# ROUND 3 – V UCO DV

## 2AC

### Topicality – energy production

#### C/I - Financial incentives include loan guarantees - distinguished from rules, regulations and policies.

DSIRE (Database of State Incentives for Renewables & Efficiency), 2012, 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) 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.)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. 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.)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. 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. 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. 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

#### Targeted towards obtaining energy production.

Richard R. Lancaster & Mark J. Berndt, June 1984, is with the Minnesota Department of Public Service, Mark J. Berndt is with the Minnesota Department of Energy and Economic Development, “Alternative energy development in the USA The effectiveness of state government incentives,” Energy Policy, Science Direct

Feiveson and Rabi 14 classify the range of possible government incentives to alternative energy into five categories: targeted incentives, direct regulation, incentives based on energy saved, non-targeted incentives and conventional fuel taxes. The predominant incentives used by state governments are targeted incentives, such as income tax credits, sales tax exemptions, property tax exemptions and grant and loan programs aimed at specific resources or technologies, followed by the conventional fuel tax, which has the effect of raising fuel prices. This study addresses the effectiveness of targeted incentives and conventional fuel taxes. The other three types of incentive are either difficult to quantify or are used in very few states, and do not lend themselves to empirical analysis. An alternative to incentives would be to remove existing subsidies to conventional fuels. Although this is straightforward in concept, it might not be in practice because of resistance from the constituencies that benefit from the subsidies.

#### We meet – was created to address energy demands.

Steve Kirsch, 2009, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “The Integral Fast Reactor (IFR) project: Congress Q&A,” <http://skirsch.com/politics/ifr/QAcongressKirsch.htm>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

There is no other alternative energy technology which eats our nuclear waste for fuel. So a billion dollars to solve a $100 billion dollar nuclear waste problem is a good deal. You get the power for free. Secondly, we need a technology to offer to India and China that is more attractive than coal. None of the alternatives you are funding now do that. But if we don't do it, the planet will suffer damages beyond repair. We must get rid of coal or we are hosed. Nothing we can do will matter. This project will take 5 years if Obama orders the NRC to fast-track the certification of the PRISM and the longer we keep putting it off, the more damage will be done. It gets exponentially harder to stop global warming as time goes on. The least expensive approach is to start yesterday. While a billion dollars is a large earmark, it is tiny in comparison to the magnitude of the problem it solves. Thirdly, because our government already invested 10 years and $1 billion into it already and then pulled the rug out from under it even though it met all expectations. Fourth, because this technology was invented by our nation's top energy scientists at our top energy national lab to solve our energy problems. How can you not fund your own top scientists especially when they proved they were right and that we now need it more than ever?

### 2AC geo-engineering CP

#### Geo-engineering for the environment ruins the environment – several models say it condemns millions.

Alan Robock, May/June 2008, Department of Meteorology at the Massachusetts Institute of Technology, receiving an S.M. and Ph.D. faculty of the Department of Meteorology of the University of Maryland, a Professor and the State Climatologist, Distinguished Professor in the Department of Environmental Sciences at Rutgers University, Associate Director of the Center for Environmental Prediction, Director of the Meteorology Undergraduate Program, and a member of the Graduate Program in Atmospheric Science, Fellow of the American Meteorological Society, Fellow of the American Association for the Advancement of Science, Editor of Reviews of Geophysics,ember of the International Association of Volcanism and Chemistry of the Earth's Interior (IAVCEI), Past-President of the Atmospheric Sciences Section of AGU and Retiring Chair of the Atmospheric and Hydrospheric Sciences Section, awarded a AAAS Congressional Science Fellowship, Bulletin of the Atomic Scientists, “20 reasons why geoengineering may be a bad idea,” p. 15-6, Ebsco Host

Could attempts to geoengineer isolated regions (say, the Arctic) be confined there? Sci-entists need to investigate these scenari-os. At the fall 2007 American Geophysical Union meeting, researchers presented preliminary findings from several dif-ferent climate models that simulated geoengineering schemes and found that they reduced precipitation over wide re-gions, condemning hundreds of millions of people to drought. 2. Continued ocean acidification. If humans adopted geoengineering as a solution to global warming, with no restriction on continued carbon emis-sions, the ocean would continue to be-come more acidic, because about half of all excess carbon dioxide in the atmo-sphere is removed by ocean uptake. The ocean is already 30 percent more acidic than it was before the Industrial Revolu-tion, and continued acidification threat-ens the entire oceanic biological chain, from coral reefs right up to humans. 7 3. Ozone depletion. Aerosol particles in the stratosphere serve as surfaces for chemical reactions that destroy ozone in the same way that water and nitric acid aerosols in polar stratospheric clouds produce the seasonal Antarctic ozone hole.8 For the next four decades or so, when the concentration of anthropo-genic ozone-depleting substances will still be large enough in the stratosphere to produce this effect, additional aero-sols from geoengineering would destroy even more ozone and increase damaging ultraviolet flux to Earth’s surface.

#### Use precaution when endorsing geo-engineering no feasible way to shut down or curb effects if it goes wrong.

Alan Robock, May/June 2008, Department of Meteorology at the Massachusetts Institute of Technology, receiving an S.M. and Ph.D. faculty of the Department of Meteorology of the University of Maryland, a Professor and the State Climatologist, Distinguished Professor in the Department of Environmental Sciences at Rutgers University, Associate Director of the Center for Environmental Prediction, Director of the Meteorology Undergraduate Program, and a member of the Graduate Program in Atmospheric Science, Fellow of the American Meteorological Society, Fellow of the American Association for the Advancement of Science, Editor of Reviews of Geophysics,ember of the International Association of Volcanism and Chemistry of the Earth's Interior (IAVCEI), Past-President of the Atmospheric Sciences Section of AGU and Retiring Chair of the Atmospheric and Hydrospheric Sciences Section, awarded a AAAS Congressional Science Fellowship, Bulletin of the Atomic Scientists, “20 reasons why geoengineering may be a bad idea,” p. 17, Ebsco Host

There’s no going back. We don’t know how quickly scientists and engi-neers could shut down a geoengineer-ing system—or stem its effects—in the event of excessive climate cooling from large volcanic eruptions or other causes. Once we put aerosols into the atmosphere, we cannot remove them. 12. Human error. Complex mechan-ical systems never work perfectly. Hu-mans can make mistakes in the de-sign, manufacturing, and operation of such systems. (Think of Chernobyl, the Exxon Valdez, airplane crashes, and friendly fire on the battlefield.) Should we stake the future of Earth on a much more complicated arrangement than these, built by the lowest bidder? 13. Undermining emissions miti-gation. If humans perceive an easy tech-nological fix to global warming that al-lows for “business as usual,” gathering the national (particularly in the United States and China) and international will to change consumption patterns and en-ergy infrastructure will be even more dif-ficult. 18 This is the oldest and most persis-tent argument against geoengineering. 14. Cost. Advocates casually claim that it would not be too expensive to implement geoengineering solutions, but there have been no definitive cost stud-ies, and estimates of large-scale govern-ment projects are almost always too low. (Boston’s “Big Dig” to reroute an inter-state highway under the coastal city, one of humankind’s greatest engineering feats, is only one example that was years overdue and billions over budget.) Angel estimates that his scheme to launch re-flective disks into orbit would cost “a few trillion dollars.” British economist Nich-olas Stern’s calculation of the cost of cli-mate change as a percentage of global GDP (roughly $9 trillion) is in the same ballpark; Angel’s estimate is also orders of magnitude greater than current glob-al investment in renewable energy tech-nology.

### 2AC oil dependence good DA

#### Nuclear cooperation with Russia solves their economy – they want the plan.

Taylor Dewey et. al, 2010, Logan Ensign, Stanford University, Natalya Matytsyna, The Higher School of Economics, Polina Beresneva, Moscow State University, Stanford U.S. Russia Forum Journal 2009-2010, <http://joinsurf.com/news/62/16/SURF-2009-2010-Journal-Article-4-of-8>

Russia is currently pursuing the strategy of expanding its global role as an energy provider. This role will necessitate expanding the domestic production of nuclear energy as a way of freeing up fossil fuels, particularly natural gas, for export. Inherent in this strategy is the expansion of Russia’s nuclear export business to transform Rosatom into a major player in the world nuclear energy market and Russia into the default country for nuclear fuel-cycle services. Russia’s interest in concluding a nuclear cooperation agreement with the United States is grounded, in large part, in its desire to implement this strategy. Although Russia is not dependent on obtaining access to US technology and is already actively pursuing its nuclear energy goals regardless, cooperation with the US could help to render Russia’s strategy more efficient. While Russia’s nuclear industry has been far more active than its US counterpart over the past several decades, there are still gaps in the Russian nuclear engineering chain and areas where US technical expertise could improve the outlook for Russian exports. This is especially true in the area of control and safety systems, known as automated control and technical processes (ACPS). To improve their ability to pursue nuclear exports in larger, more lucrative and more internationally acceptable markets, Russian officials and industry are increasingly interested in developing joint initiatives with the United States and other countries. In the past, China and other countries have asked that some reactors purchased from Russia be equipped with non-Russian made ACPS. Partnering with German and French companies appears to have helped Russian firms win bids to build two reactors in Bulgaria. Complete control systems cannot be exported from the United States unless the recipient or partner has a 123 Agreement in place. Beyond the export market, Russian officials have expressed interest in enhancing cooperation with US companies to increase the efficiency and safety of reactors already operating in Russia. In addition, the United States has valuable expertise in the area of reactor life extension. Russia is also eager to reduce the maintenance costs of its nuclear reactor operations. According to official Russian government projections, Russia’s nuclear operators are hoping to reduce their maintenance costs by 20 percent by the year 2015. The United States nuclear industry has already reduced its maintenance costs by almost half (from 3.4 to 1.68 cents/kilowatt hour) since the mid- 1980s. The US experience may be of real value as Russia works to meet its targets.

#### Imports have decreased to record lows now – without a new energy paradigm however coming price shocks will cause hollow out of the economy.

Gal Luft & Anne Korin, July/August 2012, co-directors of the Institute for the Analysis of Global Security (IAGS) and senior advisers to the United States Energy Security Council, They are co-authors of Turning Oil into Salt: Energy Independence through Fuel Choice and Petropoly: The Collapse of America’s Energy Security Paradigm, The American Interest, “The Folly of Energy Independence,” <http://www.the-american-interest.com/article.cfm?piece=1266>

In recent years America’s volume of imported oil has dropped significantly even as the price we have paid and are still paying for it has sharply increased. It follows, then, that the policy options we ought to consider differ significantly from those of the past half century. Yet there seems to be something seriously the matter with our mental clutch. We’re stuck in the wrong gear, and we’re not getting anywhere. That needs to change, now. Up to Speed To understand more fully what the problem is and what we need to do about it, consider that in recent years America’s energy landscape has turned a corner—not thanks to, but largely despite, the actions of the U.S. government. U.S. net imports of petroleum declined from 12.5 million barrels per day (mbd) in 2005 to 8.6 mbd in 2011. U.S. import dependence dropped from its 60 percent peak in 2005 to 46 percent, the level it was back in 1995. This 30 percent reduction in just seven years in the level of imports is equivalent to three times the number of barrels nominally imported from Saudi Arabia. Some of the reduction is due to a recession-induced drop in consumption; some has to do with increased vehicle fuel efficiency standards; some with a ramp up in ethanol blending; and some with a ramp up in domestic oil production. Since 2008, technologies like deep-water drilling, hydraulic fracturing and horizontal drilling have increased U.S. crude oil output by 18 percent. In the past year alone, the U.S. onshore rig count has grown by 30 percent. About a million barrels per day emerged from a new source, tight oil, which is extracted from dense rocks. North Dakota, the center of the tight oil transformation, has become the fourth largest oil-producing state behind Texas, Alaska and California. For the first time in decades, the United States is experiencing an oil boom—or at least a boomlet. But while America’s oil imports dropped, its foreign oil expenditures climbed by almost 50 percent, from $247 billion in 2005 to $367 billion in 2011. The share of oil imports in the overall trade deficit grew from 32 percent in 2005 to 58 percent in 2011. The price of a gallon of regular gasoline nearly doubled. Despite lower demand, U.S. drivers spent more last year on gasoline than in any prior year. Clearly, and surprisingly to those trapped in old ways of thinking, the volume of U.S. imports and the cost of those imports have moved in opposite directions. While America became more self-sufficient and more fuel-efficient, it became poorer and got deeper in debt. If one accepts the traditional mantra of energy security as “availability of sufficient supply at affordable prices”, then whatever points we gained on the availability front were offset by those lost on the affordability side of the ledger. The latter matters more—especially in a time of economic adversity. All but two of the post-World War II recessions were preceded by a sharp spike in oil prices; there is no question that the fivefold increase in oil prices since 2003 has contributed to the current economic dislocation. For perspective, forty years ago, at the zenith of the Cold War, the United States spent $4 billion on oil imports, an amount that equaled 1.2 percent of the defense budget. In 2006, the United States paid $296 billion, equal to half of the defense budget. By 2008, U.S. foreign oil expenditures grew so much they almost equaled the entire defense budget. The energy security paradox of the 21st century, then, is that a country can reduce oil imports but end up paying a much higher oil import bill. What this means is that, given the current state of the global economy, a new oil shock—whether caused by war in the Persian Gulf, instability in North Africa or Nigeria, or even anxious investors rushing to buy oil futures to hedge against falling currencies—would sink Western economies. As it is, the rising cost of oil is hollowing out the U.S. economy, and no fuel economy standards or new oil discovery will stop this tide. What is needed is a new energy paradigm.

#### E.U. and China already triggered speculator crisis.

Robert Bowen, 9-3-2012, Staff Writer, Examiner, “Oil prices drop as U.S. oil production reaches 15-year high,” http://www.examiner.com/article/oil-prices-drop-as-u-s-oil-production-reaches-15-year-high

One reason given for the drop in oil prices, besides increased output, is fears about the economy in Europe and China. Speculators do not want to buy high, and then if demand falls off later, they have to sell at a loss. If gasoline prices fall, then consumer spending will increase. That will lead to more jobs. That will boost the economy. It also helps the economy in the homes of average Americans.

#### Global oil production is decreasing .

James Murray & David King, 1-26-2012, founding director of the University of Washington's Program on Climate Change & Professor at the School of Oceanography, University of Washington and director of the Smith School of Enterprise and the Environment, University of Oxford & senior science adviser to the bank UBS; former chief scientific adviser to the UK, “Climate policy: Oil's tipping point has passed,” p. 433-35

The idea of 'peak oil' — that global production will reach a peak and then decline — has been around for decades, with academics arguing about whether this peak has already passed or is yet to come. The typical industry response is to point to increasing assessments of global reserves — the amount known to be in the ground that can be produced commercially. But this is misleading. The true volume of proven global reserves is clouded by secrecy; forecasts by state oil companies are not audited and seem to be exaggerated 3. More importantly, reserves often take 6–10 years to drill and develop before they become part of supply, by which time older fields have become depleted. It is far more sensible to look instead at actual production records, which are less encouraging. Even while reserves are apparently increasing, the percentage available for production is going down. In the United States, for example, production as a percentage of reserves has steadily decreased from 9% in 1980 to 6% today2. Production at existing oil fields around the world is declining at rates of about 4.5% (ref. 4) to 6.7% per year5. Only by adding in production from new wells is overall global production holding steady. In 2005, global production of regular crude oil reached about 72 million barrels per day. From then on, production capacity seems to have hit a ceiling at 75 million barrels per day. A plot of prices against production from 1998 to today2 shows this dramatic transition, from a time when supply could respond elastically to rising prices caused by increased demand, to when it could not (see 'Phase shift'). As a result, prices swing wildly in response to small changes in demand. Other people have remarked on this step change in the economics of oil around the year 2005, but the point needs to be lodged more firmly in the minds of policy-makers.

#### Nuclear energy doesn’t directly trade-off with oil.

Ferenc L. Toth, 2006, senior energy economist with the Planning and Economic Studies Section in the Department of Nuclear Energy at IAEA, Hans-Holger Rogner, head of Planning and Economic Studies at IAEA, “Oil and nuclear power: Past, present, and future,” IAEA, <http://www.iaea.org/OurWork/ST/NE/Pess/assets/oil+np_toth+rogner0106.pdf>

The current relationship between nuclear power and oil has become distinctly different than it was a few decades ago. At the onset of the 21st century, nuclear and oil for electricity generation are targeting different electricity market segments with little overlap in the longer run. Oil for electricity generation in most industrialized countries serves, where not barred for environmental reasons, more the function of the disposal of residual oil for which no other applications can be found. However, advanced refineries converting larger portions of the barrel into premium products and stringent environmental regulation constrain the use of residual oil for power generation. Other uses of oil products include peak supply, back-up fuel, and dispersed non-grid generation. These markets have been relative captive for oil but this may change in the future with the advent of fuel cells. Since nuclear power has no role to play in these captive markets, growth prospects for oil are unaffected by a nuclear presence in the electricity generating market.

#### Even if you scale up IFRs there are no indirect effects.

Ferenc L. Toth, 2006, senior energy economist with the Planning and Economic Studies Section in the Department of Nuclear Energy at IAEA, Hans-Holger Rogner, head of Planning and Economic Studies at IAEA, “Oil and nuclear power: Past, present, and future,” IAEA, <http://www.iaea.org/OurWork/ST/NE/Pess/assets/oil+np_toth+rogner0106.pdf>

The second dimension of the oil–nuclear competition is indirect: nuclear electricity versus oil products at the level of end-use. It involves many factors including economics, productivity, convenience, regulation, availability, product quality, and social preferences. These factors limit the room for competition between electricity and oil products (and vice versa) in the residential, commercial, industrial, feedstock and transportation markets. Here the characteristics of fuels and associated conversion technologies can be an advantage or disadvantage in meeting a particular energy service demand. As we have witnessed over recent decades, transportation services have remained the domain of oil products despite many government policies targeted at the introduction of non-oil based transportation fuels including electric cars. Likewise, many energy services are exclusively a domain of electricity (information/communication, lighting, control, etc.) where oil products are essentially excluded. Electricity is an end-use energy technology without any emissions, highly efficient, versatile, and convenient to use. No wonder then that it has been the fastest growing end-use energy carrier worldwide. Oil use outside the transportation and chemical sectors (feedstock) and non-energy use has declined in the residential, commercial, and industrial sectors of the OECD countries (1973: 707 Mtoe; 2002: 403 Mtoe) in large part as a result of increased use of electricity and natural gas. In developing countries, oil use in these sectors has been increasing from 124 Mtoe to 354 Mtoe over the 1973–2002 period (IEA, 2004). Globally, however, oil use in these sectors has declined from 960 Mtoe to 811 Mtoe over this period.

### 2AC rare earth elements DA

#### Converts existing coal plants – means no material cost of start-up.

Steve Kirsch, 2011, M.S. Massachusetts Institute of Technology (MIT), writer for the Huffington Post, CEO Kirsch foundation on climate, founder/head of Center for Energy and Climate Change, National Award from the Caring Institute in Washington DC, written much about the Integral Fast Reactor, Fellow, with the Science Council for Global Initiatives (SCGI), Steve Kirsch’s blog, “The Integral Fast Reactor (IFR) project: Q&A,” <http://skirsch.com/politics/globalwarming/ifrQandA.htm>

\*\*\*cites Charles Till, former Associate Director, Argonne National Laboratory, The National Academy Studies, James Hansen, Director, NASA Goddard Institute for Space Studies, Ray Hunter, former Deputy Director of the Office of Nuclear Energy, Science and Technology in the U.S. Department of Energy (DOE), Leonard Koch, winner of the Global Energy International Prize, Barry Brook Sir Hubert Wilkins Chair of Climate Change\*\*\*

Can you convert existing coal plants to be IFR plants? One nice thing about the S-PRISM is that they're modular units and of relatively low output (one power block of two will provide 760 MW). They could be emplaced in excavations at existing coal plants and utilize the same turbines, condensers (towers or others), and grid infrastructure as the coal plants currently use, and the proper number of reactor vessels could be used to match the capabilities of those facilities. Essentially all you'd be replacing is the burner (and you'd have to build a new control room, of course, or drastically modify the current one). Thus you avoid most of the stranded costs. If stranded costs can thus be kept to a minimum, both here and, more importantly, in China, we'll be able to talk realistically not just about stopping to build new coal plants but replacing the existing ones, even the newest ones.

#### Fast reactors don’t cause shortages of REE – no complex systems and small containment fields.

Barry Brook et. al, 2-21-2009, a leading environmental scientist, holding the Sir Hubert Wilkins Chair of Climate Change at the School of Earth and Environmental Sciences, and is also Director of Climate Science at the University of Adelaide’s Environment Institute, published three books, over 200 refereed scientific papers, is a highly cited researcher, received a number of distinguished awards for his research excellence including the Australian Academy of Science Fenner Medal, is an International Award Committee member for the Global Energy Prize, Australian Research Council Future Fellow, ISI Researcher, Ph.D., Macquarie University in Environmental Engineering, Science Council for Global Initiatives, Edgeworth David Medal Royal Society of NSW, Cosmos Bright Sparks Award, Tom Blees is the author of Prescription for the Planet, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, George S. Stanford is a nuclear reactor physicist, part of the team that developed the Integral Fast Reactor, PhD from Stanford University in Physics, Masters from University of Virginia in Engineering, worked at Argonne National Laboratory, Graham R.L. Cowan, "Boron: A Better Energy Carrier than Hydrogen?" in 2001, published "How Fire Can Be Tamed," BraveNewClimate, “Response to an Integral Fast Reactor (IFR) critique,” <http://bravenewclimate.com/2009/02/21/response-to-an-integral-fast-reactor-ifr-critique/>

A new IFR should cost less than either a new nuclear (typical of today’s technology) or coal plant based on the following. The IFR does not require some of the complex systems that today’s reactors require. Examples include the low level radwaste cleanup station, the emergency core cooling system, and fewer control rod drives and control rods for comparable power. Because of the low pressure in the sodium systems, less steel is required for the plant piping and reactor vessel. There are studies that suggest that the reactor containment will be less massive. Other cost savings will be made because the IFR does not require the services of the Isotopic Separation Plants for fuel enrichment. Additional costs to the IFR include the integral fuel reprocessing capability, and a secondary sodium system (but the IFR fuel process costs are somewhat offset by the extremely low cost for raw fuel and the improved waste product). Some studies have been done which indicate that an IFR would be very economical and competitive to build, own, and operate, but the final proof of economics can only come in the construction and operation of a commercial sized plant.”

#### Nuclear labs are innovating away from REE in the squo – new deposits ensure no shortages.

Jonathan Marshall, October 13, 2011. Clean Tech No Hostage to Rare Earth Shortages. http://www.pgecurrents.com/2011/10/13/clean-tech-no-hostage-to-rare-earth-shortages/

mining companies are finding new supplies all the time. California-based Molycorp Inc., the only active U.S. producer of rare earth metals, announced promising new deposits in Southern California, which could be tapped within a year. In Alaska, geologists report finding 70 promising deposits of the materials. And—much farther afield—experts from the U.S. Geological Survey have mapped deposits of at least a million metric tons of these elements in southern Afghanistan. Equally promising, inventors are finding ways to substitute more common materials for rare earth metals in vital applications. The Department of Energy has earmarked up to $30 million on cutting-edge research to this end. For example, the Pacific Northwest National Laboratory is developing a way to use composite materials containing manganese to form powerful magnets for wind turbines and electric vehicle motors. Substitutes for rare earth metals in permanent magnets are also being developed by Oak Ridge National Laboratory. Tesla Motors already uses an alternative design in its Roadster electric vehicle. So clean-tech developers need not lose too much sleep over this latest crisis. Good old Yankee ingenuity—through both geology and materials science—holds every promise of ensuring that rare earth metals rarely become a problem.

#### Shortage short term, no impact and cooperation will increase in the future.

Nabeel A. Mancheri, 5-16-2012, China faces WTO again over rare earth metals. http://www.eastasiaforum.org/2012/05/16/china-faces-wto-again-over-rare-earth-metals/

Despite the significance of China’s actions, most analysts argue that the shortage of rare earths will be a temporary phenomenon, because the rising prices for rare earth elements will encourage others to enter the market, leading to increased supply. The US, for example, has 13 per cent of the world’s known rare-earth reserves, and could re-enter the production and refining business. China’s efforts to exert price leverage are unintentionally driving a revival of global rare earths production and, over time, China will likely be just one of many global suppliers. China’s efforts to monopolise the sector are bound to backfire because such high-handed measures have prompted the rest of the world to formulate alternate strategies. At the same time, businesses and policy makers around the world alike are concerned about the increasingly restrictive and unpredictable environment of international trade in industrial raw materials. Multilateral disciplines governing export restrictions are ambiguous, which creates uncertainty for industries that require these materials and raises the risk for investment in both mining and processing facilities worldwide.

#### Plan key to national labs.

Michael Wallace & Sarah Williams, 2012, head of the Transatlantic Program at the Royal United Services Institute, and Sarah Williams, program coordinator and research associate in the U.S. Nuclear Energy Project at CSIS, “Nuclear Energy in America: Preventing its Early Demise,” CSIS

Second, setting global norms and standards for safety, security, operations, and emergency response. As the world learned with past nuclear accidents and more recently with Fukushima, a major accident anywhere can have lasting repercussions everywhere. As with nonproliferation and security, America’s ability to exert leadership and influence in this area is directly linked to the strength of our domestic industry and our active involvement in the global nuclear enterprise. A strong domestic civilian industry and regulatory structure have immediate national security significance in that they help support the nuclear capabilities of the U.S. Navy, national laboratories, weapons complex, and research institutions.

#### Key to hege.

John D. Immele, 1-19-2009, Deputy Laboratory Director for National Security at Los Alamos, and Richard L. Wagner, physicist who has worked in nuclear weapon and weapon-system design, missile defense, defenses against nuclear terrorism, nuclear energy, non-proliferation, WMD threat reduction at Los Alamos, “The US Nuclear Weapon Infrastructure and a Stable Global Nuclear Weapons Regime,” Strategic Weapons in the 21st Century Conference, http://www.lanl.gov/conferences/sw/2009

An important aspect of the broader national nuclear security mission – indeed, a definition of mission, in a sense -- is the integrated solutions that emerge from Laboratories that are responsible for the whole problem and not just disconnected fragments of the problem. Science, by its nature, is and must be an open endeavor. This can be exploited for the benefit and stability of the future global nuclear regime, or it can be wasted by overspecifying small projects and stifling creative solutions to the broader problem. The concept and practice of the national laboratory has historically been a US strength of strategic importance. It provided long-term focus, building the technology base for the long term to provide solutions that would not appear for a long time, but were very important when they did - beyond the horizon for industry, too big for universities. Laboratory leadership had considerable discretion to define Laboratory tasks within broad, long-term mission-areas, to trade among alternative problems and to match problems and solutions. Examples include the emergence of nuclear safeguards, nuclear intelligence, compact warheads for submarines, nuclear defenses and tools for the human genome such as laser cell sorting – all from a weapons program much less bureaucratized and parsed than today.¶ The US may be in some danger of losing its lead in science and its applications. In remedying or preventing this, there is much to be done, and rebuilding strong, effective national labs will be an important component of the fix. In the emerging era of nuclear dissuasion and latent nuclear (in)stability, national nuclear security will depend on re-establishing the concept and practice of the national laboratory, enlarging the mission of the labs to reflect the larger scope of this era’s nuclear and other security challenges, healing the relationship between the labs and the government.

### 2AC nano-tech add-on

#### Restarting IFR project at Argonne spurs R&D in all sectors – collaborative research utilizing nuclear science insight key to effective programs.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 391

Restart nuclear power development research at national labs like Argonne, concentrating on small reactor designs like the nuclear battery ideas discussed earlier. Given the cost and difficulty of extending power grids over millions of square miles of developing countries, the advantages of distributed generation in transforming the energy environment of such countries can hardly be exaggerated. It is a great pity that many of the physicists and engineers who were scattered when the Argonne IFR project was peremptorily terminated chose to retire. Rebuilding that brain trust should be, well, a no-brainer. If one but looks at the incredible challenges those391talented people were able to meet, it seems perfectly reasonable to suppose that a focus on small sealed reactor development could likewise result in similar success. Some of those working on the AHTR and other seemingly unneeded projects could well transition to R&D that fits into the new paradigm. Japanese companies are already eager to build nuclear batteries, and there should be every effort to work in concert with them and other researchers as we develop these new technologies. The options this sort of collaborative research would open up for the many varied types of energy needs around the world would be incalculable.

#### Argonne’s nanoscale materials prevent biowarfare agents – and safety of Argonne nanomaterials solves all consequences associated with development of nanotech.

Evelyn Brown, 5-2-2005, National Institute of Standards and Technology (NIST), “The nano-revolution continues at Argonne,” <http://m.phys.org/materials-cnm-nanoscale_news3944.html>

Federal and state officials will visit Argonne National Laboratory May 6 to participate in a cornerstone-laying ceremony for the Center for Nanoscale Materials (CNM).The CNM, which is currently under construction, is a joint DOE-State of Illinois project to provide basic nanoscale research that will lead to industrial and commercial applications that can benefit Illinois and the country. Image: Artist's conception of the Center for Nanoscale Materials now under construction at Argonne. "Nano" refers to the scale used to measure these materials – a nanometer is 1 billionth of a meter, or about 70,000 times smaller than the width of a human hair. Materials at the nanoscale differ from conventional materials because traditional physics does not apply at this scale. “Intentionally building materials at the nanoscale,” said CNM Director Eric Isaacs, “allows us to explore and develop entirely new ways to tailor a material's response to temperature, electrical or magnetic fields, or chemical environments. The basic research to be conducted at the CNM is critical so that novel, environmentally safe products and applications can be effectively developed based on nanomaterials.” Industry will be able to use research revealed by CNM researchers to understand what can be expected from nanoscale materials. They will be able to create new products that will impact the fields of energy, medicine, information technology and homeland security, and to maintain the United States' leading role in science. The center's mission includes supporting basic research and development of advanced instrumentation for creating novel materials that provide new insights at the nanoscale level. The challenges involve fabricating and exploring novel nanoscale materials and, ultimately, employing unique synthesis and characterization methods to control and tailor nanoscale phenomena. The CNM will be open to academia, industry and other government laboratories through a peer-reviewed process. CNM's research facilities The facility is being built adjacent to the Advanced Photon Source, the most brilliant source of research X-rays in the Western Hemisphere. The 85,000-square foot CNM building will house research instruments, laboratories, clean rooms and work space to assist in fabricating and understanding these tiny materials. CNM's first dedicated instrument will be the pioneering nanoprobe beam line now under construction. The nanoprobe will be a hard X-ray microscopy beam line with the highest spatial resolution in the world. With its combination of fluorescence, diffraction and transmission imaging at a spatial resolution of 30 nanometers or better in a single tool, the nanoprobe will be able to penetrate samples in situ and provide information about their internal structures. An electron-beam lithography facility will provide fabrication support to CNM users, including a 100-kilovolt electron-beam lithography tool – one of a handful of such devices in the country. The center will also feature an Argonne-developed nanopositioning system for precision motion and measurement. The CNM is a joint partnership between the Department of Energy and the State of Illinois. The State of Illinois is providing $36 million to construct the building, and DOE is providing an additional $36 million to develop and build the facility's advanced instrumentation. Argonne's CNM is one of five centers being built at national laboratories across the country as part of DOE's Nanoscale Science Research Center program under the Office of Basic Energy Sciences. The basic scientific research to be conducted at the CNM is predicted to lead to novel, environmentally safe products and applications that can be effectively developed based on nanomaterials. Research includes:-- Nanomaterials that could lead to 400 percent improvement in the efficiency of direct conversion of heat to electricity, and conversely in thermoelectric cooling.-- New materials to efficiently harvest light for energy generation, and for novel purposes such as selective chemical reactivity.-- The means to synthesize and understand new nanostructured materials that are potentially stronger, lighter, harder, safer and self-repairing such as nanocarbon, which has led to coatings for implantable biomedical devices such as an artificial retina.-- Developing advanced, adaptive biosensors, for instance, to monitor blood sugar levels and inject insulin directly into the blood stream.-- Fundamental understanding and design of novel nanoscale materials and chemical processes capable of capturing, converting and storing energy as electrical or chemical equivalents. These developments could lead to using energy to manipulate biological materials in processes such as gene surgery or cell repair, and facilitating conversion of light energy into therapeutic processes.-- New ways to manipulate photons and electrons, making possible a whole new class of devices, including those based on the spin of the electron.-- Nanomagnetic and nanostructured ferroelectric materials for semiconductors will provide a path that goes beyond current technology for information processing and storage. New materials and devices will be developed at the CNM that are capable of much higher storage densities that use less power and dissipate less heat. -- Nanophotonics research is poised to manipulate light at length scales much smaller than is possible using traditional optical elements, firmly placing light within the realm of the integrated circuit.-- Sensors to detect the presence of biowarfare agents, such as anthrax, in real time.

#### Nanotech is inevitable – safe stewardship prevents extinction.

John R. Marlow, 2004, Nanotech Columnist, nominated for the Foresight Institute Prize in Communication, NANOVEAU #002, “The Sound of Inevitability—Why Nanotech Will Happen,” <http://www.nanotech-now.com/Nanoveau/Sound-of-Inevitability.htm>

Unlike previous advances, however, nanotech has the capability to swiftly and irrevocably tip the scales one way or the other. "Nanotechnology could be our salvation or our destruction," Cameron confirms, and goes on to make what is perhaps the best argument of all for nanodevelopment: "But it's absolutely necessary as our salvation. We've put ourselves in a role of stewardship of a biosphere which is already compromised by our technology and the only solution to that will be a technology solution because of the burden of six billion, probably going on ten billion people by the end of this decade. So the only real salvation for the biosphere, to that kind of burden and to the things we've done to it already, will be a technological solution. We're already committed; we have to play the hand technologically. There's no going back to the Garden." Indeed, though it has not yet been released, it is already too late to put the nanogenie back in the bottle.

### 2AC capitalism bad

#### Weighing consequences is inevitable even in a deontological frameworks.

Joshua Green, November 2002, Assistant Professor Department of Psychology Harvard University, The Terrible, Horrible, No Good, Very Bad Truth About Morality And What To Do About It, p. 314

Some people who talk of balancing rights may think there is an algorithm for deciding which rights take priority over which. If that’s what we mean by 302 “balancing rights,” then we are wise to shun this sort of talk. Attempting to solve moral problems using a complex deontological algorithm is dogmatism at its most esoteric, but dogmatism all the same. However, it’s likely that when some people talk about “balancing competing rights and obligations” they are already thinking like consequentialists in spite of their use of deontological language. Once again, what deontological language does best is express the thoughts of people struck by strong, emotional moral intuitions: “It doesn’t matter that you can save five people by pushing him to his death. To do this would be a violation of his rights!”19 That is why angry protesters say things like, “Animals Have Rights, Too!” rather than, “Animal Testing: The Harms Outweigh the Benefits!” Once again, rights talk captures the apparent clarity of the issue and absoluteness of the answer. But sometimes rights talk persists long after the sense of clarity and absoluteness has faded. One thinks, for example, of the thousands of children whose lives are saved by drugs that were tested on animals and the “rights” of those children. One finds oneself balancing the “rights” on both sides by asking how many rabbit lives one is willing to sacrifice in order to save one human life, and so on, and at the end of the day one’s underlying thought is as thoroughly consequentialist as can be, despite the deontological gloss. And what’s wrong with that? Nothing, except for the fact that the deontological gloss adds nothing and furthers the myth that there really are “rights,” etc. Best to drop it. When deontological talk gets sophisticated, the thought it represents is either dogmatic in an esoteric sort of way or covertly consequentialist.

#### No collapse - capitalism is self-correcting in terms of energy – responsibility and regulations limits plundering.

Jeffrey Hollender & Bill Breen, 2010, Founder of the American Sustainable Business Council, a progressive alternative to the Chamber of Commerce, Editorial Director of the Fast Company, The Responsibility Revolution: How the Next Generation of Businesses will Win, p. xix

The responsibility revolution is about more than cutting carbon, reducing energy use, monitoring factories, or donating to charities. It’s about reimagining companies from within: innovating new ways of working, instilling a new logic of competing, identifying new possibilities for leading, and redefining the very purpose of business. Consequently, we’ve drawn on the best thinking not only from the corporate responsibility arena, but also from the realms of strategy, leadership, and management. Others, to whom we are indebted, have developed some of this book’s core principles. (We will acknowledge them as we present their ideas.) Our intent is to show how an emerging breed of business revolutionaries is turning theory into practice and building organizations that grow revenue by contributing to the greater good. This is a book about change, but it seeks to help companies change on the inside—change their priorities, the way they organize, how they compete, and the way they interact with the world. We fully concede that many companies, perhaps even most companies, won’t willingly alter their behavior. But they will change nonetheless, and it won’t be because they’ve suddenly seen the light. It will be because massive numbers of consumers, a spreading swarm of competitors, values-driven employees, and even that laggard indicator, the federal government, makes them change. Change is under way. The responsibility revolution spreads. Perhaps you’ve seen the insurrection begin to roil your industry, and you’re determined to get out in front of it. If so, welcome to the cause.

#### Prefer our evidence – they conflate bad human decision making with capitalism.

Jay Richards, 2009, PhD with honors in Philosophy and Theology from Princeton, Money, Greed, and God: Why Capitalism Is the Solution and Not the Problem, p. 164

Too many critics confuse the free market with the bad choices free people make. Rod Dreher, for instance, chastises fellow conservatives, saying, “We look down on the liberal libertine who asserts the moral primacy of sexual free choice, but some- how miss that the free market we so uncritically accepts exalts personal fulfillment through individual choice as the summit of human existence.”9 Perhaps they miss that fact because it’s not a fact. The free market doesn’t exalt anything. Human beings exalt and denounce things like sexual free choice. Human beings might exalt “individual choice as the summit of human exis- tence,” but a system of free exchange doesn’t do that. In a free economy, sinful entrepreneurs may entice customers with pornography, and sinful customers may buy it. But having free choices in the market doesn’t dictate what people will choose. That’s the whole point of freedom: it always involves costs—that is, trade-offs. To choose one path is to foreclose the opposite path. Even God accepted trade-offs. He chose to create a world with free beings, one that allowed those beings to turn against him. And they did. But their freedom didn’t cause them to choose the bad. It just allowed them to. So, too, with a free economy. Critics notice all the vice present in free societies. But it is only in free societies that we can fully exercise our virtue. Charity is charity, for instance, only if it’s not coerced. Besides, there’s no evidence that state control of the economy makes a citizenry more virtuous. Every social ill in modern- day America, from widespread abortion and alcoholism to family breakdown, was much worse in statist and communist countries.

#### The move to IFR is necessary to solve the root causes of exploitation - ends want and war – great divide is based on mis-understanding.

David Walters, 6-14-2011, worked as a union power plant operator for 24 years in California, currently a member of Socialist Organizer, US Section of the Fourth International, Permanent Revolution, “FUKUSHIMA, NUCLEAR ENERGY AND A SOCIALIST PROGRAM,” <http://climateandcapitalism.com/2011/06/14/socialist-arguments-for-nuclear-power/>

We have serious issues facing our class, our planet. From economic development of the productive forces in the oppressed neo-colonial world to raise their standard of living, to the phasing out of climate-changing fossil fuel use, we are going to require more, not, less energy, specifically electricity. Most on the left are at best confused by this and at worse, seek a return to some sort of pastoral green, “democratic” pre-industrial utopia. As Marxists we should reject this “we use too much” scenario that has infected the left across the world. We certainly should use energy more wisely, more efficiently and with a sense of conservation. This can happen only when the profit motive is removed and scarcity in basic necessities is a thing of the past. No one should object to this. But these things do not produce one watt of power, especially if you consider what we have to do. These include: Switching off from fossil fuels completely (they should be used only as chemical feedstock, i.e. as the basic material to make chemicals and lubricants) Increasing the development of the productive forces especially in the developing world. This means developing whole electrical grids, new, primarily non-fossil fuel, forms of generation and the infrastructure to support this, for the billions without any electrical usage at all Freeing up the productive forces to eliminate all forms of want as the material basis for a true socialist mode of production. Using nuclear energy is both the cheapest and safest way to do this. George Monbiot in his latest entry on his blog\* challenges the renewable energy advocates with some hard questions. No socialist by any means, Monbiot has brought attention to the issue of energy and what it will take to reduce carbon emissions. He notes, writing on Britain, among other things: “1. Reducing greenhouse gas emissions means increasing electricity production. It is hard to see a way around this. Because low-carbon electricity is the best means of replacing the fossil fuels used for heating and transport, electricity generation will rise, even if we manage to engineer a massive reduction in overall energy consumption. The Zero Carbon Britain report published by the Centre for Alternative Technology envisages a 55% cut in overall energy demand by 2030 – and a near-doubling of electricity production.” How is this electricity going to be produced in a sustained and regular way? We know wind generated power is erratic and variable, a problem only partially solvable by new continental wide electricity grids. We know other forms of low carbon power – tidal, coal with carbon capture and storage, large scale solar – are experimental and even if viable are likely to turn out more expensive than nuclear. We get no answer from so-called socialist Greens on this problem, at least not yet. They simply have not considered the real issues. Monbiot goes on: “3. The only viable low-carbon alternative we have at the moment is nuclear power. This has the advantage of being confined to compact industrial sites, rather than sprawling over the countryside, and of requiring fewer new grid connections (especially if new plants are built next to the old ones). It has the following disadvantages: “a. The current generation of power stations require uranium mining, which destroys habitats and pollutes land and water. Though its global impacts are much smaller than the global impacts of coal, the damage it causes cannot be overlooked. “b. The waste it produces must be stored for long enough to be rendered safe. It is not technically difficult to do this, with vitrification, encasement and deep burial, but governments keep delaying their decisions as a result of public opposition. “Both these issues (as well as concerns about proliferation and security) could be addressed through the replacement of conventional nuclear power with thorium or integral fast reactors but, partly as a result of public resistance to atomic energy, neither technology has yet been developed. (I’ll explore the potential of both approaches in a later column).” I want to address this last point. Monbiot is slowly seeing his way to something that has taken a long time: that nuclear energy is really the only way to go, even in light of the “big three” accidents: Three Mile Island, Chernobyl and Fukushima. These new technologies he mentions, the Liquid Fluoride Thorium Reactor (which doesn’t require any uranium mining, enrichment or long term disposal of spent fuel) and the Integral Fast Reactor, provide the material basis for eliminating all fossil fuels and for a future society without want, wars or exploitation that is a socialist one. Where Monbiot and I come together is not, obviously, the socialist requirement to get rid of capitalism. It is over the need for more energy, not less. It is over the realization that renewables cannot do it except in the most utopian of fantasies. The real “Great Divide” is between those among the Greens who run on fear and fantasy, and those socialists that have a materialist understanding of the need to move toward a society based not just on current human needs alone, but on expanding humanity’s ability to power such a society. Only nuclear can do this.

#### Their impact cards don’t assume the world of the aff – IFRs transform economic and geopolitical paradigms – eliminating gross inequality.

Tom Blees, 2008, the president of the Science Council for Global Initiatives, member of the selection committee for the Global Energy Prize, Prescription for the Planet, p. 335-6

When the material comforts of existence are seen as being limited, then consumption beyond one’s needs does indeed carry an undeniable ethical weight. As Ralph Waldo Emerson put it lo those many years ago, “Superfluity is theft.” Even when the energy and raw materials involved are plentiful, there remains the often conveniently ignored issue of the conditions under which goods have been produced, be they agricultural or manufactured commodities. It is disingenuous in the extreme to point to the abolition of slavery as evidence of the social evolution of mankind when millions of desperately poor people labor under conditions that can still honestly be considered as slavery. The fact that we don’t335have slaves in our home is hardly confirmation of our benevolence. The moral questions of economic fairness will not be settled by availing ourselves of the technologies promoted in this book, but should command our attention and concern indefinitely. My point is not to justify exploitation of either human or material resources, but to point out that a transformation of energy and raw material technologies as proposed herein will present a radically transformed palette upon which to paint the picture of humanity’s future. Our new course will remove the limitations by which finite natural resources and energy supplies have circumscribed our existence. Unlimited energy coupled with virtually complete recycling of materials and the production of consumer goods from plentiful or renewable resources will finally allow humanity to be unshackled from the zero-sum mentality. Raising the living standards of our billions of disadvantaged brethren will be seen as a positive development by even the most voracious consumer societies, rather than perceived with foreboding as somehow detrimental to their way of life. Admittedly this will take some getting used to. The revolution will be not just technological and political, but psychological. The passion with which consumerism is pursued is frequently grotesque in its extremes, yet the revulsion it engenders may not be so strong when it can be viewed more as shallow foolishness than callous selfishness. Much of what is considered virtuous today will be seen more as simply a matter of personal preference in a world where creature comforts are no longer in limited supply. The concept of self-denial will have to be looked at anew. Rather than concentrating on husbanding limited resources, our attention can be turned to welcoming the rest of our fellow humans into a new reality where creature comforts are the universal norm. Abundant energy and wise336use of basic resources are the keys. Clearly the technologies are already within our grasp. This won’t happen overnight, but it would be foolish to dally. The conversion of primary power systems to fast reactors will necessarily be a gradual process, which in the best-case scenario will take a few decades. Conversion of the vehicle industry to boron, however, is another story. It is entirely conceivable that boron fueled vehicles could be driving on our highways within five years. Ironically the first boron recycling plants that would be a corollary of the conversion may end up operating with natural gas for their heat requirements, since the IFR program simply won’t be able to be implemented as quickly as the boron system, and it’s questionable whether existing electrical generation systems would be able to handle the increased demand of electrically powered boron recycling plants. This would, however, be only an interim fix, and would allow the vehicle fleets to get off to a quick start. If the plasma conversion method proves feasible, though, then garbage alone will provide all the energy we need for boron recycling. Long before the conversion to boron is complete, the demand for oil will have dropped to the point where the USA, one of the world’s thirstiest countries when it comes to oil, will be able to rely solely on North American supplies, resulting in geopolitical and economic realignments that will be a harbinger of things to come. Even though oil prices will surely plummet worldwide, and while the temporary price of boron recycling may well be higher than it will be once IFRs are able to provide all the power necessary to support the system, the price disparity will easily be great enough and the environmental benefits so overwhelming that boron vehicles will surely carry the day even in the near term.

#### This means the plan is a pre-requisite - criticizing the current economic system is insufficient without a specific and workable alternative – a moral stand is not enough to start a revolution.

Lawrence Grossburg, 1992, Professor of COMS at UNC, Communication Studies Professor at UNC, We Gotta Get Out of This Place, p. 388-89

If it is capitalism that is at stake, our moral opposition to it has to be tempered by the realities of the world and the possibilities of political change. Taking a simple negative relation to it, as if the moral condemnaotion of the evil of capitalism is sufficient (granting that it does establish grotesque systems of inequality and oppression) is not likely to establish a viable political agenda. First, it is not at all clear what it would mean to overthrow capitalism in the current situation. Unfortunately, despite our desires, the “masses” are not waiting to be led into revolution, and it is not simply a case of their failure to recognize their own best interests, as if we did. Are we to decide—rather undemocratically, I might add—to overthrow capitalism in spite of their legitimate desires? Second, as much as capitalism is the cause of many of the major threats facing the world, at the moment it may also be one of the few forces of stability, unity and even, within limits, a certain “civility” in the world. The working system is, unfortunately, simply too precarious and the alternative options not all that promising. Finally, the appeal of an as yet unarticulated and even unimagined future, while perhaps powerful as a moral imperative, is simply too weak in the current context to effectively organize people, and too vague to provide any direction. Instead, the Left must think of ways to rearticulate capitalism without either giving up the critique or naively assuming that it can create capitalism with a human heart.”

#### The alternative will fail – utopian attempts at reformulating the basis for production cause more harmful acts of self-interest.

Mark Hunter, 6-21-2011, Professor of Humanities at St. Petersburg, “To Attack Capitalism Is To Attack Human Nature,” Real Clear Markets, http://www.realclearmarkets.com/articles/2011/06/21/to\_attack\_capitalism\_is\_to\_attack\_human\_nature\_99087.html

Never letting a crisis go to waste has become a progressive credo for transformative change. While one hand fans the fires, the other provides momentum for change heretofore unfathomable. The current economic maelstrom has provided the opportunistic left with the perfect excuse to pin blame for our economic problems on the inherent flaws of capitalism. Enter Humanities professor Eugene McCarraher and his tendentious article The End of Capitalism and the Wellsprings of Radical Hope where he declares ex cathedra the need to destroy capitalism in favor of a yet another ill-defined progressive utopia. McCarraher rolls out the usual leftist arguments mischaracterizing capitalism followed by vague references to ideals and lofty goals. In the end, the reader is left with elusive platitudes without any clear understanding of what exactly McCarraher is proposing, other than more government control and the ever-popular hope. Not to disappoint, McCarraher presents his opening salvo against capitalism with the de rigueur reference to Marx, which serves as a reminder that although Marxism has been thoroughly discredited in practice it still thrives in the rarified academic ranks of the left. McCarraher's argument against capitalism is that it is "unjust as a political economy and rapacious in its relationship to the natural world." And, of course, no progressive critique of capitalism would be complete without the obligatory indictment of how capitalism "compels us to be greedy, callous and petty." McCarraher's denunciation of capitalism is in fact an attack on human nature disguised as political discourse. The "pernicious" traits he attributes to capitalism are, in fact, traits globally present in every political/social order-in many cases far worse in non-capitalistic societies-because they are traits of humanity itself. His entire argument against capitalism consists of nothing more than an elaborate correlation-proves-causation fallacy (cum hoc ergo propter hoc - "with this, therefore because of this"). He wants us to believe that since capitalism contains greed it causes greed. Furthermore, McCarraher seems content to overlook the fact that capitalism is an organic economic system not created as much as evolving naturally as a consequence of free individuals interacting with other free individuals. Private property and the production of goods may be a part of capitalism, but its most essential virtue is as a guardian of man's freedom. Criticizing capitalism for its avarice is not unlike condemning representative democracy for its failure to elect the wisest of men - each may occur, but it is not relevant to their fundamental purpose. Both capitalism and representative democracy maximize freedom by diffusing power and responsibility across the broadest spectrum of society. Rigid control is antithetical to freedom and it is this that most vexes the liberal intellectual. What McCarraher is unwilling to come to terms with is that his inherent criticism of capitalism is not so much an indictment of capitalism but rather a revealing supposition he is making about humanity itself. His attack on capitalism masks a general contempt for a free people who in his worldview will inevitably choose a path of greed and avarice unless a coercive political order prevents it. Therefore, any liberal political/economic system proposed to replace capitalism must have at its core a process through which the masses are controlled and coerced to overcome the human attributes so abhorred by the liberal intellectual that he wrongly attributes to capitalism rather than people. McCarraher presents the reader with a moral crusade cleverly cloaked as political theory. He sees the Deadly Sins ever present in modern capitalism, and like the fourth century ascetic Evagrius Ponticus, McCarraher seems particularly obsessed with man's rapacious gluttony. While capitalism's natural and organic nature is condemned for its "deliberate nurturance of our vilest qualities" he fails to put forth the ramifications of the artificial and contrived alternative. The progressive alternative to capitalism must of necessity resemble Dostoyevsky's Grand Inquisitor because the crux of the matter for both modern liberals and Dostoyevsky is human freedom. The infinite variety that is millions of people making millions of decisions to reflect their own self interest needs to be replaced with a 21st century Ubermensch or new political aristocracy that is able to impose on the masses a sin-free, enlightened order. Redemption comes through man's inability to choose the indulgence of sin, and as such the anointed elite - having removed man's freedom - become the deliverers of man's salvation by taking upon themselves the burden of choice. Mankind, now being absolved of the burden of freedom, can live content without the anxiety of responsibility. However beautiful the veneer of his lofty rhetoric, this "Wellspring" is in the end enslavement. The only way to deliver mankind from the demon Mammon will be by removing the greatest gift of the gods - freedom. In this Faustian exchange we are guaranteed the Marxist security of bread, authoritarian certainty of order and utopian unity of world government. Far from new, McCarraher's Wellspring of Radical Hope is one more self-righteous proclamation by a moral prig intent on delivering mankind to elusive Olympian heights. Beyond the rhetoric, one suspects this experiment would end as other such utopian pursuits have concluded in history - hopeless.

# 1AR

### 1AR rare earth elements DA

#### U.S. fast reactors and pyro-processing is key to reinvigorating nuclear leadership – Korea proves.

Charles D. Ferguson, 6-17-2009, is the Philip D. Reed senior fellow for science and technology at the Council on Foreign Relations (CFR), is also an adjunct professor in the security studies program at Georgetown University, where he teaches a graduate-level course titled “Nuclear Technologies and Security,” and an adjunct lecturer in the national security studies program at the Johns Hopkins University, where he teaches a graduate level course titled “Weapons of Mass Destruction Technologies,” served as the project director for the CFR-sponsored Independent Task Force on U.S. Nuclear Weapons Policy, scientist-inresidence at the Monterey Institute’s Center for Nonproliferation Studies (CNS), won the Robert S. Landauer Lecture Award from the Health Physics Society, Testimony to Committee on Science and Technology, U.S. House of Representatives, “Advancing Technology for Nuclear Fuel Recycling: What Should Our Research, Development, and Demonstration Strategy Be?.” <http://www.cfr.org/content/publications/attachments/FergusonTestimonyJune172009.pdf>

The benefit of a fast reactor recycling program could be the reduction or near elimination of the longer-lived transuranic elements that are the major heat producing elements beyond several hundred years. Other countries may venture into reprocessing. Therefore, it is imperative for the United States to reevaluate its policies and redouble its efforts to prevent the further spread of reprocessing plants to non-nuclear-weapon states. In particular, the Republic of Korea is facing a crisis in the overcrowded conditions in the spent fuel pools at its power plants. One option is to remove older spent fuel and place it in dry storage casks, but the ROK government believes this option may cost too much because of the precedent set by the exorbitantly high price paid for a low level waste disposal facility. Another option is for the ROK to reprocess spent fuel. While this will provide significant volume reduction in the waste, it will only defer the problem to storage of MOX spent fuel, similar to the problem faced by France. This option will run counter to the agreement the ROK signed with North Korea in the early 1990s for both states to prohibit reprocessing or enrichment on the Korean Peninsula. A related option is to ship spent fuel to La Hague, but a security question is whether to ship plutonium back to the ROK. France would require shipment of the high level waste back to the ROK. Thus, the ROK will need a high level waste disposal facility. The main reason I raise this ROK issue at length is that the ROK and the United States have recently begun talks on the renewal of their peaceful nuclear cooperation agreement, which will expire in 2014. The United States has consent rights on ROK spent fuel because either it was produced with U.S.-supplied fresh fuel or U.S. origin reactor systems. The ROK is seeking to have future spent fuel not subject to such consent rights by purchasing fresh fuel from other suppliers and by developing reactor systems that do not have critical components that are U.S.-origin or derived from U.S.origin systems. The bottom line is that the United States is steadily losing its leverage with the ROK and other countries because of declining U.S. leadership in nuclear power plant systems and nuclear waste management. Concerning lessons the United States can learn from other countries’ nuclear waste management experience, the first lesson is that a fair political and sound scientific process is essential for selecting a permanent repository. Sweden demonstrates the effectiveness of examining multiple sites and gaining buy-in from the public and local governments. The second lesson is that reprocessing, as currently practiced, does not substantially alleviate the nuclear waste management problem. However, more research is needed to determine the costs and benefits of fast reactors for reducing transuranic waste. Any type of reprocessing will require safe and secure waste repositories. While the United States investigates the costs and benefits of various recycling proposals through a research program, it has an opportunity now to exercise leadership in two waste management areas. First, as envisioned in GNEP, the United States should offer fuel leasing services. As part of those services, it should offer to take back spent fuel from the client countries. (Russia is offering this service to Iran’s Bushehr reactor.) This spent fuel does not necessarily have to be sent to the United States. It could be sent to a third party country or location that could earn money for the spent fuel storage rental service. Spent fuel can be safely and securely stored in dry storage casks for up to 100 years. Long before this time ends, a research program will most likely determine effective means of waste management. The spent fuel leasing could be coupled to the second area where the United States can play a leadership role. That is, the United States can offer technical expertise and political support in helping to establish regional spent fuel repositories.