could wait and use its National Missile Defense interceptors—which have an inherent ASAT capability—to shoot down the first group of deep space ASATs as they wait for D-day in their parking orbit.

## 2NC

#### No impact to heg

Maher 11---adjunct prof of pol sci, Brown. PhD expected in 2011 in pol sci, Brown (Richard, The Paradox of American Unipolarity: Why the United States May Be Better Off in a Post-Unipolar World, Orbis 55;1)

At the same time, preeminence creates burdens and facilitates imprudent behavior. Indeed, because of America’s unique political ideology, which sees its own domestic values and ideals as universal, and the relative openness of the foreign policymaking process, the United States is particularly susceptible to both the temptations and burdens of preponderance. For decades, perhaps since its very founding, the United States has viewed what is good for itself as good for the world. During its period of preeminence, the United States has both tried to maintain its position at the top and to transform world politics in fundamental ways, combining elements of realpolitik and liberal universalism (democratic government, free trade, basic human rights). At times, these desires have conflicted with each other but they also capture the enduring tensions of America’s role in the world. The absence of constraints and America’s overestimation of its own ability to shape outcomes has served to weaken its overall position. And because foreign policy is not the reserved and exclusive domain of the president---who presumably calculates strategy according to the pursuit of the state’s enduring national interests---the policymaking process is open to special interests and outside influences and, thus, susceptible to the cultivation of misperceptions, miscalculations, and misunderstandings. Five features in particular, each a consequence of how America has used its power in the unipolar era, have worked to diminish America’s long-term material and strategic position. Overextension. During its period of preeminence, the United States has found it difficult to stand aloof from threats (real or imagined) to its security, interests, and values. Most states are concerned with what happens in their immediate neighborhoods. The United States has interests that span virtually the entire globe, from its own Western Hemisphere, to Europe, the Middle East, Persian Gulf, South Asia, and East Asia. As its preeminence enters its third decade, the United States continues to define its interests in increasingly expansive terms. This has been facilitated by the massive forward presence of the American military, even when excluding the tens of thousands of troops stationed in Iraq and Afghanistan. The U.S. military has permanent bases in over 30 countries and maintains a troop presence in dozens more.13 There are two logics that lead a preeminent state to overextend, and these logics of overextension lead to goals and policies that exceed even the considerable capabilities of a superpower. First, by definition, preeminent states face few external constraints. Unlike in bipolar or multipolar systems, there are no other states that can serve to reliably check or counterbalance the power and influence of a single hegemon. This gives preeminent states a staggering freedom of action and provides a tempting opportunity to shape world politics in fundamental ways. Rather than pursuing its own narrow interests, preeminence provides an opportunity to mix ideology, values, and normative beliefs with foreign policy. The United States has been susceptible to this temptation, going to great lengths to slay dragons abroad, and even to remake whole societies in its own (liberal democratic) image.14 The costs and risks of taking such bold action or pursuing transformative foreign policies often seem manageable or even remote. We know from both theory and history that external powers can impose important checks on calculated risk-taking and serve as a moderating influence. The bipolar system of the Cold War forced policymakers in both the United States and the Soviet Union to exercise extreme caution and prudence. One wrong move could have led to a crisis that quickly spiraled out of policymakers’ control. Second, preeminent states have a strong incentive to seek to maintain their preeminence in the international system. Being number one has clear strategic, political, and psychological benefits. Preeminent states may, therefore, overestimate the intensity and immediacy of threats, or to fundamentally redefine what constitutes an acceptable level of threat to live with. To protect itself from emerging or even future threats, preeminent states may be more likely to take unilateral action, particularly compared to when power is distributed more evenly in the international system. Preeminence has not only made it possible for the United States to overestimate its power, but also to overestimate the degree to which other states and societies see American power as legitimate and even as worthy of emulation. There is almost a belief in historical determinism, or the feeling that one was destined to stand atop world politics as a colossus, and this preeminence gives one a special prerogative for one’s role and purpose in world politics. The security doctrine that the George W. Bush administration adopted took an aggressive approach to maintaining American preeminence and eliminating threats to American security, including waging preventive war. The invasion of Iraq, based on claims that Saddam Hussein possessed weapons of mass destruction (WMD) and had ties to al Qaeda, both of which turned out to be false, produced huge costs for the United States---in political, material, and human terms. After seven years of war, tens of thousands of American military personnel remain in Iraq. Estimates of its long-term cost are in the trillions of dollars.15 At the same time, the United States has fought a parallel conflict in Afghanistan. While the Obama administration looks to dramatically reduce the American military presence in Iraq, President Obama has committed tens of thousands of additional U.S. troops to Afghanistan. Distraction. Preeminent states have a tendency to seek to shape world politics in fundamental ways, which can lead to conflicting priorities and unnecessary diversions. As resources, attention, and prestige are devoted to one issue or set of issues, others are necessarily disregarded or given reduced importance. There are always trade-offs and opportunity costs in international politics, even for a state as powerful as the United States. Most states are required to define their priorities in highly specific terms. Because the preeminent state has such a large stake in world politics, it feels the need to be vigilant against any changes that could impact its short-, medium-, or longterm interests. The result is taking on commitments on an expansive number of issues all over the globe. The United States has been very active in its ambition to shape the postCold War world. It has expanded NATO to Russia’s doorstep; waged war in Bosnia, Kosovo, Iraq, and Afghanistan; sought to export its own democratic principles and institutions around the world; assembled an international coalition against transnational terrorism; imposed sanctions on North Korea and Iran for their nuclear programs; undertaken ‘‘nation building’’ in Iraq and Afghanistan; announced plans for a missile defense system to be stationed in Poland and the Czech Republic; and, with the United Kingdom, led the response to the recent global financial and economic crisis. By being so involved in so many parts of the world, there often emerges ambiguity over priorities. The United States defines its interests and obligations in global terms, and defending all of them simultaneously is beyond the pale even for a superpower like the United States. Issues that may have received benign neglect during the Cold War, for example, when U.S. attention and resources were almost exclusively devoted to its strategic competition with the Soviet Union, are now viewed as central to U.S. interests. Bearing Disproportionate Costs of Maintaining the Status Quo. As the preeminent power, the United States has the largest stake in maintaining the status quo. The world the United States took the lead in creating---one based on open markets and free trade, democratic norms and institutions, private property rights and the rule of law---has created enormous benefits for the United States. This is true both in terms of reaching unprecedented levels of domestic prosperity and in institutionalizing U.S. preferences, norms, and values globally. But at the same time, this system has proven costly to maintain. Smaller, less powerful states have a strong incentive to free ride, meaning that preeminent states bear a disproportionate share of the costs of maintaining the basic rules and institutions that give world politics order, stability, and predictability. While this might be frustrating to U.S. policymakers, it is perfectly understandable. Other countries know that the United States will continue to provide these goods out of its own self-interest, so there is little incentive for these other states to contribute significant resources to help maintain these public goods.16 The U.S. Navy patrols the oceans keeping vital sea lanes open. During financial crises around the globe---such as in Asia in 1997-1998, Mexico in 1994, or the global financial and economic crisis that began in October 2008--- the U.S. Treasury rather than the IMF takes the lead in setting out and implementing a plan to stabilize global financial markets. The United States has spent massive amounts on defense in part to prevent great power war. The United States, therefore, provides an indisputable collective good---a world, particularly compared to past eras, that is marked by order, stability, and predictability. A number of countries---in Europe, the Middle East, and East Asia---continue to rely on the American security guarantee for their own security. Rather than devoting more resources to defense, they are able to finance generous social welfare programs. To maintain these commitments, the United States has accumulated staggering budget deficits and national debt. As the sole superpower, the United States bears an additional though different kind of weight. From the Israeli-Palestinian dispute to the India Pakistan rivalry over Kashmir, the United States is expected to assert leadership to bring these disagreements to a peaceful resolution. The United States puts its reputation on the line, and as years and decades pass without lasting settlements, U.S. prestige and influence is further eroded. The only way to get other states to contribute more to the provision of public goods is if the United States dramatically decreases its share. At the same time, the United States would have to give other states an expanded role and greater responsibility given the proportionate increase in paying for public goods. This is a political decision for the United States---maintain predominant control over the provision of collective goods or reduce its burden but lose influence in how these public goods are used. Creation of Feelings of Enmity and Anti-Americanism. It is not necessary that everyone admire the United States or accept its ideals, values, and goals. Indeed, such dramatic imbalances of power that characterize world politics today almost always produce in others feelings of mistrust, resentment, and outright hostility. At the same time, it is easier for the United States to realize its own goals and values when these are shared by others, and are viewed as legitimate and in the common interest. As a result of both its vast power but also some of the decisions it has made, particularly over the past eight years, feelings of resentment and hostility toward the United States have grown, and perceptions of the legitimacy of its role and place in the world have correspondingly declined. Multiple factors give rise toanti-American sentiment, and anti-Americanism takes different shapes and forms.17 It emerges partly as a response to the vast disparity in power the United States enjoys over other states. Taking satisfaction in themissteps and indiscretions of the imposing Gulliver is a natural reaction. In societies that globalization (which in many parts of the world is interpreted as equivalent to Americanization) has largely passed over, resentment and alienation are felt when comparing one’s own impoverished, ill-governed, unstable society with the wealth, stability, and influence enjoyed by the United States.18 Anti-Americanism also emerges as a consequence of specific American actions and certain values and principles to which the United States ascribes. Opinion polls showed that a dramatic rise in anti-American sentiment followed the perceived unilateral decision to invade Iraq (under pretences that failed to convince much of the rest of the world) and to depose Saddam Hussein and his government and replace itwith a governmentmuchmore friendly to the United States. To many, this appeared as an arrogant and completely unilateral decision by a single state to decide for itselfwhen---and under what conditions---military force could be used. A number of other policy decisions by not just the George W. Bush but also the Clinton and Obama administrations have provoked feelings of anti-American sentiment. However, it seemed that a large portion of theworld had a particular animus for GeorgeW. Bush and a number of policy decisions of his administration, from voiding the U.S. signature on the International Criminal Court (ICC), resisting a global climate change treaty, detainee abuse at Abu Ghraib in Iraq and at Guantanamo Bay in Cuba, and what many viewed as a simplistic worldview that declared a ‘‘war’’ on terrorism and the division of theworld between goodand evil.Withpopulations around theworld mobilized and politicized to a degree never before seen---let alone barely contemplated---such feelings of anti-American sentiment makes it more difficult for the United States to convince other governments that the U.S.’ own preferences and priorities are legitimate and worthy of emulation. Decreased Allied Dependence. It is counterintuitive to think that America’s unprecedented power decreases its allies’ dependence on it. During the Cold War, for example, America’s allies were highly dependent on the United States for their own security. The security relationship that the United States had with Western Europe and Japan allowed these societies to rebuild and reach a stunning level of economic prosperity in the decades following World War II. Now that the United States is the sole superpower and the threat posed by the Soviet Union no longer exists, these countries have charted more autonomous courses in foreign and security policy. A reversion to a bipolar or multipolar system could change that, making these allies more dependent on the United States for their security. Russia’s reemergence could unnerve America’s European allies, just as China’s continued ascent could provoke unease in Japan. Either possibility would disrupt the equilibrium in Europe and East Asia that the United States has cultivated over the past several decades. New geopolitical rivalries could serve to create incentives for America’s allies to reduce the disagreements they have with Washington and to reinforce their security relationships with the United States.

#### Bolivia proves

Watson Institute 4 [The Watson Institute for International Studies @ Brown University, Reported by Peng Wu, Watson Student Reporter "Democratization in Latin America: New Trends and Perspectives' http://watsoninstitute.org/events\_detail.cfm?id=488]

\*Cites René Mayorga, Cogut Visiting Professor in Latin American Studies and a political scientist at the Bolivian Center of Multidisciplinary Studies (CEBEM) in La Paz.

René Mayorga discussed Bolivia's struggle to reconcile the two challenges common to young democracies: economic growth and political stability. Since the late 1990s, Bolivia has seen a decrease in economic growth and increase in unemployment, which has begun to erode the country's political stability. The ruling political parties are in decline, and there is an increase demand in the country for more regional autonomy. In a survey taken six years ago, 60 percent of those surveyed stated that political parties are not necessary for democracy. Mayorga is uncertain of what the decline of parties will mean exactly for Bolivia in the long term, but he sees no threat of a possible military coup in the near future.

#### Economic interdependence prevents war

Bremmer and Gordon 12 Ian, president of Eurasia Group and author of ''Every Nation for Itself: Winners and Losers in a G-Zero World” and David, head of research at Eurasia Group and former director of policy planning at the State Department, "Where Commerce and Politics Collide," October 15, China US Focus, www.chinausfocus.com/uncategorized/where-commerce-and-politics-collide/

Whatever happened to the reassuring view that expanding trade ties make for a safer and more prosperous world? This idea has been long present in U.S. strategies toward China, even before being concretized in Robert Zoellick’s notion of integrating China into the world financial and commercial systems as a way of promoting ''responsible stakeholdership.''¶ The Chinese had a parallel concept – that promoting economic interdependence with America would counter Washington’s natural tendency to block China’s rise as an alternative power.¶ But as President Obama and Governor Mitt Romney argue over who can be tougher on China and its trade practices, and as a wave of anti-American nationalism surges across China, the commercial partnership meant to bring Washington and Beijing closer together appears to be pushing the world’s two largest economies further apart. Are we headed for some new form of Cold War-style confrontation?¶ We don’t think so. Behind all the finger-pointing and fist-shaking on both sides is a powerful economic interdependence that constrains both countries and was totally missing from U.S.-Soviet relations during the Cold War. What’s bad for one economy is still bad for the other, and both Washington and Beijing know it.¶ With trillions invested in U.S. Treasuries, and the continuing sluggishness of American consumer spending, China has a huge stake in a more robust U.S. recovery. And the prospect of a rapidly growing consumer sector in China creates enormous opportunities for American agriculture and industry.¶ But macro-economic interdependence brings with it a whole range of tactical tensions – over exchange rates, intellectual property, investment rules and standard-setting. Yet there is also a more strategic downside to mutually assured economic destruction, because neither side has perfect control over events that might undermine the relationship, and because reduced risk of all-out conflict lets them feel freer to play with fire.¶ There are a growing number of security risks around the world. In Asia, an expanding U.S. security and commercial presence has China’s next generation of leaders on edge, and Beijing finds itself in various forms of direct conflict with many of its neighbors, some of whom are America’s strategic allies. In the Middle East, a variety of new actors with competing agendas are jostling to fill emerging power vacuums. In Europe, Germany has taken a leadership role in what is sure to emerge as a quite different continent. In Russia’s sphere of influence, a government that faces rising risks at home may well respond more aggressively abroad.¶ In the past, these sorts of tectonic geopolitical shifts and the uncertainty they create might well have provoked war. But today, the economic dimension is at least as important as military muscle in shaping the balance of power. That makes for more complicated international relationships.¶ Look more closely at the contradictions. A military rivalry is a zero-sum relationship; what’s good for one side is bad for the other. But economic security is good for both. America and China both need oil to flow smoothly from the Middle East and for peace to prevail in the South China Sea. Deepening trade relations give each side a stake in the other’s success.