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#### Text: The United States federal government should offer power purchase agreements to companies that generate electricity from small modular reactors in the United States.

### Contention One: the Heat is On

#### Global Warming is happening – most recent and best evidence concludes that it is human induced

Muller 7-28-2012 [Richard, professor of physics at the University of California, Berkeley, and a former MacArthur Foundation fellow, “The Conversion of a Climate-Change Skeptic”, http://www.nytimes.com/2012/07/30/opinion/the-conversion-of-a-climate-change-skeptic.html?pagewanted=all]

CALL me a converted skeptic. Three years ago I identified problems in previous climate studies that, in my mind, threw doubt on the very existence of global warming. Last year, following an intensive research effort involving a dozen scientists, I concluded that global warming was real and that the prior estimates of the rate of warming were correct. I’m now going a step further: Humans are almost entirely the cause. My total turnaround, in such a short time, is the result of careful and objective analysis by the Berkeley Earth Surface Temperature project, which I founded with my daughter Elizabeth. Our results show that the average temperature of the earth’s land has risen by two and a half degrees Fahrenheit over the past 250 years, including an increase of one and a half degrees over the most recent 50 years. Moreover, it appears likely that essentially all of this increase results from the human emission of greenhouse gases. These findings are stronger than those of the Intergovernmental Panel on Climate Change [IPCC], the United Nations group that defines the scientific and diplomatic consensus on global warming. In its 2007 report, the I.P.C.C. concluded only that most of the warming of the prior 50 years could be attributed to humans. It was possible, according to the I.P.C.C. consensus statement, that the warming before 1956 could be because of changes in solar activity, and that even a substantial part of the more recent warming could be natural. Our Berkeley Earth approach used sophisticated statistical methods developed largely by our lead scientist, Robert Rohde, which allowed us to determine earth land temperature much further back in time. We carefully studied issues raised by skeptics: biases from urban heating (we duplicated our results using rural data alone), from data selection (prior groups selected fewer than 20 percent of the available temperature stations; we used virtually 100 percent), from poor station quality (we separately analyzed good stations and poor ones) and from human intervention and data adjustment (our work is completely automated and hands-off). In our papers we demonstrate that none of these potentially troublesome effects unduly biased our conclusions. The historic temperature pattern we observed has abrupt dips that match the emissions of known explosive volcanic eruptions; the particulates from such events reflect sunlight, make for beautiful sunsets and cool the earth’s surface for a few years. There are small, rapid variations attributable to El Niño and other ocean currents such as the Gulf Stream; because of such oscillations, the “flattening” of the recent temperature rise that some people claim is not, in our view, statistically significant. What has caused the gradual but systematic rise of two and a half degrees? We tried fitting the shape to simple math functions (exponentials, polynomials), to solar activity and even to rising functions like world population. By far the best match was to the record of atmospheric carbon dioxide (CO2), measured from atmospheric samples and air trapped in polar ice.

#### CO2 is the primary driver of climate change – outweighs all alt causes

Vertessy and Clark3-13**-**2012[Rob, Acting Director of Australian Bureau of Meteorology, and Megan, Chief Executive Officer at the Commonwealth Scientific and Industrial Research Organisation, “State of the Climate 2012”, <http://theconversation.edu.au/state-of-the-climate-2012-5831>]

Carbon dioxide (CO2) emissions account for about 60% of the effect from anthropogenic greenhouse gases on the earth’s energy balance over the past 250 years. These global CO2 emissions are mostly from fossil fuels (more than 85%), land use change, mainly associated with tropical deforestation (less than 10%), and cement production and other industrial processes (about 4%). Australia contributes about 1.3% of the global CO2 emissions. Energy generation continues to climb and is dominated by fossil fuels – suggesting emissions will grow for some time yet. CO2 levels are rising in the atmosphere and ocean. About 50% of the amount of CO2 emitted from fossil fuels, industry, and changes in land-use, stays in the atmosphere. The remainder is taken up by the ocean and land vegetation, in roughly equal parts. The extra carbon dioxide absorbed by the oceans is estimated to have caused about a 30% increase in the level of ocean acidity since pre-industrial times. The sources of the CO2 increase in the atmosphere can be identified from studies of the isotopic composition of atmospheric CO2 and from oxygen (O2) concentration trends in the atmosphere. The observed trends in the isotopic (13C, 14C) composition of CO2 in the atmosphere and the decrease in the concentration of atmospheric O2 confirm that the dominant cause of the observed CO2 increase is the combustion of fossil fuels.

#### 4 degree warming is inevitable with current carbon usage trends – only emissions reductions solve

Potsdam Institute, 2012 (Potsdam Institute for Climate Impact Research and Climate Analytics, “Turn Down the Heat: Why a 4°C Warmer World Must be Avoided”, A report for the World Bank, November, http://climatechange.worldbank.org/sites/default/files/Turn\_Down\_the\_heat\_Why\_a\_4\_degree\_centrigrade\_warmer\_world\_must\_be\_avoided.pdf)

The emission pledges made at the climate conventions in Copenhagen and Cancun, if fully met, place the world on a trajectory for a global mean warming of well over 3°C. Even if these pledges are fully implemented there is still about a 20 percent chance of exceeding 4°C in 2100.10 If these pledges are not met then there is a much higher likelihood—more than 40 percent—of warming exceeding 4°C by 2100, and a 10 percent possibility of this occurring already by the 2070s, assuming emissions follow the medium business-as-usual reference pathway. On a higher fossil fuel intensive business-as-usual pathway, such as the IPCC SRESA1FI, warming exceeds 4°C earlier in the 21st century. It is important to note, however, that such a level of warming can still be avoided. There are technically and economically feasible emission pathways that could still limit warming to 2°C or below in the 21st century. To illustrate a possible pathway to warming of 4°C or more, Figure 22 uses the highest SRES scenario, SRESA1FI, and compares it to other, lower scenarios. SRESA1FI is a fossil-fuel intensive, high economic growth scenario that would very likely cause mean the global temperature to exceed a 4°C increase above preindustrial temperatures. Most striking in Figure 22 is the large gap between the projections by 2100 of current emissions reduction pledges and the (lower) emissions scenarios needed to limit warming to 1.5–2°C above pre-industrial levels. This large range in the climate change implications of the emission scenarios by 2100 is important in its own right, but it also sets the stage for an even wider divergence in the changes that would follow over the subsequent centuries, given the long response times of the climate system, including the carbon cycle and climate system components that contribute to sea-level rise. The scenarios presented in Figure 22 indicate the likely onset time for warming of 4°C or more. It can be seen that most of the scenarios remain fairly close together for the next few decades of the 21st century. By the 2050s, however, there are substantial differences among the changes in temperature projected for the different scenarios. In the highest scenario shown here (SRES A1FI), the median estimate (50 percent chance) of warming reaches 4°C by the 2080s, with a smaller probability of 10 percent of exceeding this level by the 2060s. Others have reached similar conclusions (Betts et al. 2011). Thus, even if the policy pledges from climate convention in Copenhagen and Cancun are fully implemented, there is still a chance of exceeding 4°C in 2100. If the pledges are not met and present carbon intensity trends continue, then the higher emissions scenarios shown in Figure 22 become more likely, raising the probability of reaching 4°C global mean warming by the last quarter of this century. Figure 23 shows a probabilistic picture of the regional patterns of change in temperature and precipitation for the lowest and highest RCP scenarios for the AR4 generation of AOGCMS. Patterns are broadly consistent between high and low scenarios. The high latitudes tend to warm substantially more than the global mean. RCP8.5, the highest of the new IPCC AR5 RCP scenarios, can be used to explore the regional implications of a 4°C or warmer world. For this report, results for RCP8.5 (Moss et al. 2010) from the new IPCC AR5 CMIP5 (Coupled Model Intercomparison Project; Taylor, Stouffer, & Meehl 2012) climate projections have been analyzed. Figure 24 shows the full range of increase of global mean temperature over the 21st century, relative to the 1980–2000 period from 24 models driven by the RCP8.5 scenario, with those eight models highlighted that produce a mean warming of 4–5°C above preindustrial temperatures averaged over the period 2080–2100. In terms of regional changes, the models agree that the most pronounced warming (between 4°C and 10°C) is likely to occur over land. During the boreal winter, a strong “arctic amplification” effect is projected, resulting in temperature anomalies of over 10°C in the Arctic region. The subtropical region consisting of the Mediterranean, northern Africa and the Middle East and the contiguous United States is likely to see a monthly summer temperature rise of more than 6°C.

#### Not too late – every reduction key

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[Dana, is an environmental scientist at a private environmental consulting firm in the Sacramento, California area. He has a Bachelor's Degree in astrophysics from the University of California at Berkeley, and a Master's Degree in physics from the University of California at Davis. He has been researching climate science, economics, and solutions as a hobby since 2006, and has contributed to Skeptical Science since September, 2010, <http://www.skepticalscience.com/realistically-what-might-future-climate-look-like.html>, HM]

We're not yet committed to surpassing 2°C global warming, but as Watson noted, we are quickly running out of time to realistically give ourselves a chance to stay below that 'danger limit'. However, 2°C is not a do-or-die threshold. Every bit of CO2 emissions we can reduce means that much avoided future warming, which means that much avoided climate change impacts. As Lonnie Thompson noted, the more global warming we manage to mitigate, the less adaption and suffering we will be forced to cope with in the future. Realistically, based on the current political climate (which we will explore in another post next week), limiting global warming to 2°C is probably the best we can do. However, there is a big difference between 2°C and 3°C, between 3°C and 4°C, and anything greater than 4°C can probably accurately be described as catastrophic, since various tipping points are expected to be triggered at this level. Right now, we are on track for the catastrophic consequences (widespread coral mortality, mass extinctions, hundreds of millions of people adversely impacted by droughts, floods, heat waves, etc.). But we're not stuck on that track just yet, and we need to move ourselves as far off of it as possible by reducing our greenhouse gas emissions as soon and as much as possible. There are of course many people who believe that the planet will not warm as much, or that the impacts of the associated climate change will be as bad as the body of scientific evidence suggests. That is certainly a possiblity, and we very much hope that their optimistic view is correct. However, what we have presented here is the best summary of scientific evidence available, and it paints a very bleak picture if we fail to rapidly reduce our greenhouse gas emissions. If we continue forward on our current path, catastrophe is not just a possible outcome, it is the most probable outcome. And an intelligent risk management approach would involve taking steps to prevent a catastrophic scenario if it were a mere possibility, let alone the most probable outcome. This is especially true since the most important component of the solution - carbon pricing - can be implemented at a relatively low cost, and a far lower cost than trying to adapt to the climate change consequences we have discussed here (Figure 4).

### Contention Two: Extinction

#### Scenario A is Agriculture

#### Global warming makes global agricultural production impossible – resulting in mass starvation

Potsdam Institute, 2012 (Potsdam Institute for Climate Impact Research and Climate Analytics, “Turn Down the Heat: Why a 4°C Warmer World Must be Avoided”, A report for the World Bank, November, http://climatechange.worldbank.org/sites/default/files/Turn\_Down\_the\_heat\_Why\_a\_4\_degree\_centrigrade\_warmer\_world\_must\_be\_avoided.pdf)

The overall conclusions of IPCC AR4 concerning food production and agriculture included the following: • Crop productivity is projected to increase slightly at mid- to high latitudes for local mean temperature increases of up to 1 to 3°C depending on the crop, and then decrease beyond that in some regions (medium confidence) {WGII 5.4, SPM}. • At lower latitudes, especially in seasonally dry and tropical regions, crop productivity is projected to decrease for even small local temperature increases (1 to 2°C) which would increase the risk of hunger (medium confidence) {WGII 5.4, SPM}. • Globally, the potential for food production is projected to increase with increases in local average temperature over a range of 1 to 3°C, but above this it is projected to decrease (medium confidence) {WGII 5.4, 5.5, SPM}. These findings clearly indicate a growing risk for low-latitude regions at quite low levels of temperature increase and a growing risk for systemic global problems above a warming of a few degrees Celsius. While a comprehensive review of literature is forthcoming in the IPCC AR5, the snapshot overview of recent scientific literature provided here illustrates that the concerns identified in the AR4 are confirmed by recent literature and in important cases extended. In particular, impacts of extreme heat waves deserve mention here for observed agricultural impacts (see also Chapter 2). This chapter will focus on the latest findings regarding possible limits and risks to large-scale agriculture production because of climate change, summarizing recent studies relevant to this risk assessment, including at high levels of global warming approaching 4°C. In particular, it will deliberately highlight important findings that point to the risks of assuming a forward projection of historical trends. Projections for food and agriculture over the 21st century indicate substantial challenges irrespective of climate change. As early as 2050, the world’s population is expected to reach about 9 billion people (Lutz and Samir 2010) and demand for food is expected to increase accordingly. Based on the observed relationship between per capita GDP and per capita demand for crop calories (human consumption, feed crops, fish production and losses during food production), Tilman et al. (2011) project a global increase in the demand for crops by about 100 percent from 2005 to 2050. Other estimates for the same period project a 70 percent increase of demand (Alexandratos 2009). Several projections suggest that global cereal and livestock production may need to increase by between 60 and 100 percent to 2050, depending on the warming scenario (Thornton et al. 2011). The historical context can on the one hand provide reassurance that despite growing population, food production has been able to increase to keep pace with demand and that despite occasional fluctuations, food prices generally stabilize or decrease in real terms (Godfray, Crute, et al. 2010). Increases in food production have mainly been driven by more efficient use of land, rather than by the extension of arable land, with the former more widespread in rich countries and the latter tending to be practiced in poor countries (Tilman et al. 2011). While grain production has more than doubled, the area of land used for arable agriculture has only increased by approximately 9 percent (Godfray, Beddington, et al. 2010). However, although the expansion of agricultural production has proved possible through technological innovation and improved water-use efficiency, observation and analysis point to a significant level of vulnerability of food production and prices to the consequences of climate change, extreme weather, and underlying social and economic development trends. There are some indications that climate change may reduce arable land in low-latitude regions, with reductions most pronounced in Africa, Latin America, and India (Zhang and Cai 2011). For example, flooding of agricultural land is also expected to severely impact crop yields in the future: 10.7 percent of South Asia´s agricultural land is projected to be exposed to inundation, accompanied by a 10 percent intensification of storm surges, with 1 m sea-level rise (Lange et al. 2010). Given the competition for land that may be used for other human activities (for example, urbanization and biofuel production), which can be expected to increase as climate change places pressure on scarce resources, it is likely that the main increase in production will have to be managed by an intensification of agriculture on the same—or possibly even reduced—amount of land (Godfray, Beddington et al. 2010; Smith et al. 2010). Declines in nutrient availability (for example, phosphorus), as well as the spread in pests and weeds, could further limit the increase of agricultural productivity. Geographical shifts in production patterns resulting from the effects of global warming could further escalate distributional issues in the future. While this will not be taken into consideration here, it illustrates the plethora of factors to take into account when thinking of challenges to promoting food security in a warming world. New results published since 2007 point to a more rapidly escalating risk of crop yield reductions associated with warming than previously predicted (Schlenker and Lobell 2010; Schlenker and Roberts 2009). In the period since 1980, patterns of global crop production have presented significant indications of an adverse effect resulting from climate trends and variability, with maize declining by 3.8 percent and wheat production by 5.5 percent compared to a case without climate trends. A significant portion of increases in crop yields from technology, CO2 fertilization, and other changes may have been offset by climate trends in some countries (Lobell et al. 2011). This indication alone casts some doubt on future projections based on earlier crop models. In relation to the projected effects of climate change three interrelated factors are important: temperature-induced effect, precipitation-induced effect, and the CO2 -fertilization effect. The following discussion will focus only on these biophysical factors. Other factors that can damage crops, for example, the elevated levels of tropospheric ozone (van Groenigen et al. 2012), fall outside the scope of this report and will not be addressed. Largely beyond the scope of this report are the far-reaching and uneven adverse implications for poverty in many regions arising from the macroeconomic consequences of shocks to global agricultural production from climate change. It is necessary to stress here that even where overall food production is not reduced or is even increased with low levels of warming, distributional issues mean that food security will remain a precarious matter or worsen as different regions are impacted differently and food security is further challenged by a multitude of nonclimatic factors.

#### Scenario B is Biodiversity

#### 4 degrees of warming make sustaining biodiversity impossible – the impact is extinction

Potsdam Institute, 2012 (Potsdam Institute for Climate Impact Research and Climate Analytics, “Turn Down the Heat: Why a 4°C Warmer World Must be Avoided”, A report for the World Bank, November, http://climatechange.worldbank.org/sites/default/files/Turn\_Down\_the\_heat\_Why\_a\_4\_degree\_centrigrade\_warmer\_world\_must\_be\_avoided.pdf)

Ecosystems and their species provide a range of important goods and services for human society. These include water, food, cultural and other values. In the AR4 an assessment of climate change effects on ecosystems and their services found the following: • If greenhouse gas emissions and other stresses continue at or above current rates, the resilience of many ecosystems is likely to be exceeded by an unprecedented combination of change in climate, associated disturbances (for example, flooding, drought, wildfire, insects, and ocean acidification) and other stressors (global change drivers) including land use change, pollution and over-exploitation of resources. • Approximately 20 to 30 percent of plant and animal species assessed so far are likely to be at increased risk of extinction, if increases in global average temperature exceed of 2–3° above preindustrial levels. • For increases in global average temperature exceeding 2 to 3° above preindustrial levels and in concomitant atmospheric CO2 concentrations, major changes are projected in ecosystem structure and function, species’ ecological interactions and shifts in species’ geographical ranges, with predominantly negative consequences for biodiversity and ecosystem goods and services, such as water and food supply. It is known that past large-scale losses of global ecosystems and species extinctions have been associated with rapid climate change combined with other ecological stressors. Loss and/or degradation of ecosystems, and rates of extinction because of human pressures over the last century or more, which have intensified in recent decades, have contributed to a very high rate of extinction by geological standards. It is well established that loss or degradation of ecosystem services occurs as a consequence of species extinctions, declining species abundance, or widespread shifts in species and biome distributions (Leadley et al. 2010). Climate change is projected to exacerbate the situation. This section outlines the likely consequences for some key ecosystems and for biodiversity. The literature tends to confirm the conclusions from the AR4 outlined above. Despite the existence of detailed and highly informative case studies, upon which this section will draw, it is also important to recall that there remain many uncertainties (Bellard, Bertelsmeier, Leadley, Thuiller, and Courchamp, 2012). However, threshold behavior is known to occur in biological systems (Barnosky et al. 2012) and most model projections agree on major adverse consequences for biodiversity in a 4°C world (Bellard et al., 2012). With high levels of warming, coalescing human induced stresses on ecosystems have the potential to trigger large-scale ecosystem collapse (Barnosky et al. 2012). Furthermore, while uncertainty remains in the projections, there is a risk not only of major loss of valuable ecosystem services, particularly to the poor and the most vulnerable who depend on them, but also of feedbacks being initiated that would result in ever higher CO2 emissions and thus rates of global warming. Significant effects of climate change are already expected for warming well below 4°C. In a scenario of 2.5°C warming, severe ecosystem change, based on absolute and relative changes in carbon and water fluxes and stores, cannot be ruled out on any continent (Heyder, Schaphoff, Gerten, & Lucht, 2011). If warming is limited to less than 2°C, with constant or slightly declining precipitation, small biome shifts are projected, and then only in temperate and tropical regions. Considerable change is projected for cold and tropical climates already at 3°C of warming. At greater than 4°C of warming, biomes in temperate zones will also be substantially affected. These changes would impact not only the human and animal communities that directly rely on the ecosystems, but would also exact a cost (economic and otherwise) on society as a whole, ranging from extensive loss of biodiversity and diminished land cover, through to loss of ecosystems services such as fisheries and forestry (de Groot et al., 2012; Farley et al., 2012). Ecosystems have been found to be particularly sensitive to geographical patterns of climate change (Gonzalez, Neilson, Lenihan, and Drapek, 2010). Moreover, ecosystems are affected not only by local changes in the mean temperature and precipitation, along with changes in the variability of these quantities and changes by the occurrence of extreme events. These climatic variables are thus decisive factors in determining plant structure and ecosystem composition (Reu et al., 2011). Increasing vulnerability to heat and drought stress will likely lead to increased mortality and species extinction. For example, temperature extremes have already been held responsible for mortality in Australian flying-fox species (Welbergen, Klose, Markus, and Eby 2008), and interactions between phenological changes driven by gradual climate changes and extreme events can lead to reduced fecundity (Campbell et al. 2009; Inouye, 2008). Climate change also has the potential to facilitate the spread and establishment of invasive species (pests and weeds) (Hellmann, Byers, Bierwagen, & Dukes, 2008; Rahel & Olden, 2008) with often detrimental implications for ecosystem services and biodiversity. Human land-use changes are expected to further exacerbate climate change driven ecosystem changes, particularly in the tropics, where rising temperatures and reduced precipitation are expected to have major impacts (Campbell et al., 2009; Lee & Jetz, 2008). Ecosystems will be affected by the increased occurrence of extremes such as forest loss resulting from droughts and wildfire exacerbated by land use and agricultural expansion (Fischlin et al., 2007). Climate change also has the potential to catalyze rapid shifts in ecosystems such as sudden forest loss or regional loss of agricultural productivity resulting from desertification (Barnosky et al., 2012). The predicted increase in extreme climate events would also drive dramatic ecosystem changes (Thibault and Brown 2008; Wernberg, Smale, and Thomsen 2012). One such extreme event that is expected to have immediate impacts on ecosystems is the increased rate of wildfire occurrence. Climate change induced shifts in the fire regime are therefore in turn powerful drivers of biome shifts, potentially resulting in considerable changes in carbon fluxes over large areas (Heyder et al., 2011; Lavorel et al., 2006) It is anticipated that global warming will lead to global biome shifts (Barnosky et al. 2012). Based on 20th century observations and 21st century projections, poleward latitudinal biome shifts of up to 400 km are possible in a 4° C world (Gonzalez et al., 2010). In the case of mountaintop ecosystems, for example, such a shift is not necessarily possible, putting them at particular risk of extinction (La Sorte and Jetz, 2010). Species that dwell at the upper edge of continents or on islands would face a similar impediment to adaptation, since migration into adjacent ecosystems is not possible (Campbell, et al. 2009; Hof, Levinsky, Araújo, and Rahbek 2011). The consequences of such geographical shifts, driven by climatic changes as well as rising CO2 concentrations, would be found in both reduced species richness and species turnover (for example, Phillips et al., 2008; White and Beissinger 2008). A study by (Midgley and Thuiller, 2011) found that, of 5,197 African plant species studied, 25–42 percent could lose all suitable range by 2085. It should be emphasized that competition for space with human agriculture over the coming century is likely to prevent vegetation expansion in most cases (Zelazowski et al., 2011) Species composition changes can lead to structural changes of the entire ecosystem, such as the increase in lianas in tropical and temperate forests (Phillips et al., 2008), and the encroachment of woody plants in temperate grasslands (Bloor et al., 2008, Ratajczak et al., 2012), putting grass-eating herbivores at risk of extinction because of a lack of food available—this is just one example of the sensitive intricacies of ecosystem responses to external perturbations. There is also an increased risk of extinction for herbivores in regions of drought-induced tree dieback, owing to their inability to digest the newly resident C4 grasses (Morgan et al., 2008). The following provides some examples of ecosystems that have been identified as particularly vulnerable to climate change. The discussion is restricted to ecosystems themselves, rather than the important and often extensive impacts on ecosystems services. Boreal-temperate ecosystems are particularly vulnerable to climate change, although there are large differences in projections, depending on the future climate model and emission pathway studied. Nevertheless there is a clear risk of large-scale forest dieback in the boreal-temperate system because of heat and drought (Heyder et al., 2011). Heat and drought related die-back has already been observed in substantial areas of North American boreal forests (Allen et al., 2010), characteristic of vulnerability to heat and drought stress leading to increased mortality at the trailing edge of boreal forests. The vulnerability of transition zones between boreal and temperate forests, as well as between boreal forests and polar/tundra biomes, is corroborated by studies of changes in plant functional richness with climate change (Reu et al., 2011), as well as analyses using multiple dynamic global vegetation models (Gonzalez et al., 2010). Subtle changes within forest types also pose a great risk to biodiversity as different plant types gain dominance (Scholze et al., 2006). Humid tropical forests also show increasing risk of major climate induced losses. At 4°C warming above pre-industrial levels, the land extent of humid tropical forest, characterized by tree species diversity and biomass density, is expected to contract to approximately 25 percent of its original size [see Figure 3 in (Zelazowski et al., 2011)], while at 2°C warming, more than 75 percent of the original land can likely be preserved. For these ecosystems, water availability is the dominant determinant of climate suitability (Zelazowski et al., 2011). In general, Asia is substantially less at risk of forest loss than the tropical Americas. However, even at 2°C, the forest in the Indochina peninsula will be at risk of die-back. At 4°C, the area of concern grows to include central Sumatra, Sulawesi, India and the Philippines, where up to 30 percent of the total humid tropical forest niche could be threatened by forest retreat (Zelazowski et al., 2011). There has been substantial scientific debate over the risk of a rapid and abrupt change to a much drier savanna or grassland ecosystem under global warming. This risk has been identified as a possible planetary tipping point at around a warming of 3.5–4.5°C, which, if crossed, would result in a major loss of biodiversity, ecosystem services and the loss of a major terrestrial carbon sink, increasing atmospheric CO2 concentrations (Lenton et al., 2008)(Cox, et al., 2004) (Kriegler, Hall, Held, Dawson, and Schellnhuber, 2009). Substantial uncertainty remains around the likelihood, timing and onset of such risk due to a range of factors including uncertainty in precipitation changes, effects of CO2 concentration increase on water use efficiency and the CO2 fertilization effect, land-use feedbacks and interactions with fire frequency and intensity, and effects of higher temperature on tropical tree species and on important ecosystem services such as pollinators. While climate model projections for the Amazon, and in particular precipitation, remain quite uncertain recent analyses using IPCC AR4 generation climate indicates a reduced risk of a major basin wide loss of precipitation compared to some earlier work. If drying occurs then the likelihood of an abrupt shift to a drier, less biodiverse ecosystem would increase. Current projections indicate that fire occurrence in the Amazon could double by 2050, based on the A2 SRES scenario that involves warming of approximately 1.5°C above pre-industrial levels (Silvestrini et al., 2011), and can therefore be expected to be even higher in a 4°C world. Interactions of climate change, land use and agricultural expansion increase the incidence of fire (Aragão et al., 2008), which plays a major role in the (re)structuring of vegetation (Gonzalez et al., 2010; Scholze et al., 2006). A decrease in precipitation over the Amazon forests may therefore result in forest retreat or transition into a low biomass forest (Malhi et al., 2009). Moderating this risk is a possible increase in ecosystem water use efficiency with increasing CO2 concentrations is accounted for, more than 90 percent of the original humid tropical forest niche in Amazonia is likely to be preserved in the 2°C case, compared to just under half in the 4°C warming case (see Figure 5 in Zelazowski et al., 2011) (Cook, Zeng, and Yoon, 2012; Salazar & Nobre, 2010). Recent work has analyzed a number of these factors and their uncertainties and finds that the risk of major loss of forest due to climate is more likely to be regional than Amazon basin-wide, with the eastern and southeastern Amazon being most at risk (Zelazowski et al., 2011). Salazar and Nobre (2010) estimates a transition from tropical forests to seasonal forest or savanna in the eastern Amazon could occur at warming at warming of 2.5–3.5°C when CO2 fertilization is not considered and 4.5–5.5°C when it is considered. It is important to note, as Salazar and Nobre (2010) point out, that the effects of deforestation and increased fire risk interact with the climate change and are likely to accelerate a transition from tropical forests to drier ecosystems. Increased CO2 concentration may also lead to increased plant water efficiency (Ainsworth and Long, 2005), lowering the risk of plant die-back, and resulting in vegetation expansion in many regions, such as the Congo basin, West Africa and Madagascar (Zelazowski et al., 2011), in addition to some dry-land ecosystems (Heyder et al., 2011). The impact of CO2 induced ‘greening’ would, however, negatively affect biodiversity in many ecosystems. In particular encroachment of woody plants into grasslands and savannahs in North American grassland and savanna communities could lead to a decline of up to 45 percent in species richness ((Ratajczak and Nippert, 2012) and loss of specialist savanna plant species in southern Africa (Parr, Gray, and Bond, 2012). Mangroves are an important ecosystem and are particularly vulnerable to the multiple impacts of climate change, such as: rise in sea levels, increases in atmospheric CO2 concentration, air and water temperature, and changes in precipitation patterns. Sea-level rise can cause a loss of mangroves by cutting off the flow of fresh water and nutrients and drowning the roots (Dasgupta, Laplante et al. 2010). By the end of the 21st century, global mangrove cover is projected to experience a significant decline because of heat stress and sea-level rise (Alongi, 2008; Beaumont et al., 2011). In fact, it has been estimated that under the A1B emissions scenario (3.5°C relative to pre-industrial levels) mangroves would need to geographically move on average about 1 km/year to remain in suitable climate zones (Loarie et al., 2009). The most vulnerable mangrove forests are those occupying low-relief islands such as small islands in the Pacific where sea-level rise is a dominant factor. Where rivers are lacking and/ or land is subsiding, vulnerability is also high. With mangrove losses resulting from deforestation presently at 1 to 2 percent per annum (Beaumont et al., 2011), climate change may not be the biggest immediate threat to the future of mangroves. However if conservation efforts are successful in the longer term climate change may become a determining issue (Beaumont et al., 2011). Coral reefs are acutely sensitive to changes in water temperatures, ocean pH and intensity and frequency of tropical cyclones. Mass coral bleaching is caused by ocean warming and ocean acidification, which results from absorption of CO2 (for example, Frieler et al., 2012a). Increased sea-surface temperatures and a reduction of available carbonates are also understood to be driving causes of decreased rates of calcification, a critical reef-building process (De’ath, Lough, and Fabricius, 2009). The effects of climate change on coral reefs are already apparent. The Great Barrier Reef, for example, has been estimated to have lost 50 percent of live coral cover since 1985, which is attributed in part to coral bleaching because of increasing water temperatures (De’ath et al., 2012). Under atmospheric CO2 concentrations that correspond to a warming of 4°C by 2100, reef erosion will likely exceed rates of calcification, leaving coral reefs as “crumbling frameworks with few calcareous corals” (Hoegh-Guldberg et al., 2007). In fact, frequency of bleaching events under global warming in even a 2°C world has been projected to exceed the ability of coral reefs to recover. The extinction of coral reefs would be catastrophic for entire coral reef ecosystems and the people who depend on them for food, income and shoreline. Reefs provide coastal protection against coastal floods and rising sea levels, nursery grounds and habitat for a variety of currently fished species, as well as an invaluable tourism asset. These valuable services to often subsistence-dependent coastal and island societies will most likely be lost well before a 4°C world is reached. The preceding discussion reviewed the implications of a 4°C world for just a few examples of important ecosystems. The section below examines the effects of climate on biological diversity Ecosystems are composed ultimately of the species and interactions between them and their physical environment. Biologically rich ecosystems are usually diverse and it is broadly agreed that there exists a strong link between this biological diversity and ecosystem productivity, stability and functioning (McGrady-Steed, Harris, and Morin, 1997; David Tilman, Wedin, and Knops, 1996)(Hector, 1999; D Tilman et al., 2001). Loss of species within ecosystems will hence have profound negative effects on the functioning and stability of ecosystems and on the ability of ecosystems to provide goods and services to human societies. It is the overall diversity of species that ultimately characterizes the biodiversity and evolutionary legacy of life on Earth. As was noted at the outset of this discussion, species extinction rates are now at very high levels compared to the geological record. Loss of those species presently classified as ‘critically endangered’ would lead to mass extinction on a scale that has happened only five times before in the last 540 million years. The loss of those species classified as ‘endangered’ and ‘vulnerable’ would confirm this loss as the sixth mass extinction episode (Barnosky 2011). Loss of biodiversity will challenge those reliant on ecosystems services. Fisheries (Dale, Tharp, Lannom, and Hodges, 2010), and agronomy (Howden et al., 2007) and forestry industries (Stram & Evans, 2009), among others, will need to match species choices to the changing climate conditions, while devising new strategies to tackle invasive pests (Bellard, Bertelsmeier, Leadley, Thuiller, and Courchamp, 2012). These challenges would have to be met in the face of increasing competition between natural and agricultural ecosystems over water resources. Over the 21st-century climate change is likely to result in some bio-climates disappearing, notably in the mountainous tropics and in the poleward regions of continents, with new, or novel, climates developing in the tropics and subtropics (Williams, Jackson, and Kutzbach, 2007). In this study novel climates are those where 21st century projected climates do not overlap with their 20th century analogues, and disappearing climates are those 20th century climates that do not overlap with 21st century projected climates. The projections of Williams et al (2007) indicate that in a 4°C world (SRES A2), 12–39 percent of the Earth’s land surface may experience a novel climate compared to 20th century analogues. Predictions of species response to novel climates are difficult because researchers have no current analogue to rely upon. However, at least such climates would give rise to disruptions, with many current species associations being broken up or disappearing entirely. Under the same scenario an estimated 10–48 percent of the Earth’s surface including highly biodiverse regions such as the Himalayas, Mesoamerica, eastern and southern Africa, the Philippines and the region around Indonesia known as Wallacaea would lose their climate space. With limitations on how fast species can disperse, or move, this indicates that many species may find themselves without a suitable climate space and thus face a high risk of extinction. Globally, as in other studies, there is a strong association apparent in these projections between regions where the climate disappears and biodiversity hotspots. Limiting warming to lower levels in this study showed substantially reduced effects, with the magnitude of novel and disappearing climates scaling linearly with global mean warming. More recent work by Beaumont and colleagues using a different approach confirms the scale of this risk (Beaumont et al., 2011, Figure 36). Analysis of the exposure of 185 eco-regions of exceptional biodiversity (a subset of the so-called Global 200) to extreme monthly temperature and precipitation conditions in the 21st century compared to 1961–1990 conditions shows that within 60 years almost all of the regions that are already exposed to substantial environmental and social pressure, will experience extreme temperature conditions based on the A2 emission scenario (4.1°C global mean temperature rise by 2100) (Beaumont et al., 2011). Tropical and sub-tropical eco-regions in Africa and South America are particularly vulnerable. Vulnerability to such extremes is particularly acute for high latitude and small island biota, which are very limited in their ability to respond to range shifts, and to those biota, such as flooded grassland, mangroves and desert biomes, that would require large geographical displacements to find comparable climates in a warmer world. The overall sense of recent literature confirms the findings of the AR4 summarized at the beginning of the section, with a number of risks such as those to coral reefs occurring at significantly lower temperatures than estimated in that report. Although non-climate related human pressures are likely to remain a major and defining driver of loss of ecosystems and biodiversity in the coming decades, it is also clear that as warming rises so will the predominance of climate change as a determinant of ecosystem and biodiversity survival. While the factors of human stresses on ecosystems are manifold, in a 4°C world, climate change is likely to become a determining driver of ecosystem shifts and large-scale biodiversity loss (Bellard et al., 2012; New et al., 2011). Recent research suggests that large-scale loss of biodiversity is likely to occur in a 4°C world, with climate change and high CO2 concentration driving a transition of the Earth´s ecosystems into a state unknown in human experience. Such damages to ecosystems would be expected to dramatically reduce the provision of ecosystem services on which society depends (e.g., hydrology—quantity flow rates, quality; fisheries (corals), protection of coastline (loss of mangroves). Barnosky has described the present situation facing the biodiversity of the planet as “the perfect storm” with multiple high intensity ecological stresses because of habitat modification and degradation, pollution and other factors, unusually rapid climate change and unusually high and elevated atmospheric CO2 concentrations. In the past, as noted above, this combination of circumstances has led to major, mass extinctions with planetary consequences. Thus, there is a growing risk that climate change, combined with other human activities, will cause the irreversible transition of the Earth´s ecosystems into a state unknown in human experience (Barnosky et al., 2012).

#### Scenario C is Carbon Dioxide

#### Current Carbon emissions guarantee ocean acidification – only reversing these trends ensures ocean resiliency – the alternative collapses marine life

Potsdam Institute, 2012 (Potsdam Institute for Climate Impact Research and Climate Analytics, “Turn Down the Heat: Why a 4°C Warmer World Must be Avoided”, A report for the World Bank, November, http://climatechange.worldbank.org/sites/default/files/Turn\_Down\_the\_heat\_Why\_a\_4\_degree\_centrigrade\_warmer\_world\_must\_be\_avoided.pdf)

The high emission scenarios would also result in very high carbon dioxide concentrations and ocean acidification, as can be seen in Figure 25 and Figure 26. The increase of carbon dioxide concentration to the present-day value of 390 ppm has caused the pH to drop by 0.1 since preindustrial conditions. This has increased ocean acidity, which because of the logarithmic scale of pH is equivalent to a 30 percent increase in ocean acidity (concentration of hydrogen ions). The scenarios of 4°C warming or more by 2100 correspond to a carbon dioxide concentration of above 800 ppm and lead to a further decrease of pH by another 0.3, equivalent to a 150 percent acidity increase since preindustrial levels. Ongoing ocean acidification is likely to have very severe consequences for coral reefs, various species of marine calcifying organisms, and ocean ecosystems generally (for example, Vézina & Hoegh-Guldberg 2008; Hofmann and Schellnhuber 2009). A recent review shows that the degree and timescale of ocean acidification resulting from anthropogenic CO2 emissions appears to be greater than during any of the ocean acidification events identified so far over the geological past, dating back millions of years and including several mass extinction events (Zeebe 2012). If atmospheric CO2 reaches 450 ppm, coral reef growth around the world is expected to slow down considerably and at 550 ppm reefs are expected to start to dissolve (Cao and Caldeira 2008; Silverman et al. 2009). Reduced growth, coral skeleton weakening, and increased temperature dependence would start to affect coral reefs already below 450 ppm. Thus, a CO2 level of below 350 ppm appears to be required for the long-term survival of coral reefs, if multiple stressors, such as high ocean surface-water temperature events, sea-level rise, and deterioration in water quality, are included (Veron et al. 2009). Based on an estimate of the relationship between atmospheric carbon dioxide concentration and surface ocean acidity (Bernie, Lowe, Tyrrell, and Legge 2010), only very low emission scenarios are able to halt and ultimately reverse ocean acidification (Figure 26). An important caveat on these results is that the approach used here is likely to be valid only for relatively short timescales. If mitigation measures are not implemented soon to reduce carbon dioxide emissions, then ocean acidification can be expected to extend into the deep ocean. The calculations shown refer only to the response of the ocean surface layers, and once ocean acidification has spread more thoroughly, slowing and reversing this will be much more difficult. This would further add significant stress to marine ecosystems already under pressure from human influences, such as overfishing and pollution.

**Extinction**

Kristof 6 (NICHOLAS D. KRISTOF, American journalist, author, op-ed columnist, and a winner of two Pulitzer Prizes, “Scandal Below the Surface”, Oct 31, 2006, http://select.nytimes.com/2006/10/31/opinion/31kristof.html?\_r=1, CMR)

If you think of the earth’s surface as a great beaker, then it’s filled mostly with ocean water. It is slightly alkaline, and that’s what creates a hospitable home for fish, coral reefs and plankton — and indirectly, higher up the food chain, for us. But scientists have discovered that the carbon dioxide (CO2) we’re spewing into the air doesn’t just heat up the atmosphere and lead to rising seas. Much of that carbon is absorbed by the oceans, and there it produces carbonic acid — the same stuff found in soda pop. That makes oceans a bit more acidic, impairing the ability of certain shellfish to produce shells, which, like coral reefs, are made of calcium carbonate. A recent article in Scientific American explained the indignity of being a dissolving mollusk in an acidic ocean: “Drop a piece of chalk (calcium carbonate) into a glass of vinegar (a mild acid) if you need a demonstration of the general worry: the chalk will begin dissolving immediately.” The more acidic waters may spell the end, at least in higher latitudes, of some of the tiniest variations of shellfish — certain plankton and tiny snails called pteropods. This would **disrupt the food chain,** possibly killing off many whales and fish, and rippling up all the way to humans. We stand, so to speak, on the shoulders of plankton. “There have been a couple of very big events in geological history where the carbon cycle changed dramatically,” said Scott Doney, senior scientist at the Woods Hole Oceanographic Institution in Massachusetts. One was an abrupt warming that took place 55 million years ago in conjunction with acidification of the oceans and **mass extinctions**. Most scientists don’t believe we’re headed toward a man-made variant on that episode — not **yet**, at any rate. But many worry that we’re hurtling into unknown dangers. “Whether in 20 years or 100 years, I think marine ecosystems are going to be dramatically different by the end of this century, and that’ll lead to **extinction events**,” Mr. Doney added. “This is the only habitable planet we have,” he said. “The damage we do is going to be felt by **all the generations to come.”** So that should be one of the great political issues for this century — the vandalism we’re committing to our planet because of our refusal to curb greenhouse gases. Yet the subject is barely debated in this campaign. Changes in ocean chemistry are only one among many damaging consequences of carbon emissions. Evidence is also growing about the more familiar dangers: melting glaciers, changing rainfall patterns, rising seas and more powerful hurricanes. Last year, the World Health Organization released a study indicating that climate change results in an extra 150,000 deaths and five million sicknesses each year, by causing the spread of malaria, diarrhea, malnutrition and other ailments. A report prepared for the British government and published yesterday, the Stern Review on the Economics of Climate Change, warned that inaction “could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century.” If emissions are not curbed, climate change will cut 5 percent to 20 percent of global G.D.P. each year, declared the mammoth report. “In contrast,” it said, “the costs of action — reducing greenhouse gas emissions to avoid the worst impacts of climate change — can be limited to around 1 percent of global G.D.P. each year.” Some analysts put the costs of action higher, but most agree that it makes sense to invest far more in alternative energy sources, both to wean ourselves of oil and to reduce the strain on our planet. We know what is needed: a carbon tax or cap-and-trade system, a post-Kyoto accord on emissions cutbacks, and major research on alternative energy sources. But as The Times’s Andrew Revkin noted yesterday, spending on energy research and development has fallen by more than half, after inflation, since 1979.

#### And, it independently kills plankton

Cheng**,** Ph.D, associated professor at the University of Texas,2007(Victoria. July. Keystone Species Extinction Overview. http://www.arlingtoninstitute.org/wbp/species-extinction/443)

Plankton is a blanket term for many species of microorganisms that drift in open water and make up the base of the aquatic food chain. There are two types of plankton, phytoplankton and zooplankton. Phytoplankton make their own food through the process of photosynthesis, while zooplankton feed on phytoplankton. Zooplankton are in turn eaten by larger animals. In this way these tiny organisms sustain all life in the oceans. According to the NASA, phytoplankton populations in the northern oceans have declined by as much as 30% since 1980.[4] While the cause of this decline remains uncertain, there are several theories.One theory points to global warming as the main cause.[5] Phytoplankton require nutrients obtained from the bottom of the ocean to reproduce. At the Earth’s poles, ocean water is colder at the surface than down in the depths. Therefore water from the bottom of the ocean rises to the top, carrying with it essential nutrients from the ocean floor. However, as the water near the surface becomes warmer due to climate change, less water rises from the bottom, resulting in less nutrients for the phytoplankton. This consequently hinders their reproduction processes.Another theory suggests that carbon dioxide emissions are causing this decline in plankton population. The ocean has always absorbed a significant amount of carbon dioxide, but in recent years its capacity for this pollutant may not have been able to keep up with the level of human output. Recent studies suggest that the carbon dioxide the ocean absorbs is turned into carbonic acid, which lowers the pH level of the ocean.[6] This acidification is highly corrosive to sea animals that form shells, including pteropods, which are a type of zooplankton. Pteropods are a food source for countless larger animals such as salmon and cod. If they are unable to survive in an acidic ocean, then the entire ocean system will be threatened.

#### Extinction – oxygen depletion and food chains

UPI **June 6,** 2008 (http://www.upi.com/Energy\_Resources/2008/06/06/Acidic\_oceans\_may\_tangle\_food\_chain/UPI-84651212763771/print/)

Increased carbon levels in ocean water could have devastating impacts on marine life, scientists testified Thursday at a congressional hearing. Although most of the concern about carbon emissions has focused on the atmosphere and resulting temperature changes, accumulation of carbon dioxide in the ocean also could have disturbing outcomes, experts said at the hearing, which examined legislation that would create a program to study how the ocean responds to increased carbon levels. Ocean surface waters quickly absorb carbon dioxide from the atmosphere, so as carbon concentrations rise in the skies, they also skyrocket in the watery depths that cover almost 70 percent of the planet. As carbon dioxide increases in oceans, the acidity of the water also rises, and this change could affect a wide variety of organisms, said Scott Doney, senior scientist at the Woods Hole Oceanographic Institution, a non-profit research institute based in Woods Hole, Mass. "Greater acidity slows the growth or even dissolves ocean plant and animal shells built from calcium carbonate," Doney told representatives in the House Committee on Energy and the Environment. "Acidification thus threatens a wide range of marine organisms, from microscopic plankton and shellfish to massive coral reefs." If small organisms, like phytoplankton, are knocked out by acidity, the ripples would be far-reaching, said David Adamec, head of ocean sciences at the National Aeronautics and Space Administration. "If the amount of phytoplankton is reduced, you reduce the amount of photosynthesis going on in the ocean," Adamec told United Press International. "Those little guys are responsible for half of the oxygen you're breathing right now." A hit to microscopic organisms can also bring down a whole food chain. For instance, several years ago, an El Nino event wiped out the phytoplankton near the Galapagos Islands. That year, juvenile bird and seal populations almost disappeared. If ocean acidity stunted phytoplankton populations like the El Nino did that year, a similar result would occur -- but it would last for much longer than one year, potentially leading to extinction for some species, Adamec said. While it's clear increased acidity makes it difficult for phytoplankton to thrive, scientists don't know what level of acidity will result in catastrophic damages, said Wayne Esaias, a NASA oceanographer. "There's no hard and fast number we can use," he told UPI. In fact, although scientists can guess at the impacts of acidity, no one's sure what will happen in reality. Rep. Roscoe Bartlett, R-Md., pointed to this uncertainty at Thursday's hearing. "The ocean will be very different with increased levels of carbon dioxide, but I don't know if it will be better or worse," Bartlett said. However, even though it's not clear what the changes will be, the risk of doing nothing could be disastrous for ecosystems, said Ken Caldeira, a scientist at the Carnegie Institution for Science, a non-profit research organization. "The systems that are adapted to very precise chemical or climatological conditions will disappear and be replaced by species which, on land, we call weeds," Caldeira said. "What is the level of irreversible environmental risk that you're willing to take?" It's precisely this uncertainty that the Federal Ocean Acidification Research and Monitoring Act attempts to address. The bill creates a federal committee within the National Oceanic and Atmospheric Administration to monitor carbon dioxide levels in ocean waters and research the impacts of acidification. like Bishop. "We would lose everything," he told UPI.

### Contention Three: Solvency

#### Federal purchase agreements are key to create a market for SMRs and spur private investment

Rosner and Goldberg, 2011 (Robert, senator of the Helmholtz Association for the Research Field Structure of Matter and is currently the William E. Wrather Distinguished Service Professor at the University of Chicago; Stephen, Senior Advisor to the American Academy of Arts & Sciences; “Small Modular Reactors – Key to Future Nuclear Power Generation in the U.S.”, Energy Policy Institute at Chicago (EPIC), The University of Chicago, Contributor: Joseph S. Hezir, Pricipal, EOP Foundation, Inc., Technical Paper, Revision 1, November, <https://epic.sites.uchicago.edu/sites/epic.uchicago.edu/files/uploads/EPICSMRWhitePaperFinalcopy.pdf>)

6.2 GOVERNMENT SPONSORSHIP OF MARKET TRANSFORMATION INCENTIVES Similar to other important energy technologies, such as energy storage and renewables, “**market pull” activities coupled with the traditional “technology push” activities would significantly increase the likelihood of timely and successful commercialization. Market transformation incentives serve two** important **objectives**. **They facilitate demand for the** off-take of **SMR plants**, **thus reducing market risk** **and helping to attract private investment** without high risk premiums. In addition, **if such** market transformation **opportunities could be targeted to higher price electricity markets** or higher value electricity applications**, they would significantly reduce the cost of any companion production incentives.** There are three special market opportunities that may provide the additional market pull needed to successfully commercialize SMRs: the federal government, international applications, and the need for replacement of existing coal generation plants. 6.2.1 **Purchase Power Agreements with Federal Agency Facilities** **Federal facilities could be the initial customer** **for the** output of the LEAD or FOAK **SMR plants**. **The federal government is the largest single consumer of electricity in the U.S**., but its use of electricity is widely dispersed geographically and highly fragmented institutionally (i.e., many suppliers and customers). **Current federal electricity procurement policies do not encourage aggregation of demand, nor do they allow for agencies to enter into long-term contracts that are “bankable” by suppliers**. President **Obama** has sought to place federal agencies in the vanguard of efforts to adopt clean energy technologies and reduce greenhouse gas emissions. Executive Order 13514, issued on October 5, 2009, **calls for reductions in greenhouse gases by all federal agencies**, **with DOE establishing a target of a 28% reduction by 2020**, including greenhouse gases associated with purchased electricity. **SMRs provide** **one** potential **option to meet the** President’s Executive **Order**. **One or more federal agency facilities that can be cost effectively connected to an SMR plant could agree to contract to purchase the bulk of the power output from a privately developed and financed** LEAD **plant**. 46 A LEAD plant, even without the benefits of learning, could offer electricity to federal facilities at prices competitive with the unsubsidized significant cost of other clean energy technologies. Table 4 shows that the LCOE estimates for the LEAD and FOAK-1plants are in the range of the unsubsidized national LCOE estimates for other clean electricity generation technologies (based on the current state of maturity of the other technologies). A**ll of these technologies should experience additional learning improvements over time.** **However**, **as presented earlier in the learning model analysis, the study team anticipates significantly greater learning improvements in SMR technology that would improve the competitive position of SMRs over time.** Additional competitive market opportunities can be identified on a region-specific, technology-specific basis. For example, the Southeast U.S. has limited wind resources. While the region has abundant biomass resources, the estimated unsubsidized cost of biomass electricity is in the range of $90-130 per MWh (9-13¢/kWh), making LEAD and FOAK plants very competitive (prior to consideration of subsidies). 47 Competitive pricing is an important, but not the sole, element to successful SMR deployment. A bankable contractual arrangement also is required, and this provides an important opportunity for federal facilities to enter into the necessary purchase power arrangements. However, to provide a “bankable” arrangement to enable the SMR project sponsor to obtain private sector financing, **the federal agency purchase agreement may need to provide a guaranteed payment for aggregate output, regardless of actual generation output**. 48 **Another challenge is to establish a mechanism to aggregate demand among federal electricity consumers if no single federal facility customer has a large enough demand for the output of an SMR module. The study team believes that highlevel federal leadership, such as that exemplified in E.O. 13514, can surmount these challenges and provide critical initial markets for SMR plants.**

#### SMRs are critical to reducing emissions and preventing catastrophic global warming – any alternative fails

Cohen 2012

[Armond, Executive Director, Clean Air Task Force, 2-13, “Decarbonization: The Nuclear Option,” http://energy.nationaljournal.com/2012/02/is-america-poised-for-nuclear.php?print=true&printcomment=2161670]

Three years ago, **MIT’s** Richard **Lester published** **a simple** **analysis of what would be required to meet** **President** **Obama’s** **83%-by-2050** **greenhouse gas emission reduction target. The results were stark: Even if energy efficiency were to improve at rates 50% better than historical averages, and biofuels were able to meaningfully reduce transportation emissions in the near term (a proposition with which we disagree), meeting Obama’s goal would require retrofitting every existing coal plant in the country with** carbon capture and sequestration (**CCS), building twice again that much fossil capacity with CCS, building close to 3,000 wind farms the size of Massachusetts’ Cape Wind, and building nearly 4,000 solar farms** the size of California’s Ivanpah. **And, having done all that, increasing the amount of nuclear power we generate by a factor of five**. Just on its face, this is a tall order**. The capital investment is jaw-dropping, and it is becoming increasingly difficult to site new energy projects**, regardless of whether they are solar or wind farms, transmission lines, CCS infrastructure, shale gas drilling, or nuclear facilities. More subtly, **integrating these various energy sources—especially balancing output of intermittent renewables in an electric grid with no significant ability to store energy—is a major challenge; it is far from certain it can even be done at very large scale. To maximize our odds of meeting the target, we will need to prioritize development and deployment of technologies that appear capable of growing economically to full scale.¶ Cheap** unscrubbed **natural gas is a “McSolution” to the problem—tempting, but probably not the healthiest long-term choice. In order to make a major contribution to climate abatement, methane emissions from natural gas production and distribution will need to be reduced, and gas-fired power plants will need to use CCS technologies**. And**, although gas in the United States today is sold at prices below production costs, that cannot continue for long, especially in increasingly international markets**. Similarly**, “soft energy paths” like PV power** (also sometimes today sold below cost) **will need significant grid support and zero-carbon balancing to generate meaningful emission reductions. The economic supply curve for large, attractive sites for these projects is bound to bend sharply upwards over time as well. In this context, nuclear power has** potentially significant advantages to offer: **It is demonstrably low-carbon; it provides baseload energy; unlike wind and solar, it has high power density; and, although gas is cheap today, the price of new nuclear power appears to approach that of new coal**. Perhaps more importantly, **the price of new nuclear plants will decline as years pass. Standardization will lead to** some **cost reductions; factory assembly of small, modular units could bring about further step-change reductions** (as it has for automobiles and airplanes) **in production costs**. None of this means that nuclear is poised for a renaissance in the United States. Utilities and their regulators won’t argue with $3 gas, Congress is unwilling to put a price on carbon, and some people remain vehemently opposed to nuclear energy. Ultimately, however, **nuclear energy is** probably **an** indispensible element of any credible plan to substantially decarbonize the country. The Nuclear Regulatory Commission’s recent approval of the new Westinghouse reactor design is good news in this regard, as it should help revitalize the American nuclear industry and keep it moving on a path of continuous improvement. In the longer term, a **host of newer technologies, including passively cooled small reactors, gas-cooled reactors, and reactors with liquid fuels offer significant potential for further improvements in cost and safety. The country would do well to support continued development and deployment of these designs. In an ideal world, we might wait to scale up nuclear power until after we’ve exhausted all efficiency and renewables options**. Unfortunately, however, **we don’t have decades to do this, even if we thought traditional green sources would eventually fill the zero-carbon void, which seems unrealistic. Half of the CO2 emitted today will still be warming the planet 1,000 years from now, and these legacy emissions won’t erase themselves**. We need to develop all low-carbon energy options now to hedge against the risk of serious climate consequences; **nuclear power**, despite its genuine challenges, cannot be left off the table.

#### Nuclear’s inevitable globally but won’t solve warming until the US develops SMR’s

Lovering et al 2012

[Michael, – et al and Ted Nordhaus—co-founders of American Environics and the Breakthrough Institute a think tank that works on energy and climate change – AND – Jesse Jenkins-Director of Energy and Climate Policy, the Breakthrough Institute, Why We Need Radical Innovation to Make New Nuclear Energy Cheap, 9/11, thebreakthrough.org/index.php/programs/energy-and-climate/new-nukes/]

Arguably, the biggest impact of Fukushima on the nuclear debate, ironically, has been to force a growing number of pro-nuclear environmentalists out of the closet, including us. The reaction to the accident by anti-nuclear campaigners and many Western publics put a fine point on the gross misperception of risk that informs so much anti-nuclear fear. Nuclear remains the only proven technology capable of reliably generating zero-carbon energy at a scale that can have any impact on global warming**. Climate change -- and**, for that matter, the enormous present-day **health risks associated with burning coal, oil, and gas** -- simply **dwarf any** legitimate **risk associated with** the operation of **nuclear** power **plants**. About 100,000 people die every year due to exposure to air pollutants from the burning of coal. By contrast, about 4,000 people have died from nuclear energy -- ever -- almost entirely due to Chernobyl.¶ But rather **than simply lecturing our fellow environmentalists about their misplaced priorities, and how profoundly inadequate present-day renewables are as substitutes for fossil energy, we would do better to take seriously the real obstacles standing in the way of a serious nuclear renaissance.** Many of these obstacles have nothing to do with the fear-mongering of the anti-nuclear movement or, for that matter, the regulatory hurdles imposed by the U.S. Nuclear Regulatory Commission and similar agencies around the world**.¶ As long as nuclear technology is characterized by enormous upfront capital costs, it is likely to remain just a hedge against overdependence on** lower-cost coal and **gas**, not the wholesale replacement it needs to be to make a serious dent in climate change. **Developing countries need** large **plants capable of bringing large amounts of new power to their fast-growing economies. But they also need power to be cheap**. So long as **coal** remains the cheapest source of electricity in the developing world, it **is likely to remain king.¶ The most worrying threat to the future of nuclear is**n't the political fallout from Fukushima -- it's **economic reality. Even as new nuclear plants are built in the developing world, old plants are being retired in the developed world.** For example, Germany's plan to phase-out nuclear simply relies on allowing existing plants to be shut down when they reach the ends of their lifetime. Given the size and cost of new conventional plants today, those plants are unlikely to be replaced with new ones. As such, the **combined political and economic constraints associated with current nuclear energy technologies mean that nuclear energy's share of global energy generation is unlikely to grow** in the coming decades, **as global energy demand is likely to increase faster than new plants can be deployed.¶ To move the needle on nuclear energy to the point that it might actually be capable of displacing fossil fuels, we'll need** new nuclear technologies that are cheaper and smaller. Today, there are a range of nascent, smaller nuclear power plant designs, some of them modifications of the current light-water reactor technologies used on submarines, and others, like thorium fuel and fast breeder reactors, which are based on entirely different nuclear fission technologies. Smaller, modular reactors can be built much faster and cheaper than traditional large-scale nuclear power plants. Next-generation nuclear reactors are designed to be incapable of melting down, produce drastically less radioactive waste, make it very difficult or impossible to produce weapons grade material, useless water, and require less maintenance.¶ Most of these designs still face substantial technical hurdles before they will be ready for commercial demonstration. That means a great deal of research and innovation will be necessary to make these next generation plants viable and capable of displacing coal and gas. **The U**nited States **could be a leader on developing these technologies, but unfortunately U.S. nuclear policy remains mostly stuck in the past. Rather than creating new solutions**, efforts to restart **the U.S.** nuclear industry have mostly **focused on encouraging utilities to build the next generation of large,** light-water **reactors with loan guarantees** and various other subsidies and regulatory fixes. With a few exceptions, **this is** largely **true** elsewhere **around the world** as well.¶ Nuclear has enjoyed bipartisan support in Congress for more than 60 years, but the enthusiasm is running out. The Obama administration deserves credit for authorizing funding for two small modular reactors, which will be built at the Savannah River site in South Carolina. But a much more sweeping reform of U.S. nuclear energy policy is required. At present, **the N**uclear **R**egulatory **C**ommission has little institutional knowledge of anything other than light-water reactors and virtually no capability to review or regulate alternative designs. This affects nuclear innovation in other countries as well, since the NRC remains, despite its many critics, the global gold standard for thorough regulation of nuclear energy. Most other countries follow the NRC's lead when it comes to establishing new technical and operational standards for the design, construction, and operation of nuclear plants.¶ What's needed now is a new national commitment to the development, testing, demonstration, and early stage commercialization of a broad range of new nuclear technologies -- from much smaller light-water reactors to next generation ones -- in search of a few designs that can be mass produced and deployed at a significantly lower cost than current designs. This will require both greater public support for nuclear innovation and an entirely different regulatory framework to review and approve new commercial designs.¶ In the meantime, **developing countries will continue to build traditional, large nuclear power plants.** But time is of the essence. **With the lion's share of future carbon emissions coming from those** emerging economic **powerhouses**, the need to develop smaller and cheaper designs that can scale faster is all the more important.¶ A true nuclear renaissance can't happen overnight. And it won't happen so long as large and expensive light-water reactors remain our only option. But in the end, there is no credible path to mitigating climate change without a massive global expansion of nuclear energy. If you care about climate change, nothing is more important than developing the nuclear technologies we will need to get that job done.

#### DOE Cost sharing fails to create a market– plan necessary to make nuclear power cost competitive

DOE 2012

[A Strategic Framework for SMR Deployment, 2-24-12, http://www.ne.doe.gov/smrsubcommittee/documents/SMR%20Strategic%20Framework.pdf]

Four Phases to Commercial Deployment Accomplishing these goals will require a multi-phased deployment from licensing through full scale production and a strategy that adjusts along those stages. We lay out four phases each with a distinct goal but different policy tools may be appropriate for achieving those goals. Phase 1 – Near-term Certification and Licensing The first phase of the strategy is to address the licensing challenge described above. The goal for this phase is to complete SMR designs, see those designs certified by the NRC and have projects licensed to build and operate these reactors. Following the request of the Administration and approval from Congress, DOE has an emerging program to accelerate this certification and licensing effort. The five-year $452 million program will provide financial risk mitigation for the costs of working through the NRC review and approval process for up to two SMR designs and associated operating licenses. The successful conclusion of this phase should result in reactor designs that are of sufficient maturity to both meet the safety requirements of the NRC and serve as a solid basis for commercial contracting and cost estimation. Phase 2 – Construction of the First Movers While phase 1 is necessary to provide the initial momentum toward the widespread commercial deployment of SMRs, it may not be sufficient. If the first-of-a-kind SMR power plants produce electricity at costs higher than available alternatives, the market demand for the new technology may not materialize. Widespread deployment of SMRs implies commercial competitiveness; reaching the state of competitiveness may require incentives for market or non-market actors to bear the costs of learning. Phase 2 of the strategic framework is to encourage the construction of the first-of-a-kind SMR plants. These first movers will likely not have the benefit of full factory production as the manufacturing processes will be established through repetition. In fact, it is most likely that the components and modules fabricated for these first plants will be done on specification as prototype parts. The government is well-suited to be the first purchaser of electricity from SMR power plants. Executive Order 13514 establishes ambitious greenhouse-gas reduction goals for Federal agencies 3 that could translate into a premium for clean energy that the government is willing to bear but is not currently valued by the private sector. The President’s Council of Advisors for Science and Technology has called attention to the potential leverage that the government has to use its purchasing power to advance technologies that can support clean energy objectives. 4 A specific policy tool that would be applicable for such first movers would be for the government installations, such as DOE labs or military bases, to enter into power purchase agreements (PPA) with those local utilities that are willing to own and operate SMRs. The output from these SMR power plants would need to be at a price that would enable the utility to make the capital investment for the project. It is too early to discern how such PPAs should be structured but one could see a tradeoff with a high power price for a small number of reactors on one end or a smaller premium spread out over the certainty of a large number of orders on the other. It should be noted that there are specific restrictions limiting the length of PPAs with government facilities, and these limitations may need to be addressed in order to make these arrangements practical. Should it make sense for private entities in favorable markets to act as first movers, the policy tools identified in phase 3 may be appropriate. Phase 3 – Early Adopters Leading to Factories Once the first reactors have been built, the focus shifts to phase 3 – inducing early adopters in the private sector to fill an order book that will be sufficient to warrant the capital investment to establish a fully-configured, fully-staffed SMR factory that will begin working down the learning curve to lower the overall costs. This phase will see the industry transition from building the first units to developing the capability to produce SMRs at a sustained rate. As this transition takes place, suppliers would be expected to leverage existing, excess factory capacity from realms such as the U.S. naval shipbuilding industry. The vision is that by 2030, the industry will have built on the order of twenty units and dedicated factories will be in place leading to the final phase of the commercialization process. The expectation is that this wave of orders will move beyond government purchases to those by private companies for electricity production in favorable markets. PPAs for government sites beyond the first movers will likely provide a subset of these early adopters. For utilities looking to sell electricity their broad customer base, government policies may be an important element of the deployment strategy by providing incentives for these companies. Policies to spur early adopters could include credits for the production of electricity from early SMRs, offsetting investment challenges through tax credits or some form of loan guarantee. Policies intended to spur manufacturing could be applicable to the investment decisions for building SMR factories. Wider-reaching proposals such as government corporations to demonstrate new energy technologies may provide additional opportunities for alleviating constraints, as well. This range of policy tools would almost certainly require broad Congressional support and action. Phase 4 – Sustained Factory Production of SMRs As initial factories are improved and expanded and new ones are built, the mature industry could result in a total output on the order of 50 SMRs per year by 2040 or sooner. This account presumes that most of the deployment is targeted for the U.S.; however, should a vibrant export market materialize – a distinct possibility – the throughput would need to scale accordingly. There may be a role for public policies in this phase, but they would be less about the development of SMR technology than promoting the domestic use of clean power. The appropriate policy tools in this stage would be those that seek to fundamentally reshape how energy is used in the economy over the long-term such as a carbon tax, a cap and trade system, or clean energy standards. In addition, in order to promote the development of domestic manufacturing sector, the government could consider the use of manufacturing tax credits or other such incentives to bolster this segment of the economy.

#### Nuclear power is necessary to avoid four degrees warming

Comeau 3-12

[Steve, a database programmer and a member of Local Motion, a Burlington-based group that promotes people-powered transportation, “Comeau: Nuclear power can be tool in avoiding global warming”, http://vtdigger.org/2013/03/12/comeau-nuclear-power-can-be-tool-in-avoiding-global-warming/]

Nuclear power is used to generate electricity, primarily replacing the use of coal for that purpose. In the two years since the Fukushima-Daiichi nuclear facility disaster hundreds of thousands of people worldwide have died from air pollution related to burning coal. According to the World Health Organization, “Urban outdoor air pollution is estimated to cause 1.3 million deaths worldwide per year.” Much of that pollution can be attributed to coal, which accounts for over 40 percent of electricity generated in the world. Burning coal produces massive amounts of waste products including fly ash, sulfur dioxide, mercury, and other heavy metals. Burning coal is bad for the environment and human health. But the biggest issue with burning coal is that it is the largest contributor of CO2 emissions, and therefore a huge contributor to human-caused global warming. To make progress on reducing CO2 emissions related to global warming, coal needs to stay in the ground. Of course there are many political and economic forces that make this close to impossible, but it can only be done if the electricity produced by coal is replaced. The replacements available for that purpose are natural gas, renewable energy, and nuclear power. These all have issues and risks, but are far cleaner and with fewer health consequences than coal. There are many interesting developments that will allow nuclear power to be safer, produce less waste, and even use up the existing nuclear waste. Bill Gates is promoting a company called TerraPower, developing the Traveling Wave Reactor. Environmentalist Stewart Brand, editor of the Whole Earth Catalog, supports nuclear power and the development of integral fast reactors that use uranium more efficiently and can use waste from other reactors. James Hansen, a leading climate scientist and now an activist, also supports third- and fourth-generation nuclear reactors as a way to avert climate change. The projections from a variety of sources depict that CO2 emissions will decline slowly in the United States and likely continue to increase around the world — so pretty much a “business-as-usual” scenario. A report by PricewaterhouseCoopers, “Too late for two degrees,” shows that in 2001 the world energy related emissions grew by 3 percent. China’s emissions grew by 9.4 percent, but emissions in the United States dropped by 1.9 percent, in part due to a mild winter. The most revealing and useful metric is the CO2 measurements taken at the Mauna Loa Observatory in Hawaii since 1959. Based on the trend of the CO2 measurements over the past 20 years, the atmospheric CO2 level — currently at 396 ppm (parts per million) — will reach 450 ppm in 2034. This is approximately the level of CO2 where the average global temperature will increase by 2 degrees (3.6 degrees F) over the pre-industrial level. Based on the latest climate change science, disruptive climate change is occurring now and will continue to occur with increased warming. That part is certain. What is uncertain is the intensity and timing of the transition to dangerous climate change, the threshold which is thought to be 2 degrees C of warming over the pre-industrial level. According to a report published in November 2012 by the World Bank, titled “Turn Down the Heat — Why a 4℃ Warmer World Must be Avoided,” if the current commitments and pledges for reducing emissions are not fully implemented, warming of 4 degrees C (7.2 degrees F) could occur as early as the 2060s. This level of warming will likely produce enormous environmental harm, as well as social and economic disruption. I encourage everyone to download and read this World Bank report. We need a greater understanding and appreciation of the magnitude of the projected harm that dangerous climate change can cause. People will adapt to climate change, but that adaptation will include migration and displacement that is orders of magnitude greater than that caused by the Fukushima-Daiichi nuclear facility disaster. That adaptation will include the abandonment of large cities flooded by a rising sea and migration from regions parched by drought. The warming and CO2 levels will last for centuries and change the world ecosystems. To postpone or avert the greatest harm from climate change it is necessary to accept the risks and potential harm that come with nuclear power, renewable energy, and natural gas, because the alternative is so much worse. The environmentalist positions against the energy technologies that offer effective solutions for replacement of coal are not helpful. As stated in the World Bank report: “The projected 4℃ warming must not be allowed to occur — the heat must be turned down.”

### Contention Four: Warming Outweighs

#### Uncertainty is a reason to vote aff – our ability to predict exactly what will happen and adapt is minimal

Kim, 2012 (Dr. Jim Yong, President of the World Bank Group, “Turn Down The heat: why a 4°C warmer world must be avoided”, November, World Bank, http://climatechange.worldbank.org/sites/default/files/Turn\_Down\_the\_heat\_Why\_a\_4\_degree\_centrigrade\_warmer\_world\_must\_be\_avoided.pdf)

It is my hope that this report shocks us into action. Even for those of us already committed to fighting climate change, I hope it causes us to work with much more urgency. This report spells out what the world would be like if it warmed by 4 degrees Celsius, which is what scientists are nearly unanimously predicting by the end of the century, without serious policy changes. The 4°C scenarios are devastating: the inundation of coastal cities; increasing risks for food production potentially leading to higher malnutrition rates; many dry regions becoming dryer, wet regions wetter; unprecedented heat waves in many regions, especially in the tropics; substantially exacerbated water scarcity in many regions; increased frequency of high-intensity tropical cyclones; and irreversible loss of biodiversity, including coral reef systems. And most importantly, a 4°C world is so different from the current one that it comes with high uncertainty and new risks that threaten our ability to anticipate and plan for future adaptation needs. The lack of action on climate change not only risks putting prosperity out of reach of millions of people in the developing world, it threatens to roll back decades of sustainable development. It is clear that we already know a great deal about the threat before us. The science is unequivocal that humans are the cause of global warming, and major changes are already being observed: global mean warming is 0.8°C above pre industrial levels; oceans have warmed by 0.09°C since the 1950s and are acidifying; sea levels rose by about 20 cm since pre-industrial times and are now rising at 3.2 cm per decade; an exceptional number of extreme heat waves occurred in the last decade; major food crop growing areas are increasingly affected by drought. Despite the global community’s best intentions to keep global warming below a 2°C increase above pre-industrial climate, higher levels of warming are increasingly likely. Scientists agree that countries’ current United Nations Framework Convention on Climate Change emission pledges and commitments would most likely result in 3.5 to 4°C warming. And the longer those pledges remain unmet, the more likely a 4°C world becomes. Data and evidence drive the work of the World Bank Group. Science reports, including those produced by the Intergovernmental Panel on Climate Change, informed our decision to ramp up work on these issues, leading to, a World Development Report on climate change designed to improve our understanding of the implications of a warming planet; a Strategic Framework on Development and Climate Change, and a report on Inclusive Green Growth. The World Bank is a leading advocate for ambitious action on climate change, not only because it is a moral imperative, but because it makes good economic sense. But what if we fail to ramp up efforts on mitigation? What are the implications of a 4°C world? We commissioned this report from the Potsdam Institute for Climate Impact Research and Climate Analytics to help us understand the state of the science and the potential impact on development in such a world. It would be so dramatically different from today’s world that it is hard to describe accurately; much relies on complex projections and interpretations. We are well aware of the uncertainty that surrounds these scenarios and we know that different scholars and studies sometimes disagree on the degree of risk. But the fact that such scenarios cannot be discarded is sufficient to justify strengthening current climate change policies. Finding ways to avoid that scenario is vital for the health and welfare of communities around the world. While every region of the world will be affected, the poor and most vulnerable would be hit hardest. A 4°C world can, and must, be avoided. The World Bank Group will continue to be a strong advocate for international and regional agreements and increasing climate financing. We will redouble our efforts to support fast growing national initiatives to mitigate carbon emissions and build adaptive capacity as well as support inclusive green growth and climate smart development. Our work on inclusive green growth has shown that—through more efficiency and smarter use of energy and natural resources—many opportunities exist to drastically reduce the climate impact of development, without slowing down poverty alleviation and economic growth. This report is a stark reminder that climate change affects everything. The solutions don’t lie only in climate finance or climate projects. The solutions lie in effective risk management and ensuring all our work, all our thinking, is designed with the threat of a 4°C degree world in mind. The World Bank Group will step up to the challenge.

#### Err aff on probability – risks of major war are almost ZERO

Fettweis 2006

[Christopher, National Security Decision Making Department, US Naval War College, “A Revolution in International Relation Theory: Or, What If Mueller Is Right?” International Studies Review (2006) 8, 677–697]

The obsolescence-of-major-war argument is familiar enough to need little introduction (Mueller 1989, 1995, 2004; see also Rosecrance 1986, 1999; Ray 1989; Kaysen 1990; Van Evera 1990–1991; Kegley 1993; Jervis 2002; Mandelbaum 2002). In its most basic and common form, the thesis holds that **a broad shift in attitudes toward warfare has occurred within the most powerful states of the international system, virtually removing the possibility for the kind of war that pits the strongest states against each other. Major wars**, fought by the most powerful members of the international system, **are**, in Michael Mandelbaum's (1998/1999:20) words, "somewhere between impossible and unlikely."  The argument is founded upon a traditional liberal faith in the possibility of moral progress within the society of great powers, which has created for the first time "an almost universal sense that the deliberate launching of a war can no longer be justified" (Ray 1989:425; also Luard 1986, 1989). To use Francis Fukayama's (1992) phrase**, it is the "autonomous power of ideas" that has brought major war to an end. Whereas past leaders were at times compelled by the masses to use force in the defense of the national honor, today popular pressures urge peaceful resolutions to disputes between industrialized states. This normative shift has all but removed warfare from the set of options before policymakers, making it a** highly unlikely outcome. Mueller (1989:11) has referred to the abolition of slavery and dueling as precedents. "Dueling, a form of violence famed and fabled for centuries, is avoided not merely because it has ceased to seem 'necessary,' but because it has sunk from thought as a viable, conscious possibility. You can't fight a duel if the idea of doing so never occurs to you or your opponent." By extension, states cannot fight wars if doing so does not occur to them or to their opponent. Major war has become, in Mueller's words, "sub-rationally unthinkable."  Obviously, the obsolescence-of-major-war argument is not without critics. First, and most basic, the literature is sometimes quite vague about what constitutes a "major war" and who exactly the "great powers" are. In Retreat from Doomsday, Mueller (1989) alternately describes his data set as consisting of "developed countries" (p. 4), the "first and second worlds" (p. 256), the "major and not-so-major countries" (p. 5), and the 44 wealthiest states (p. 252). Others refer to the great powers as those states with a certain minimum standard of living, especially those in Europe (Luard 1986:398); modern, "industrial societies" (Kaysen 1990); the "leading global powers" (Väyrynen 2006:13); or merely "the most powerful members of the international system" (Mandelbaum 1998/1999:21). What constitutes a "major" war is also often left unclear. Some analyses use arbitrary quantitative values (for example, 1,000 battle deaths); others study only world wars, those fought by the most powerful members of the international system, drawing on all their resources, with the potential to lead to outcomes of "revolutionary geopolitical consequences including the birth and death of regimes, the redrawing of borders, and the reordering of the hierarchy of sovereign states" (Mandelbaum 1998/1999:20).  **Definitions are often the last refuge of academic scoundrels—many IR theories deal with potentially contradictory information by simply refining or redefining the data under consideration. Perhaps the best way to avoid this pitfall is to err on the side of inclusion, expanding the analysis as broadly as possible. While the obsolescence-of-major-war argument clearly covers the kind of catastrophic wars that Mandelbaum analyzes, any big war between industrialized, powerful states would render the proposition false. At its essence, like pornography, one knows major war when one sees it.** Major powers will likely occasionally deem it in their interest to strike the minor, and at times small, states, especially those led by nondemocratic, unenlightened leaders. **But societal unease at the continuation of small wars—such as those in Afghanistan and Iraq or between poor, weak states like Ethiopia and Eritrea—should be ameliorated by the knowledge that, for the first time in history, world war is exceedingly unlikely**. Determining which states are great powers is slightly more complicated, but not by much. Two decades ago, Jack Levy (1983:10) noted that the importance of the concept of "great power" was not matched by anything approaching analytical precision in its use and the field has not progressed much since. Relevant states for this analysis are those with the potential to be great powers, whether that potential is realized or not. The choice not to devote a large portion of one's national resources toward territorial defense was not available to most states in other, bygone eras. If today's rich states can choose not to prepare for war without consequence, then the nature of the system may well have changed.  Broadly speaking, there is an indirect relationship between the relative level of development and the chances of being involved in a major war against a peer. In its most basic, inclusive, and falsifiable form, the obsolescence-of-major-war argument postulates that the most advanced countries—roughly speaking, those in the global north—are unlikely to fight one another ever again. Precise determination of which countries are in the "north" and which are not is less important than it may seem at first, since current versions of the argument do not restrict themselves to the great powers. As will be discussed below, if the logic behind the obsolescence-of-major-war argument is correct, a drastic diminution of all kinds of war everywhere may be on the horizon. It is important to note that this argument does not suggest that competition is coming to a conclusion, only that the means to compete have changed. Rivalry will continue; envy, hubris, and lust for power will likely never disappear. Rogues and outlaws will probably always plague humanity, but very rarely as leaders of powerful states, especially in the northern democracies. **The Mueller argument merely holds that** war need not follow from any of this, **especially major wars**. States can compete in nonviolent ways, addressing the logic of war with the grammar of commerce, to paraphrase Edward Luttwak (1990:19). The conflicts of the future may be fought in boardrooms rather than battlefields, using diplomacy, sanctions, and the methods of commerce rather than brute force.  One of the obvious strengths of the obsolescence-of-major-war argument is that it carries clear routes to falsification. It can be proven incorrect by virtually any big war in Western Europe, in the Pacific Rim, or in North America. If Japan attacks Australia, if the United States moves north, or if Germany rises again and makes another thrust at Paris and Moscow, Retreat from Doomsday will join The Great Illusion (Angell [1909] 1913) in the skeptical realist's list of utopian fantasies. Until that happens, however, scholars are left to explain one of the great anomalies in the history of the international system.  Most IR scholarship carries on as if such an anomaly simply does not exist. This is especially true of realists, whose theories typically leave little room for fundamental systemic change (Lebow 1994). "The game of politics does not change from age to age," argued a skeptical Colin Gray (1999:163), "let alone from decade to decade." Indeed, the most powerful counterargument to Mueller—and one that is ultimately unanswerable—is that this period of peace will be temporary and that someday these trends will be reversed. Neorealists traditionally contend that the anarchic structure of the system stacks the deck against long-term stability, which accounts for "war's dismal recurrence throughout the millennia," in the words of Kenneth Waltz (1989:44). Other scholars are skeptical about the explanatory power of ideas, at least as independent variables in models of state behavior (Mearsheimer 1994/1995; Brooks and Wohlforth 2000/2001; Copeland 2003).  However, one need not be convinced about the potential for ideas to transform international politics to believe that major war is extremely unlikely to recur. Mueller, Mandelbaum, Ray, and others may give primary credit for the end of major war to ideational evolution akin to that which made slavery and dueling obsolete, but others have interpreted the causal chain quite differently. Neoliberal institutionalists have long argued that complex economic interdependence can have a pacifying effect upon state behavior (Keohane and Nye 1977, 1987). Richard Rosecrance (1986, 1999) has contended that evolution in socio-economic organization has altered **the shortest, most rational route to state prosperity** in ways that **make war unlikely.** Finally, many others have argued that credit for great power peace can be given to the existence of nuclear weapons, which make aggression irrational (Jervis 1989; Kagan et al. 1999). With so many overlapping and mutually reinforcing explanations, at times the end of major war may seem to be overdetermined (Jervis 2002:8–9). For purposes of the present discussion, successful identification of the exact cause of this fundamental change in state behavior is probably not as important as belief in its existence. In other words, the outcome is far more important than the mechanism. The importance of Mueller's argument for the field of IR is ultimately not dependent upon why major war has become obsolete, only that it has.  Almost as significant, all these proposed explanations have one important point in common: they all imply that change will be permanent. Normative/ideational evolution is typically unidirectional—few would argue that it is likely, for instance, for slavery or dueling to return in this century. The complexity of economic interdependence is deepening as time goes on and going at a quicker pace. And, obviously, nuclear weapons cannot be uninvented and (at least at this point) no foolproof defense against their use seems to be on the horizon. The combination of forces that may have brought major war to an end seems to be unlikely to allow its return.  **The twentieth century witnessed an unprecedented pace of evolution in all areas of human endeavor, from science and medicine to philosophy and religion. In such an atmosphere, it is not difficult to imagine that attitudes toward the venerable institution of war may also have experienced rapid evolution and that its obsolescence could become plausible, perhaps even probable, in spite of thousands of years of violent precedent. The** burden of proof **would seem to be on those who maintain that the "rules of the game" of international politics, including the rules of war, are the lone area of human interaction immune to fundamental evolution and that, due to these immutable and eternal rules, war will always be with us. Rather than ask how major war could have grown obsolete, perhaps scholars should ask why anyone should believe that it could not.**

#### No nuclear war – deterrence

Tepperman 2009

[Deputy Editor at Newsweek. Frmr Deputy Managing Editor, Foreign Affairs. LLM, i-law, NYU. MA, jurisprudence, Oxford. (Jonathan, Why Obama Should Learn to Love the Bomb, <http://jonathantepperman.com/Welcome_files/nukes_Final.pdf>, CMR]

The argument that nuclear weapons can be agents of peace as well as destruction rests on two deceptively simple observations. First, nuclear weapons have not been used since 1945. Second, there’s never been a nuclear, or even a nonnuclear, war between two states that possess them. Just stop for a second and think about that: it’s hard to overstate how remarkable it is, especially given the singular viciousness of the 20th century. As Kenneth Waltz, the leading “nuclear optimist” and a professor emeritus of political science at UC Berkeley puts it, “We now have 64 years of experience since Hiroshima. It’s striking and against all historical precedent that for that substantial period, there has not been any war among nuclear states.” To understand why—and why the next 64 years are likely to play out the same way—you need to start by recognizing that **all states are rational** on some basic level. **Their leaders** may be stupid, petty, venal, even evil, but they **tend to do things** only when **they’re** pretty **sure they can get away with** them. Take war: a country will start a fight only when it’s almost certain it can get what it wants at an acceptable price. Not even Hitler or Saddam waged wars they didn’t think they could win. The problem historically has been that leaders often make the wrong gamble and underestimate the other side—and millions of innocents pay the price. **Nuclear weapons** change all that by **mak**ing **the costs of war** obvious, inevitable, and unacceptable. Suddenly, when both sides have the ability to turn the other to ashes with the push of a button— and everybody knows it—the basic math shifts. **Even the craziest** tin-pot dictator is forced to **accept** that **war** with a nuclear state **is unwinnable** and thus not worth the effort. As Waltz puts it, “Why fight if you can’t win and might lose everything?” Why indeed? The iron logic of deterrence and mutually assured destruction is so compelling, it’s led to what’s known as the nuclear peace: the virtually unprecedented stretch since the end of World War II in which all the world’s major powers have avoided coming to blows. They did fight **proxy wars**, ranging from Korea to Vietnam to Angola to Latin America. But these **never matched** the furious destruction of full-on, **great-power war** (World War II alone was responsible for some 50 million to 70 million deaths). And since the end of the Cold War, such bloodshed has declined precipitously. Meanwhile, the nuclear powers have scrupulously avoided direct combat, and there’s very good reason to think they always will. There have been some near misses, but a close look at these cases is fundamentally reassuring—because in each instance, very different leaders all came to the same safe conclusion. Take the mother of all nuclear standoffs: the Cuban missile crisis. For 13 days in October 1962, the United States and the Soviet Union each threatened the other with destruction. But both **countries** soon **stepped back** from the brink **when they recognized** that **a war would** have **mean**t **curtains** for everyone. As important as the fact that they did is the reason why: Soviet leader Nikita Khrushchev’s aide Fyodor Burlatsky said later on, “It is impossible to win a nuclear war, and both sides realized that, maybe for the first time.” The record since then shows the same pattern repeating: **nuclear** armed **enemies** slide toward war, then **pull back**, always for the same reasons. The best recent example is India and Pakistan, which fought three bloody wars after independence before acquiring their own nukes in 1998. Getting their hands on weapons of mass destruction didn’t do anything to lessen their animosity. But it did dramatically mellow their behavior. Since acquiring atomic weapons, the two sides have never fought another war, despite severe provocations (like Pakistani-based terrorist attacks on India in 2001 and 2008). They have skirmished once. But during that flare-up, in Kashmir in 1999, both countries were careful to keep the fighting limited and to avoid threatening the other’s vital interests. Sumit Ganguly, an Indiana University professor and coauthor of the forthcoming India, Pakistan, and the Bomb, has found that on both sides, officials’ thinking was strikingly similar to that of the Russians and Americans in 1962. The prospect of war brought Delhi and Islamabad face to face with a nuclear holocaust, and leaders in each country did what they had to do to avoid it.

#### Nuclear war doesn’t cause extinction

**Socol 2011**

Yehoshua (Ph.D.), an inter-disciplinary physicist, is an expert in electro-optics, high-energy physics and applications, and material science and Moshe Yanovskiy, Jan 2, “Nuclear Proliferation and Democracy”, http://www.americanthinker.com/2011/01/nuclear\_proliferation\_and\_demo.html, CMR

Nuclear proliferation should no longer be treated as an unthinkable nightmare; it is likely to be the future reality. Nuclear weapons have been acquired not only by an extremely poor per capita but large country such as India, but also by even poorer and medium-sized nations such as Pakistan and North Korea. One could also mention South Africa, which successfully acquired a nuclear arsenal despite economic sanctions (the likes of which have not yet been imposed on Iran). It is widely believed that sanctions and rhetoric will not prevent Iran from acquiring nuclear weapons and that many countries, in the Middle East and beyond, will act accordingly (see, e.g., recent Heritage report). Nuclear Warfare -- Myths And Facts The direct consequences of the limited use of nuclear weapons -- especially low-yield devices most likely to be in the hands of non-state actors or irresponsible governments -- **would** probably **not be great enough** to bring about significant geopolitical upheavals. Casualties from a single 20-KT nuclear device are estimated [1] at about 25,000 fatalities with a similar number of injured, assuming a rather unfortunate scenario (the center of a large city, with minimal warning). Scaling the above toll to larger devices or to a larger number of devices is less than linear. For example, it has been estimated that it would take as many as eighty devices of 20-KT yield each to cause 300,000 civilian fatalities in German cities (a result actually achieved by Allied area attacks, or carpet-bombings, during the Second World War). A single 1-MT device used against Detroit has been estimated by U.S. Congress OTA to result in about 220,000 fatalities. It is anticipated that well-prepared civil defense measures, based on rather simple presently known techniques, would decrease these numbers by maybe an order of magnitude (as will be discussed later). There is little doubt that a nation determined to survive and with a strong sense of its own destiny **would not succumb to** such **losses**. It is often argued that the fallout effects of even the limited use of nuclear weapons would be worldwide and would last for generations. This is an **exaggeration**. The following facts speak for themselves. -- In Japan, as assessed by REFR, less than 1,000 excess cancer cases (i.e., above the natural occurrence) were recorded in over 100,000 survivors over the past sixty years -- compared with about 110,000 immediate fatalities in the two atomic bombings. No clinical or even sub-clinical effects were discovered in the survivors' offspring. -- In the Chernobyl area, as assessed by IAEA, only fifteen cancer deaths can be directly attributed to fallout radiation. No radiation-related increase in congenital formations was recorded. Nuclear Conflict -- Possible Scenarios With reference to a possible regional nuclear conflict between a rogue state and a democratic one, the no-winner (mutual assured destruction) scenario is probably false. An analysis by Anthony Cordesman, et al. regarding a possible Israel-Iran nuclear conflict estimated that while Israel might survive an Iranian nuclear blow, Iran would certainly not survive as an organized society. Even though the projected casualties cited in that study seem to us overstated, especially as regards Israel, the conclusion rings true. Due to the extreme high intensity ("above-conventional") of nuclear conflict, it is nearly certain that such a war, no matter its outcome, **would not last for years,** as we have become accustomed to in current low-intensity conflicts. Rather, we should anticipate a new geo-political reality: the emergence of clear winners and losers **within** several **days**, or at most weeks after the initial outbreak of hostilities. This latter reality will most probably contain fewer nuclear-possessing states than the former.

# 2AC Case

### Warming

#### Only apocalyptic narrative solves – uniquely key to activism

Veldman 12 – doctoral candidate in the Religion and Nature program at the University of Florida (Robin Globus, “Narrating the Environmental Apocalypse”, Volume 17, Number 1, Spring 2012, Ethics & the Environment, online, MCR)

All this is not to say that apocalypticism directly or inevitably causes activism, or that believing catastrophe is imminent is the only reason people become activists. However, it is to say that activism and apocalypticism are associated for some people, and that this association is not arbitrary, for there is something uniquely powerful and compelling about the apocalyptic narrative. Plenty of people will hear it and ignore it, or find it implausible, or simply decide that if the situation really is so dire there is nothing they can do to prevent it from continuing to deteriorate. Yet to focus only on the ability of apocalyptic rhetoric to induce apathy, indifference or reactance is to ignore the evidence that it also fuels quite the opposite—grave concern, activism, and sometimes even outrage. It is also to ignore the movement’s history. From Silent Spring (Carson [1962] 2002) to The Limits to Growth (Meadows et al 1972) to The End of Nature (McKibben 1989), apocalyptic arguments have held a prominent place within environmental literature, topping best-seller lists and spreading the message far and wide that protecting the environment should be a societal priority. Thus, while it is not a style of argument that will be effective in convincing everyone to commit to the environmental cause (see Feinberg and Willer 2011), there does appear to be a close relationship between apocalyptic belief and activism among a certain minority. The next section explores the implications of that relationship further. [End Page 8]

### Makhijani

#### Is wrong

Barton 10

Charles, frmr PhD Candidate in History, MA in Philsophy, worked on the LFTR concept for about 2/3eds of his ORNL career and recognized by nuclear bloggers most of whom have technical training, and has been mentioned by the Wall Street Journal, “Arjun Makhijani and the Modular Small Reactor null-hypothesis” October 2, 2010, http://nucleargreen.blogspot.com/2010/10/arjun-makhijani-and-modular-small.html)

Arjun Makhijani (with Michele Boyd) has recently published a fact sheet on Small Modular Reactors which in effect advertises itself as the null-hypothesis to the case I an others have been making for some time on the advantages of small reactors. Small Modular ReactorsNo Solution for the Cost, Safety, and Waste Problems of Nuclear Power, Makhijani's title proclaims. But what is the evidence that backs Makhijani's case up. As it turns out Makhijani offers no empirical data to back up his assertion, so as an example of scientific reasoning, Makhijani's fact sheet rates an F.

### Lifecycle

**Net-reduction in emissions – robust evidence**

**NREL ‘12** (National Renewable Energy Laboratory, “Nuclear Power Results – Life Cycle Assessment Harmonization”, Updated May 4, 2012, retrieved Sept 3, 2012, <http://www.nrel.gov/analysis/sustain_lca_nuclear.html>, CMR)

Collectively, life cycle assessment literature shows that nuclear power is similar to other renewable and much lower than fossil fuel in total lifecycle GHG emissions. In addition, the harmonization process increased the precision of lifecycle GHG estimates in the literature while having little impact on the overall central tendency.¶ Harmonization Impact on Variability and Central Tendency¶ Overall, harmonizing for all parameters (capacity factor, thermal efficiency, system lifetime, system boundary and GWPs) resulted in a tighter distribution than the published GHG emissions estimates for nuclear power systems. The total range of the data was decreased by 50% and the interquartile range was decreased by 35%.¶ Of the values harmonized, adjusting reported data to a consistent system operating lifetime had the greatest impact on reducing variability in the estimated life cycle GHG emissions from nuclear power systems.¶ Harmonization reduced the central tendency of GHG emissions estimates for nuclear power systems by 8%.¶ Comparison of Harmonization Impacts on Pressurized Water Reactor and Boiling Water Reactor Technologies¶ For more information, visit:¶ IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation: Renewable Energy in the Context of Sustainable DevelopmentPDF¶ Life Cycle Greenhouse Gas Emissions from Nuclear Electricity Generation: Systematic Review and Harmonization (journal article)¶ OpenEI: Data, Visualization, and Bibliographies¶ Assuming consistent performance characteristics, the median LC GHG emissions estimates were nearly identical for PWR and BWR technologies after harmonization. The median life cycle GHG emission estimates for PWR and BWR technology types are 14 and 21 g CO2eq/kWh, respectively, as published, and 12 and 13 g CO2eq/kWh, respectively after harmonization.¶ To understand additional sources of variability in reported results, categorization and comparison of results based on life cycle assessment method, GHG emission intensity of primary source energy mix GHG emission intensity, uranium enrichment method and uranium ore grade was also conducted.¶ Given the large number of previously published life cycle GHG emission estimates of nuclear power systems and their narrow distribution, post-harmonization, it is unlikely that new LCAs with the same system boundaries of similar nuclear LWR power technologies will differ greatly.

**a.) Reduces emissions – our evidence assumes lifecycle**

**WNA ’11** (“Comparison of Lifecycle Greenhouse Gas Emissions of Various Electricity Generation Sources”, <http://www.world-nuclear.org/uploadedFiles/org/reference/pdf/comparison_of_lifecycle.pdf>, CMR)

Nuclear power plants achieve a high degree of safety through the defence-in-depth approach where,¶ among other things, the plant is designed with multiple physical barriers. These additional physical¶ barriers are generally not built within other electrical generating systems, and as such, the greenhouse¶ gas emissions attributed to construction of a nuclear power plant are higher than emissions resulting from¶ construction of other generation methods. These additional emissions are **accounted for** in each of the¶ studies included in Figure 2. Even when emissions from the additional safety barriers are included, the¶ lifecycle emissions of nuclear energy are **considerably lower** than fossil fuel based generation methods.¶ Averaging the results of the studies places nuclear energy’s 30 tonnes CO2e/GWh emission intensity at¶ 7% of the emission intensity of natural gas, and only 3% of the emission intensity of coal fired power¶ plants. In addition, the lifecycle GHG emission intensity of nuclear power generation is **consistent with renewable energy sources** including biomass, hydroelectric and wind.

**b.) Best methodology**

**WNA ’11** (“Comparison of Lifecycle Greenhouse Gas Emissions of Various Electricity Generation Sources”, <http://www.world-nuclear.org/uploadedFiles/org/reference/pdf/comparison_of_lifecycle.pdf>, CMR)

This report is a secondary research compilation of literature in which lifecycle GHG emissions associated¶ with electricity generation have been accounted for. To be included within this compilation, the source¶ needed to meet the following requirements:¶ • Be from a **credible source**. Studies published by governments and universities were sought out,¶ and industry publications used when independently verified.¶ • Clearly define the term “lifecycle” used in the assessment. Although the definition of lifecycle can¶ vary, to be considered credible, the source needed to clearly state what definition was being used.¶ • Include nuclear power generation and at least one other electricity generation method. This would¶ ensure that the comparison to nuclear was relevant.¶ • Express GHG emissions as a function of electricity production (e.g. kg CO2e/kWh or equivalent).¶ This would ensure that the comparison across electricity generation was relevant

# 2AC – T Incentive

#### We meet – aff doesn’t procure – it is a contract to purchase electricity – their ev concludes we’re T

#### C/I - Financial incentives require the disbursement of public funds linked to energy production – excludes action with incentive effects

**Webb 93** – lecturer in the Faculty of Law at the University of Ottawa (Kernaghan, “Thumbs, Fingers, and Pushing on String: Legal Accountability in the Use of Federal Financial Incentives”, 31 Alta. L. Rev. 501 (1993) Hein Online)

In this paper, "financial incentives" are taken to mean disbursements 18 of public funds or contingent commitments to individuals and organizations, intended to encourage, support or induce certain behaviours in accordance with express public policy objectives. They take the form of grants, contributions, repayable contributions, loans, loan guarantees and insurance, subsidies, procurement contracts and tax expenditures.19 Needless to say, the ability of government to achieve desired behaviour may vary with the type of incentive in use: up-front disbursements of funds (such as with contributions and procurement contracts) may put government in a better position to dictate the terms upon which assistance is provided than contingent disbursements such as loan guarantees and insurance. In some cases, the incentive aspects of the funding come from the conditions attached to use of the monies.20 In others, the mere existence of a program providing financial assistance for a particular activity (eg. low interest loans for a nuclear power plant, or a pulp mill) may be taken as government approval of that activity, and in that sense, an incentive to encourage that type of activity has been created.21 Given the wide variety of incentive types, it will not be possible in a paper of this length to provide anything more than a cursory discussion of some of the main incentives used.22 And, needless to say, the comments made herein concerning accountability apply to differing degrees depending upon the type of incentive under consideration.¶ By limiting the definition of financial incentives to initiatives where *public* *funds are either disbursed or contingently committed*, a large number of regulatory programs with incentive *effects* which exist, but in which no money is forthcoming,23 are excluded from direct examination in this paper. Such programs might be referred to as *indirect* incentives. Through elimination of indirect incentives from the scope of discussion, thedefinition of the incentive instrument becomes both more manageable and more particular. Nevertheless, it is possible that much of the approach taken here may be usefully applied to these types of indirect incentives as well.24 Also excluded from discussion here are social assistance programs such as welfare and *ad hoc* industry bailout initiatives because such programs are not designed primarily to *encourage* behaviours in furtherance of specific public policy objectives. In effect, these programs are assistance, but they are not incentives.

#### Prefer it – aff ground – we need answers to cp’s like states – only our interp allows the aff to have core offense against things like the states CP

#### And intent to define – their evidence is outlining incentives in a certain UN project – err aff our interp has an intent to define incentives

#### No ground loss – they get all of their disads

#### No limits explosion – the topic is still manageable

#### Good is good enough – their interp creates a race to the bottom which prevents substantive topic education

# 2AC - T - In

#### We meet PPA’s are offered throughout the US

#### C/I – In means within

Dictionary.com, 2013 (“In”, http://dictionary.reference.com/browse/in?s=t)

in [in] Show IPA preposition, adverb, adjective, noun, verb, inned, in·ning. preposition 1. (used to indicate inclusion within space, a place, or limits): walking in the park.

#### Prefer it

#### PICS – their interp justifies PICs out of any small place - means aff can’t win

#### Grammar – their interp doesn’t make sense – if I’m in the quarterfinals it doesn’t mean I’m in every debate

#### Education – it’s inevitable but having it on the aff is better because standards for solvency evidence are higher

# 2AC - CP

#### Perm do both – solves the link – creates competitive alternative energy

#### Links to politics – Energy production debates would cause gop to backlash

#### CP wouldn’t buy Nuclear – too much investment risk even with upfront capital costs covered – only guaranteed purchaser removes that risk – that’s rosner and Goldberg and the DOE evidence

#### Only nuclear solves – Cohen and Comeau

#### WE don’t buy tech which means their innovation arguments are bad – always incentive for innovation

#### Certainty is key – crucial for investment

Trembath 11 Alex, Policy associate in the Energy and Climate Program at Breakthrough. He is the lead or co-author of several Breakthrough publications, including the 2012 report, 2/4/11, [Nuclear Power and the Future of Post-Partisan Energy Policy](http://leadenergy.org/2011/02/the-nuclear-option-in-a-post-partisan-approach-on-energy/), "Beyond Boom and Bust: Putting Clean Tech on a Path to Subsidy Independence" and "Where the Shale Gas Revolution Came From”, <http://leadenergy.org/2011/02/the-nuclear-option-in-a-post-partisan-approach-on-energy/>, CMR

If there is one field of the energy sector for which certainty of political will and government policy is essential, it is nuclear power. High up front costs for the private industry, extreme regulatory oversight and public wariness necessitate a committed government partner for private firms investing in nuclear technology. In a new [report](http://www.thirdway.org/publications/370) on the potential for a “nuclear renaissance,” Third Way references the failed cap-and-trade bill, delaying tactics in the House vis-a-vis EPA regulations on CO₂, and the recent election results to emphasize the difficult current political environment for advancing new nuclear policy. The report, “The Future of Nuclear Energy,” makes the case for political certainty: “It is difficult for energy producers and users to estimate the relative price for nuclear-generated energy compared to fossil fuel alternatives (e.g. natural gas)–an essential consideration in making the major capital investment decision necessary for new energy production that will be in place for decades.” Are our politicians willing to match the level of certainty that the nuclear industry demands? Lacking a suitable price on carbon that may have been achieved by a cap-and-trade bill removes one primary policy instrument for making nuclear power more cost-competitive with fossil fuels. The impetus on Congress, therefore, will be to shift from demand-side “pull” energy policies (that increase demand for clean tech by raising the price of dirty energy) to [supply-side “push” policies](http://leadenergy.org/2010/09/supply-demand-energy-innovation/), or industrial and innovation policies. Fortunately, there are signals from political and thought leaders that a package of policies may emerge to incentivize alternative energy sources that include nuclear power. One place to start is the recently deceased American Power Act, addressed above, authored originally by Senators Kerry, Graham and Lieberman. Before its final and disappointing incarnation, the bill [included](http://www.huffingtonpost.com/2010/05/12/american-power-act-photos_n_573643.html#s90041&title=undefined) provisions to increase loan guarantees for nuclear power plant construction in addition to other tax incentives. Loan guarantees are probably the most important method of government involvement in new plant construction, given the high capital costs of development. One wonders what the fate of the bill, or a less ambitious set of its provisions, would have been had Republican Senator Graham not abdicated and removed any hope of Republican co-sponsorship. But that was last year. The changing of the guard in Congress makes this a whole different game, and the once feasible support for nuclear technology on either side of the aisle must be reevaluated. A New York Times [piece](http://www.nytimes.com/2010/11/17/business/energy-environment/17NUCLEAR.html) in the aftermath of the elections forecast a difficult road ahead for nuclear energy policy, but did note Republican support for programs like a waste disposal site and loan guarantees. Republican support for nuclear energy has roots in the most significant recent energy legislation, the Energy Policy Act of 2005, which passed provisions for nuclear power with wide bipartisan support. Reaching out to Republicans on policies they have supported in the past should be a goal of Democrats who wish to form a foundational debate on moving the policy forward. There are also signals that key Republicans, notably [Lindsey Graham](http://washingtonindependent.com/99171/graham-circulating-clean-energy-standard) and [Richard Lugar](http://www.plattsenergyweektv.com/story.aspx?storyid=132784&catid=293), would throw their support behind a clean energy standard that includes nuclear and CCS. Republicans in Congress will find intellectual support from a group that AEL’s Teryn Norris coined [“innovation hawks,”](http://leadenergy.org/2011/01/the-rise-of-innovation-hawks/) among them Steven Hayward, David Brooks and George Will. Will has been [particularly outspoken](http://www.newsweek.com/2010/04/08/this-nuclear-option-is-nuclear.html) in support of nuclear energy, writing in 2010 that “it is a travesty that the nation that first harnessed nuclear energy has neglected it so long because fads about supposed ‘green energy’ and superstitions about nuclear power’s dangers.” The extreme reluctance of Republicans to cooperate with Democrats over the last two years is only the first step, as any legislation will have to overcome Democrats’ traditional opposition to nuclear energy. However, here again there is reason for optimism. Barbara Boxer and John Kerry bucked their party’s long-time aversion to nuclear in a precursor bill to APA, and Kerry continued working on the issue during 2010. Jeff Bingaman, in a speech earlier this week, reversed his position on the issue by calling for the inclusion of nuclear energy provisions in a clean energy standard. The Huffington Post [reports](http://www.huffingtonpost.com/2011/02/01/sen-jeff-bingaman-backs-n_n_816864.html) that “the White House reached out to his committee [Senate Energy] to help develop the clean energy plan through legislation.” This development in itself potentially mitigates two of the largest obstacle standing in the way of progress on comprehensive energy legislation: lack of a bill, and lack of high profile sponsors. Democrats can also direct [Section 48C](http://leadenergy.org/2010/12/clean-energy-financing-first-steps-towards-post-partisan-effort/#more-3320) of the American Recovery and Reinvestment Act of 2009 towards nuclear technology, which provides a tax credit for companies that engage in clean tech manufacturing. Democrats should not give up on their policy goals simply because they no longer enjoy broad majorities in both Houses, and Republicans should not spend all their time holding symbolic repeal votes on the Obama Administration’s accomplishments. The lame-duck votes in December on “Don’t Ask, Don’t Tell,” the tax cut deal and START indicate that at least a few Republicans are willing to work together with Democrats in a divided Congress, and that is precisely what nuclear energy needs moving forward. It will require an agressive push from the White House, and a concerted effort from both parties’ leadership, but the road for forging bipartisan legislation is not an impassable one. The politician with perhaps the single greatest leverage over the future of nuclear energy is President Obama, and his rhetoric matches the challenge posed by our aging and poisonous energy infrastructure. “This is our generation’s Sputnik moment,” announced Obama recently. Echoing the calls of presidents past, the President used his [State of the Union](http://www.slate.com/id/2281847/) podium to signal a newly invigorated industrialism in the United States. He advocated broadly for renewed investment in infrastructure, education, and technological innovation. And he did so in a room with many more members of the opposition party than at any point during the first half of his term. The eagerness of the President to combine left and right agendas can hopefully match the hyper-partisan bitterness that dominates our political culture, and nuclear power maybe one sector of our economy to benefit from his political leadership.

#### Unconditional signal key – CP leads to politicization

Kemp ’12 (John, “Obama’s confused energy policy”, March 26, <http://business.financialpost.com/2012/03/26/obamas-confused-energy-policy/>, CMR)

U.S. President Barack Obama has discovered too late that symbols matter. His administration is trying and mostly failing to reverse the impression that it is hostile to fossil fuels such as oil, gas and coal after the president’s peremptory and opportunistic decision to block the Keystone XL pipeline in January. In a string of speeches, beginning with the State of the Union, the president has articulated a carefully scripted “all of the above” strategy which embraces clean energy from wind and solar, improvements in energy efficiency, and an increase in domestic hydrocarbon production – especially clean-burning gas but also oil from shale. It is all part of a complicated balancing act that aims to mollify his environmental base, ease fears about the rising gasoline prices and neutralise opposition from the oil industry and congressional Republicans, angered by continued restrictions on drilling and pipelines, who are seeking to exploit rising oil prices to hurt the president ahead of November’s election. PIPELINE DREAMS So far the president has struggled to sound convincing. Obama cannot shake off the impression the administration’s enthusiasm for clean tech is matched by an only grudging acceptance of the need to develop more fossil fuel resources. So in a bold move, the White House last week stuck the president in a pipe yard in front of a stack of oil pipes ready to be laid at the industry’s spiritual home of Cushing, Oklahoma, to reiterate its commitment to the fossil fuel component of “all of the above”. Politicians pick backdrops carefully (remember George W. Bush and his “mission accomplished” banner on the USS Abraham Lincoln in 2003). So this was the most pointed way the White House could associate the president with expansion of domestic oil and gas, imply he is not anti-oil and suggest he is keen to promote “shovel ready” jobs in pipeline construction. The charitable interpretation is that the president is charting a middle way between environmentalists staunchly opposed to fossil fuel development because of its global warming potential, and the “drill baby drill” enthusiasts of the oil industry and right-wing talk radio. “Having pleased environmentalists in January, Mr Obama can now embrace Oklahoma oilmen with a straight face,” Gregory Meyer wrote in the Financial Times last week. The less charitable interpretation is that the president has alienated everyone by performing a series of tergiversations and is struggling to integrate the disparate elements of his energy policy into a coherent whole. The White House took care to balance the trip to the pipe yard and a New Mexico oil field (very old dirty energy) with visits to a solar project in Nevada (nice clean energy) and the centre for automotive research in Ohio (ditto). The president has stressed his support for the southern leg of the Keystone pipeline (from Cushing to the Gulf) while defending his decision to block the northern leg (from the Canadian border via Nebraska), insisting there was just not time to evaluate the impact on Ogallala aquifer, and hinting but not quite promising his administration would look favourably on another application once more studies have been done and the election is out of the way. ALIENATING EVERYONE Whether anyone is convinced is doubtful. The Natural Resources Defence Council (NRDC), one of the country’s largest and most powerful environmental lobbies, is certainly not enthusiastic. NRDC President Frances Beinecke immediately responded to the president’s embrace of pipelines with a blog entitled “All of the Above Can’t Deliver All the Benefits the Clean Energy Economy Can”. “Instead of offering targeted policies, many leaders are suggesting an ”all of the above“ approach to energy development. The idea is that we should throw everything we have at the problem and see what sticks. It’s a misguided strategy that would do more harm than good,” wrote a clearly disappointed Beinecke. “It’s the equivalent of walking into a restaurant and ordering everything on the menu. Most people don’t do that in real life, because we know it costs too much and will make us sick. Instead we select the best food for the best price. We can do the same with energy. We can choose the best and bypass the rest.” Oil and gas producers are scarcely less enthusiastic, though there are some signs that the debate is moving in their direction, with heavy hints the administration will not block further drilling and pipelines. The White House will probably even approve the northern section of Keystone, eventually, once it no longer needs environmental votes. But planning long-lived capital intensive projects is hard when investors must struggle with a bewildering policy in which regulations covering everything from drilling to power plant emissions, nuclear permits and mountain top mining are proposed and withdrawn according to whether they are politically expedient. BIPARTISANSHIP? None of these problems is new. America’s energy policy has been severely dysfunctional for at least 40 years, driven by a mix of political concern about gasoline prices, lobbying for misguided deregulation of power markets at the behest of companies like Enron, and a guerrilla war of litigation fought by environmental groups against anything and everything (from nuclear to coal-fired and hydroelectric plants) spawning a giant environmental-legal complex. But the Obama administration has done nothing to provide leadership or try to impose coherence on energy issues. The president’s short-term approach to Keystone and emission controls has simply made matters worse. So there is a certain irony that Bill Richardson, energy secretary under the Clinton administration and a former governor of New Mexico, should lend his weight to Obama’s four-state energy tour with an editorial in the “Financial Times” calling for partisans to “Stop the politics and adopt a national energy plan” (March 22). “As energy secretary in the Clinton administration, I came to realise this country needs to promote all types of energy production. Mr Obama is right to put us on this course but the US Congress makes his mission challenging, if not impossible,” Richardson wrote. “There is plenty of rhetorical agreement about ”energy independence“ but when it comes to the specifics – pipelines, drilling, efficiency standards and renewable energy tax policies – consensus is elusive.” Indeed. According to Richardson, “The question for both Republicans and Democrats is whether such entrenched positions will prolong achievement of the ultimate goal that both sides agree on — energy independence and sustainable economic growth in the long term.” “There ought to be sufficient opportunities, given the vast resources that are available, to find common ground.” There is certainly no lack of interest in energy policy. Legislators in both houses of Congress have introduced more bills dealing with oil and gas issues in the current session (2011-2013) than at any time in at least 20 years. But actually achieving something will require compromise, on both sides. It will require congressional Republicans and coal-state Democrats to accept some of the regulatory agenda aimed at boosting fuel efficiency and cutting emissions. And it will require the president to face down some of the more extreme demands from green groups and end the thicket of guerrilla litigation around new energy projects. So far there is no sign whatsoever that either side is willing to make the necessary compromises. Both are having far too much fun treating energy policy as a political football. To go back to those photos, the president was proudly standing in front of tubes for a pipeline that currently has a section missing in the middle and won’t take oil anywhere. It is an apt metaphor for America’s broken energy policy.

# 2AC - K

#### Framework we get to weigh implementation of the aff vs a competitive alternative –

#### Predictability – the rez says USFG so that’s predictable that we should debate – the alternative moots the 1AC and makes fair debate impossible

#### Education – the only way to change government energy policy is deliberation about how climate science can inform policy options – it’s low now so there is only a risk we’re right – that’s Hanson

**Hansen ‘9**, heads the [NASA](http://en.wikipedia.org/wiki/NASA) [Goddard Institute for Space Studies](http://en.wikipedia.org/wiki/Goddard_Institute_for_Space_Studies) and [adjunct professor](http://en.wikipedia.org/wiki/Professors_in_the_United_States#Adjunct_professor) in the Department of Earth and Environmental Sciences at [Columbia University](http://en.wikipedia.org/wiki/Columbia_University) (James, December, Storms of My Grandchildren, xi)

I believe the biggest obstacle to solving global warming is the role of money in politics, the undue sway of special interests. **But the public, and young people in particular, will need to get involved in a major way.** “What?” you say. You already did get involved by working your tail off to help elect President Barack Obama. Sure, I (a registered Independent who has voted for both Republicans and Democrats over the years) voted for change too, and I had moist eyes during his Election Day speech in Chicago. That was and always will be a great day for America. But let me tell you: President Obama does not get it. He and his key advisers are subject to heavy pressures, and so far the approach has been, “Let’s compromise.” **So you still have a hell of a lot of work ahead of you**. You do not have any choice. Your attitude must be “Yes, we can.” I am sorry to say that most of what our politicians are doing on the climate front is greenwashing – their proposals sound good, but they are deceiving you and themselves at the same time. Politicians think that if matters look difficult, compromise is a good approach. **Unfortunately, nature and the laws of physics cannot compromise – they are what they are.** Policy decisions on climate change are being deliberated every day by those without full knowledge of the science, and often with intentional misinformation spawned by special interests. This book was written to help rectify the situation. Citizens with a special interest – in their loved ones – need to become familiar with the science, exercise their democratic rights, and pay attention to politicians’ decisions. Otherwise, it seems, short-term special interests will hold sway in capitals around the world – and we are running out of time.

#### Simulation and institutional deliberation are valuable and motivate effective responses to climate risks

Marx et al 7 (Sabine M, Center for Research on Environmental Decisions (CRED) @ Columbia University, Elke U. Weber, Graduate School of Business and Department of Psychology @ Columbia University, Benjamin S. Orlovea, Department of Environmental Science and Policy @ University of California Davis, Anthony Leiserowitz, Decision Research, David H. Krantz, Department of Psychology @ Columbia University, Carla Roncolia, South East Climate Consortium (SECC), Department of Biological and Agricultural Engineering @ University of Georgia and Jennifer Phillips, Bard Centre for Environmental Policy @ Bard College, “Communication and mental processes: Experiential and analytic processing of uncertain climate information”, 2007, http://climate.columbia.edu/sitefiles/file/Marx\_GEC\_2007.pdf)

Based on the observation that experiential and analytic processing systems compete and that personal experience and vivid descriptions are often favored over statistical information, we suggest the following research and policy implications.¶ Communications designed to create, recall and highlight relevant personal experience and to elicit affective responses can lead to more public attention to, processing of, and engagement with forecasts of climate variability and climate change. Vicarious experiential information in the form of scenarios, narratives, and analogies can help the public and policy makers imagine the potential consequences of climate variability and change, amplify or attenuate risk perceptions, and influence both individual behavioral intentions and public policy preferences. Likewise, as illustrated by the example of retranslation in the Uganda studies, the translation of statistical information into concrete experience with simulated forecasts, decisionmaking and its outcomes can greatly facilitate an intuitive understanding of both probabilities and the consequences of incremental change and extreme events, and motivate contingency planning.¶ Yet, while the engagement of experience-based, affective decision-making can make risk communications more salient and motivate behavior, experiential processing is also subject to its own biases, limitations and distortions, such as the finite pool of worry and single action bias. Experiential processing works best with easily imaginable, emotionally laden material, yet many aspects of climate variability and change are relatively abstract and require a certain level of analytical understanding (e.g., long-term trends in mean temperatures or precipitation). Ideally, communication of climate forecasts should encourage the interactive engagement of both analytic and experiential processing systems in the course of making concrete decisions about climate, ranging from individual choices about what crops to plant in a particular season to broad social choices about how to mitigate or adapt to global climate change.¶ One way to facilitate this interaction is through group and participatory decision-making. As the Uganda example suggests, group processes allow individuals with a range of knowledge, skills and personal experience to share diverse information and perspectives and work together on a problem. Ideally, groups should include at least one member trained to understand statistical forecast information to ensure that all sources of information—both experiential and analytic—are considered as part of the decision-making process. Communications to groups should also try to translate statistical information into formats readily understood in the language, personal and cultural experience of group members. In a somewhat iterative or cyclical process, the shared concrete information can then be re-abstracted to an analytic level that leads to action.¶ Risk and uncertainty are inherent dimensions of all climate forecasts and related decisions. Analytic products like trend analysis, forecast probabilities, and ranges of uncertainty ought to be valuable contributions to stakeholder decision-making. Yet decision makers also listen to the inner and communal voices of personal and collective experience, affect and emotion, and cultural values. Both systems—analytic and experiential—should be considered in the design of climate forecasts and risk communications. If not, many analytic products will fall on deaf ears as decision makers continue to rely heavily on personal experience and affective cues to make plans for an uncertain future. The challenge is to find innovative and creative ways to engage both systems in the process of individual and group decision-making.

#### Decision-making skills and engagement with the state energy apparatus prevents energy technocracy and actualizes radical politics

Hager, professor of political science – Bryn Mawr College, 1992

(Carol J., “Democratizing Technology: Citizen & State in West German Energy Politics, 1974-1990” *Polity*, Vol. 25, No. 1, p. 45-70)

During this phase, the citizen initiative attempted to overcome its defensive posture and implement an alternative politics. The strategy of legal and technical challenge might delay or even prevent plant construction, but it would not by itself accomplish the broader goal on the legitimation dimension, i.e., democratization. Indeed, it worked against broad participation. The activists had to find a viable means of achieving change. Citizens had proved they could contribute to a substantive policy discussion. Now, some activists turned to the parliamentary arena as a possible forum for an energy dialogue. Until now, parliament had been conspicuously absent as a relevant policy maker, but if parliament could be reshaped and activated, citizens would have a forum in which to address the broad questions of policy-making goals and forms. They would also have an institutional lever with which to pry apart the bureaucracy and utility. None of the established political parties could offer an alternative program. Thus, local activists met to discuss forming their own voting list. These discussions provoked internal dissent. Many citizen initiative members objected to the idea of forming a political party. If the problem lay in the role of parliament itself, another political party would not solve it. On the contrary, parliamentary participation was likely to destroy what political innovations the extraparliamentary movement had made. Others argued that a political party would give the movement an institutional platform from which to introduce some of the grassroots democratic political forms the groups had developed. Founding a party as the parliamentary arm of the citizen movement would allow these groups to play an active, critical role in institutionalized politics, participating in the policy debates while retaining their outside perspective. Despite the disagreements, the Alternative List for Democracy and Environmental Protection Berlin (AL) was formed in 1978 and first won seats in the Land parliament with 7.2 percent of the vote in 1981.43 The founders of the AL were encouraged by the success of newly formed local green parties in Lower Saxony and Hamburg,44 whose evolution had been very similar to that of the West Berlin citizen move-ment. Throughout the FRG, unpopular administrative decisions affect-ing local environments, generally in the form of state-sponsored indus-trial projects, prompted the development of the citizen initiative and ecology movements. The groups in turn focused constant attention on state planning "errors," calling into question not only the decisions themselves, but also the conventional forms of political decision making that produced them.45 Disgruntled citizens increasingly aimed their critique at the established political parties, in particular the federal SPD/ FDP coalition, which seemed unable to cope with the economic, social, and political problems of the 1970s. Fanned by publications such as the Club of Rome's report, "The Limits to Growth," the view spread among activists that the crisis phenomena were not merely a passing phase, but indicated instead "a long-term structural crisis, whose cause lies in the industrial-technocratic growth society itself."46 As they broadened their critique to include the political system as a whole, many grassroots groups found the extraparliamentary arena too restrictive. Like many in the West Berlin group, they reasoned that the necessary change would require a degree of political restructuring that could only be accomplished through their direct participation in parliamentary politics. Green/alternative parties and voting lists sprang up nationwide and began to win seats in local assemblies. The West Berlin Alternative List saw itself not as a party, but as the parliamentary arm of the citizen initiative movement. One member explains: "the starting point for alternative electoral participation was simply the notion of achieving a greater audience for [our] own ideas and thus to work in support of the extraparliamentary movements and initia-tives,"47 including non-environmentally oriented groups. The AL wanted to avoid developing structures and functions autonomous from the citizen initiative movement. Members adhered to a list of principles, such as rotation and the imperative mandate, designed to keep parliamentarians attached to the grassroots. Although their insistence on grassroots democracy often resulted in interminable heated discussions, the participants recognized the importance of experimenting with new forms of decision making, of not succumbing to the same hierarchical forms they were challenging. Some argued that the proper role of citizen initiative groups was not to represent the public in government, but to mobilize other citizens to participate directly in politics themselves; self-determination was the aim of their activity.48 Once in parliament, the AL proposed establishment of a temporary parliamentary commission to study energy policy, which for the first time would draw all concerned participants together in a discussion of both short-term choices and long-term goals of energy policy. With help from the SPD faction, which had been forced into the opposition by its defeat in the 1981 elections, two such commissions were created, one in 1982-83 and the other in 1984-85.49 These commissions gave the citizen activists the forum they sought to push for modernization and technical innovation in energy policy. Although it had scaled down the proposed new plant, the utility had produced no plan to upgrade its older, more polluting facilities or to install desulfurization devices. With prodding from the energy commission, Land and utility experts began to formulate such a plan, as did the citizen initiative. By exposing administrative failings in a public setting, and by producing a modernization plan itself, the combined citizen initiative and AL forced bureaucratic authorities to push the utility for improvements. They also forced the authorities to consider different technological solutions to West Berlin's energy and environmental problems. In this way, the activists served as technological innovators. In 1983, the first energy commission submitted a list of recommendations to the Land parliament which reflected the influence of the citizen protest movement. It emphasized goals of demand reduction and efficiency, noted the value of expanded citizen participation and urged authorities to "investigate more closely the positive role citizen participation can play in achieving policy goals."50 The second energy commission was created in 1984 to discuss the possibilities for modernization and shutdown of old plants and use of new, environmentally friendlier and cheaper technologies for electricity and heat generation. Its recommendations strengthened those of the first commission.51 Despite the non-binding nature of the commissions' recommendations, the public discussion of energy policy motivated policy makers to take stronger positions in favor of environmental protection. III. Conclusion The West Berlin energy project eventually cleared all planning hurdles, and construction began in the early 1980s. The new plant now conforms to the increasingly stringent environmental protection requirements of the law. The project was delayed, scaled down from 1200 to 600 MW, moved to a neutral location and, unlike other BEWAG plants, equipped with modern desulfurization devices. That the new plant, which opened in winter 1988-89, is the technologically most advanced and environmen-tally sound of BEWAG's plants is due entirely to the long legal battle with the citizen initiative group, during which nearly every aspect of the original plans was changed. In addition, through the efforts of the Alter-native List (AL) in parliament, the Land government and BEWAG formulated a long sought modernization and environmental protection plan for all of the city's plants. The AL prompted the other parliamentary parties to take pollution control seriously. Throughout the FRG, energy politics evolved in a similar fashion. As Habermas claimed, underlying the objections against particular projects was a reaction against the administrative-economic system in general. One author, for example, describes the emergence of two-dimensional protest against nuclear energy: The resistance against a concrete project became understood simul-taneously as resistance against the entire atomic program. Questions of energy planning, of economic growth, of understanding of democracy entered the picture. . . . Besides concern for human health, for security of conditions for human existence and protec-tion of nature arose critique of what was perceived as undemocratic planning, the "shock" of the delayed public announcement of pro-ject plans and the fear of political decision errors that would aggra-vate the problem.52 This passage supports a West Berliner's statement that the citizen initiative began with a project critique and arrived at *Systemkritik*.53 I have labeled these two aspects of the problem the public policy and legitima-tion dimensions. In the course of these conflicts, the legitimation dimen-sion emergd as the more important and in many ways the more prob-lematic. Parliamentary Politics In the 1970s, energy politics began to develop in the direction Offe de-scribed, with bureaucrats and protesters avoiding the parliamentary channels through which they should interact. The citizen groups them-selves, however, have to a degree reversed the slide into irrelevance of parliamentary politics. Grassroots groups overcame their defensive posture enough to begin to formulate an alternative politics, based upon concepts such as decision making through mutual understanding rather than technical criteria or bargaining. This new politics required new modes of interaction which the old corporatist or pluralist forms could not provide. Through the formation of green/alternative parties and voting lists and through new parliamentary commissions such as the two described in the case study, some members of grassroots groups attempted to both operate within the political system and fundamentally change it, to restore the link between bureaucracy and citizenry. Parliamentary politics was partially revived in the eyes of West German grassroots groups as a legitimate realm of citizen participation, an outcome the theory would not predict. It is not clear, however, that strengthening the parliamentary system would be a desirable outcome for everyone. Many remain skeptical that institutions that operate as part of the "system" can offer the kind of substantive participation that grass-roots groups want. The constant tension between institutionalized politics and grassroots action emerged clearly in the recent internal debate between "fundamentalist" and "realist" wings of the Greens. Fundis wanted to keep a firm footing outside the realm of institutionalized politics. They refused to bargain with the more established parties or to join coalition governments. Realos favored participating in institutionalized politics while pressing their grassroots agenda. Only this way, they claimed, would they have a chance to implement at least some parts of their program. This internal debate, which has never been resolved, can be interpreted in different ways. On one hand, the tension limits the appeal of green and alternative parties to the broader public, as the Greens' poor showing in the December 1990 all-German elections attests. The failure to come to agreement on basic issues can be viewed as a hazard of grass-roots democracy. The Greens, like the West Berlin citizen initiative, are opposed in principle to forcing one faction to give way to another. Disunity thus persists within the group. On the other hand, the tension can be understood not as a failure, but as a kind of success: grassroots politics has not been absorbed into the bureaucratized system; it retains its critical dimension, both in relation to the political system and within the groups themselves. The lively debate stimulated by grassroots groups and parties keeps questions of democracy on the public agenda. Technical Debate In West Berlin, the two-dimensionality of the energy issue forced citizen activists to become both participants in and critics of the policy process.

#### Perm do the plan and

#### Climate apocalypticisism leads to activism that averts catastrophe – studies prove robust correlation

Veldman 12 – doctoral candidate in the Religion and Nature program at the University of Florida (Robin Globus, “Narrating the Environmental Apocalypse”, Volume 17, Number 1, Spring 2012, Ethics & the Environment, online, MCR)

Environmental Apocalypticism and Activism¶ As we saw in the introduction, critics often argue that apocalyptic rhetoric induces feelings of hopelessness or fatalism. While it certainly does for some people, in this section I will present evidence that apocalypticism also often goes hand in hand with activism.¶ Some of the strongest evidence of a connection between environmental apocalypticism and activism comes from a national survey that examined whether Americans perceived climate change to be dangerous. As part of his analysis, Anthony Leiserowitz identified several “interpretive communities,” which had consistent demographic characteristics but varied in their levels of risk perception. The group who perceived the risk to be the greatest, which he labeled “alarmists,” described climate change [End Page 5] using apocalyptic language, such as “Bad…bad…bad…like after nuclear war…no vegetation,” “Heat waves, it’s gonna kill the world,” and “Death of the planet” (2005, 1440). Given such language, this would seem to be a reasonable way to operationalize environmental apocalypticism. If such apocalypticism encouraged fatalism, we would expect alarmists to be less likely to have engaged in environmental behavior compared to groups with moderate or low levels of concern. To the contrary, however, Leiserowitz found that alarmists “were significantly more likely to have taken personal action to reduce greenhouse gas emissions” (ibid.) than respondents who perceived climate change to pose less of a threat. Interestingly, while one might expect such radical views to appeal only to a tiny minority, Leiserowitz found that a respectable eleven percent of Americans fell into this group (ibid).¶ Further supporting Leiserowitz’s findings, in a separate national survey conducted in 2008, Maibach, Roser-Renouf, and Leiserowitz found that a group they labeled “the Alarmed” (again, due to their high levels of concern about climate change) “are the segment most engaged in the issue of global warming. They are very convinced it is happening, human-caused, and a serious and urgent threat. The Alarmed are already making changes in their own lives and support an aggressive national response” (2009, 3, emphasis added). This group was far more likely than people with lower levels of concern over climate change to have engaged in consumer activism (by rewarding companies that support action to reduce global warming with their business, for example) or to have contacted elected officials to express their concern. Additionally, the authors found that “[w]hen asked which reason for action was most important to them personally, the Alarmed were most likely to select preventing the destruction of most life on the planet (31%)” (2009, 31)—a finding suggesting that for many in this group it is specifically the desire to avert catastrophe, rather than some other motivation, that encourages pro-environmental behavior. Taken together, these and other studies (cf. Semenza et al. 2008 and DerKarabetia, Stephenson, and Poggi 1996) provide important evidence that many of those who think environmental problems pose a severe threat practice some form of activism, rather than giving way to fatalistic resignation.

#### The 1AC is a narrativization of climate apocalypse – key to moral deliberation which ensures activism and avoids their apathy arguments since it’s tied to constructive solutions

Veldman 12 – doctoral candidate in the Religion and Nature program at the University of Florida (Robin Globus, “Narrating the Environmental Apocalypse”, Volume 17, Number 1, Spring 2012, Ethics & the Environment, online, MCR)

The Apocalyptic Narrative as a Framework for Moral Deliberation¶ In discussing how apocalypticism functions within the environmental community, it will be helpful to analyze it as a type of narrative. I do so because the domain of narrative includes both the stories that people read and write, as well as those they tell and live by. By using narratives as data, scholars can analyze experiential and textual sources simultaneously (Polkinghorne 1988; Riessman 2000).¶ To analyze environmental apocalypticism as a type of narrative is not to suggest that apocalyptics’ claims about the future are fictional. Rather, it is to highlight that the facts to which environmentalists appeal have been organized with particular goals in mind, goals which have necessarily shaped the selection and presentation of those facts. Compelling environmental writers do not simply list every known fact pertaining to the natural world, but instead select certain findings and place them within a larger interpretive framework. Alone, each fact has little meaning, but when woven into a larger narrative, a message emerges. This process of narrativization is essential if a message is to be persuasive (Killingsworth and Palmer 2000, 197), and has occurred not only in the rapidly expanding genre of environmental nonfiction, but in much scientific writing about the environment as well (Harré, Brockmeier, and Mühlhäusler 1999, 69).¶ What defines narratives as such is their beginning-middle-end structure, their ability to “describe an action that begins, continues over a well-defined period of time, and finally draws to a definite close” (Cronon 1992, 1367). Here I will focus on the last of these elements, the ending, because anything we can learn about how endings function within narratives in general will be applicable to the apocalypse, the most final ending of all.¶ An ending is essential in order for a story to be complete, but there is more to it than this. Endings are also key because they establish a story’s moral, the lesson it is supposed to impart upon the reader. In other words, to know the moral of the story, auditors must know the consequences of the actions depicted therein, so there can be no moral without an ending. To take a simple example, when we hear the story of the shepherd boy who falsely claims that a wolf is attacking his flock of sheep in order to entertain himself at his community’s expense, what makes the lesson clear is that when a wolf does attack his flock, the disenchanted town members refuse to come to his aid. By clearly illustrating how telling lies can have [End Page 9] unpleasant consequences for the perpetrator, the ending reveals the moral that lying is wrong. As Cronon explains, it is “[t]he difference between beginning and end [that] gives us our chance to extract a moral from the rhetorical landscape” (1992, 1370).¶ Endings play a similar role in environmental stories. In Al Gore’s book Earth in the Balance (1992), for example, he devotes over a third of the book’s pages to presenting scientific evidence that disaster is imminent.5 As he sums it up, “Modern industrial civilization…is colliding violently with our planet’s ecological system. The ferocity of its assault on the earth is breathtaking, and the horrific consequences are occurring so quickly as to defy our capacity to recognize them” (1992, 269). He builds this argument so carefully precisely because if the ending does not seem credible, the moral he wants readers to draw from the story will not be compelling. If his readers are not convinced that the ending to this story of ecological misbehavior will be a debacle of colossal proportions, they will not become convinced that they need to dramatically alter their ecological behavior. Thus the vision of future catastrophe that Gore presents provides a crucial vantage point from which the present environmental situation can be understood as the result of a grand moral failure, and Gore’s readers are made aware of their obligations in light of it. Gore himself appreciates the importance of this recognition, arguing that “whether we realize it or not, we are now engaged in an epic battle to right the balance of our earth, and the tide of this battle will turn only when the majority of people in the world become sufficiently aroused by a shared sense of urgent danger to join an all-out effort” (1992, 269, emphasis added). Here, as in so many other stories, the ending must be in place for the moral to become clear.¶ To say that endings are essential in order for stories to have morals is already to hint that stories alter behavior, that they can encourage action in the real world even as they invoke an imaginary one. This much is clear from Earth in the Balance (1992): Gore does not just want people to grasp a moral, to perceive some ethic in the abstract—he wants them change their behavior in the here and now. In constructing a narrative with this goal in mind, he is banking on the ability of powerful stories to motivate social change, to be, as Cronon puts it, “our chief moral compass in the world” (1992, 1375).¶ Mark Johnson’s insightful synthesis of cognitive science and philosophy helps explain further how this process of moral guidance occurs. For [End Page 10] Johnson, narrative is fundamental to our experience of reality, “the most comprehensive means we have for constructing temporal syntheses that bind together and unify our past, present, and future into more or less meaningful patterns” (1993, 174). Narratives are also critical to our ability to reason morally, an activity which Johnson asserts is fundamentally imaginative. In this view, we use stories to imagine ourselves in different scenarios, exploring and evaluating the consequences of different possible actions in order to determine the right one. Moral deliberation is thus¶ …an imaginative exploration of the possibilities for constructive action within a present situation. We have a problem to solve here and now (e.g., ‘What am I to do?’…. ‘How should I treat others?’), and we must try out various possible continuations of our narrative in search of the one that seems best to resolve the indeterminacy of our present situation.¶ (1993, 180)¶ Put another way, what cognitive science has revealed is that from an empirical perspective the process of moral deliberation entails constructing narratives rooted in our unique history and circumstances, rather than applying universal principles (such as Kant’s categorical imperative) to particular cases. That we use narratives to reason morally is not a result of conscious choice but of how human cognition works. That is, insofar as we experience ourselves as temporal beings, a narrative framework is necessary to organize, explain, and ultimately justify the many individual decisions that over time become a life. Formal principles may be useful in unambiguous textbook cases, but in real life “we can almost never decide (reflectively) how to act without considering the ways in which we can continue our narrative construction of our situation” (Johnson 1993, 160). Empirically speaking, “our moral reasoning is situated within our narrative understanding” (Johnson 1993, 180, italics in original).¶ The observation that people use narratives to reason morally may help explain the association between environmental apocalypticism and activism. The function of the apocalyptic narrative may be that it helps adherents determine how to act by providing a storyline from which they can imaginatively sample, enabling them to assess the consequences of their actions. In order to answer the question, “Should I drive or walk to the store?” for example, they can reason, “If I walk, that will reduce my carbon footprint, which will help keep the ice caps from melting, saving humans and other species.” It is their access to this narrative of impending [End Page 11] disaster that makes such reasoning possible, for it provides a simple framework within which people can consider and eventually arrive at some conclusion about their moral obligations.6 More broadly, it can guide entire lives by providing a narrative frame of reference that imbues the individual’s experiences with meaning. For example, it is the context of looming anthropogenic apocalypse which suggests that dedicating one’s life to achieving a healthier relationship with the natural world is a worthwhile endeavor. Absent the apocalypse, choices such as limiting one’s travel to reduce greenhouse gas emissions, becoming vegetarian, working in the environmental sector (often for less compensation), or growing one’s own food could seem to be meaningless sacrifices. Within this context, on the other hand, such choices become essential features of the quest to live a moral life.¶ The apocalyptic narrative is but one of many ways to tell the environmental story, yet it is one that seems particularly well-suited to encouraging pro-environmental behavior. First, the apocalyptic ending discloses certain everyday decisions as moral decisions. Without the narrative context of impending disaster, decisions such as whether to drive or walk to the store would be merely matters of convenience or preference. In the context of potentially disastrous consequences for valued places, people, and organisms, by contrast, such decisions become matters of right and wrong. Second, putting information about the environment into narrative form enables apocalyptics to link complex global environmental processes to their own lives, a perceptual technique Thomashow describes as “bringing the biosphere home” (2002). Developing this skill is essential because without that felt sense of connection to their own lived experience, people are much less likely to become convinced that it is incumbent upon them to act (2002, 2). Finally, the sheer magnitude of the impending disaster increases the feeling of responsibility to make good on one’s moral intuitions. By locating individuals within a drama of ultimate concern, the narrative frames their choices as cosmically important, and this feeling of urgency then helps to convert moral deliberation into action.¶ With this conceptual overview in place, we can now examine more closely what the relationship between apocalypticism and moral reasoning looks like in practice. [End Page 12]

#### Only our specific rhetoric solves

Stepp, 11/5/2012 (Matthew, Contributor and Senior Policy Analyst of the D.C.-based think tank the Information Technology and Innovation Foundation, “Climate Hawks and 'Reverse Tribalism': How Our Policy Choices Are Fueling Climate Inaction”, Forbes, http://www.forbes.com/sites/matthewstepp/2012/11/05/climate-hawks-and-reverse-tribalism-how-are-policy-choices-are-fueling-climate-inaction/)

A self-aware and important discussion has emerged among climate advocates on ‘reverse tribalism’: the process by which some within the climate community scold climate hawks for making exaggerated claims about climate change and extreme weather (see Hurricane Sandy). As Grist writer Dave Roberts puts it, these ‘climate scolds’ believe they, “are saving the [climate hawk] activists from themselves,” by keeping them within the bounds of peer-reviewed science and not allowing their alarming message to be used against them to create climate denial and spurn policy action.¶ But this process of reverse tribalism exists in the first place because climate advocates are supporting the wrong policy choices. In other words, reverse tribalism isn’t a communications issue, it’s a policy issue and it’s at the heart of solving climate change.¶ On paper, making the connection between specific extreme weather events like Hurricane Sandy and climate change is seen as a communications strategy. It’s a way for climate hawks (and I consider myself one) to convey a visceral sense of what climate change means and even feels like. If Americans connect the images of flooded subways, long gas station lines, and washed away neighborhoods to human-driven climate change, then they’re more likely to support climate policy.¶ For communicators like Roberts, it’s the best way to get their point across. And I couldn’t agree more that climate change is an urgent, society-threatening problem that requires aggressive attention over many decades.¶ The problem is that making the extreme weather-climate change connection isn’t working, reverse tribalism or not. It didn’t work after Hurricane Katrina. Or after another year of historic droughts and wildfires. And it probably won’t work after Hurricane Sandy.¶ Sure, Sandy’s devastating impacts on New Jersey and New York are helping spark a long overdue discussion on climate change within the parameters of the Presidential election (if we count NYC Mayor Michael Bloomberg’s endorsement of President Obama on climate grounds as a national discussion), but this shows the limits of it as a communications strategy. Policy elites will discuss climate change, reporters will challenge politicos with climate questions, and cover stories will be written, but more likely than not anything actionable will come from it. I am not suggesting the discussion of climate change isn’t important, but don’t expect Hurricane Sandy to be the proverbial foot to the policymakers backside.¶ Jarring images of extreme weather aren’t sparking action because ‘climate scolds’ are muddying the messaging. No, as I wrote in Sunday’s Washington Post the images aren’t sparking action because the policy options most climate advocates and environmentalists are selling the public are bankrupt:¶ “Many environmentalists argue that the best way to address climate change is for Americans to change their lifestyles and make sacrifices for the good of the planet. Americans are told they must consume less, waste less and spend more to buy clean energy. While David Brooks’s “Bourgeois Bohemians” may be able to retrofit their homes with solar panels and drive Chevy Volts, most of us can’t.”¶ Shifting from using fossil fuels to clean energy isn’t an obvious or easy economic choice for most Americans. Clean energy technologies like wind, solar, nuclear, and electric vehicles are more expensive than carbon-intensive alternatives and suffer from limited performance and intermittency problems. As a result, the dominant climate policies emphasized by advocates and environmentalists are like selling nothing more than a bill of goods. Preferred government mandates like Clean Energy Standards or regulatory schemes like cap-and-trade will raise energy prices. In absence of mandates, significant tax-payer subsidies are required to spur even modest clean energy deployment. As I put it in the same piece in the Post, climate change policy has:¶ “…become a hair shirt that Americans are expected to wear for the ‘good of the planet.’ Middle America has long been told what not to do: not to buy incandescent light bulbs, drive gas-guzzling cars and trucks, or use dirty energy.”¶ If Americans were offered clean energy options that were affordable and better than gasoline, coal, and natural gas, much of the derision towards clean energy would go away. Only then would mandates accelerate the deployment of cheap, clean energy rather than force more expensive clean energy technologies on the market. Only then would long-term subsidies not be needed for the clean energy industry to simply survive. And the need to constantly harp on every extreme weather event as one more reason for Americans to sacrifice for the public good becomes less of an issue, as does reverse tribalism.¶ To remove these cost and technology performance barriers – and therefore the major barrier to mitigating climate change – climate advocates should be discussing how best to support clean energy innovation to develop cheaper, better clean energy options. It’s clear that we can’t put the deployment cart before the development horse without feeding the very derision that climate advocates hope to overcome by connecting extreme weather to climate change. It’s an endless positive feedback loop and a vicious one at that.¶ Many fellow climate hawks will respond by saying that I have it all wrong. We just need better messaging. The aforementioned ‘climate scolds’ need to back off the reverse tribalism. Or even more wonky, I shouldn’t bash deployment policies to elevate clean energy innovation – it’s not an either/or proposition. By which they really mean “clean energy R&D is okay, but what is really important is deploying the clean tech we have today.”¶ But the reality is that clean energy is not ready for prime time and all the deployment in the world won’t make it so. One hundred more lithium ion car battery factories won’t get us batteries that cost $100/kWh and have 5 times more storage capacity. Only R&D-based innovation will get us that. The same is true with other key clean energy technologies. Most climate advocates have it wrong by overwhelmingly emphasizing deployment.¶ What we need today – and what Americans would get behind as ‘climate policy’ – is an aggressive clean energy innovation strategy aimed at developing cheaper and better technology options. Smarter deployment policies may be needed down the road to scale better technologies, but they would come with less baggage than the blunt deployment policies used today. Climate advocates and environmentalists need to forget about messaging and start innovating.

#### Inherent equality of all beings requires utilitiarianism

David Cummiskey, Associate Professor of Philosophy @ Bates College & a Ph.D. from UM, 1996, Kantian Consequentialism, Pg. 145-146

In the next section, I will defend this interpretation of the duty of beneficence. For the sake of argument, however, let us first simply assume that beneficence does not require significant self-sacrifice and see what follows. Although Kant is unclear on this point, we will assume that significant self-sacrifices are supererogatory. Thus, if I must harm one in order to save many, the individual whom I will harm by my action is not morally required to affirm the action. On the other hand, I have a duty to do all that I can for those in need. As a consequence **I am faced with a dilemma: If I act, I harm a person in a way that a rational being need not consent to; if I fail to act, then I do not do my duty to those in need and thereby fail to promote an objective end.** Faced with such a choice, which horn of the dilemma is more consistent with the formula of the end-in-itself? **We must not obscure the issue by characterizing this type of case as the sacrifice of individuals for some abstract “social entity.” It is not a question of some persons having to bear the cost for some elusive “overall social good.”** Instead, **the question is whether some persons must bear the inescapable cost for the sake of other persons.** Robert Nozick, for example, argues that “**to use a person in this way does not sufficiently respect and take account of the fact that he [or she] is a separate person, that** ~~his~~ **is the only life he [or she] has.” But why is this not equally true of all those whom we do not save through our failure to act? By emphasizing solely the one who must bear the cost if we act, we fail to sufficiently respect and take account of the many other separate persons, each with only one life, who will bear the cost of our inaction.** In such a situation, what would a conscientious Kantian agent, an agent motivated by the unconditional value of rational beings, choose? **A morally good agent recognizes that the basis of all particular duties is the principle that “rational nature exists as an end in itself.”** Rational nature as such is the supreme objective end of all conduct. **If one truly believes that all** rational beings **have an equal value then the rational solution to such a dilemma involves maximally promoting the lives and liberties of as many** rational beings **as possible**. **In order to avoid this** conclusion, **the non-consequentialist** Kantian **needs to justify agent-centered constraints.** As we saw in chapter 1, however, even most Kantian **deontologists recognize that agent-centered constraints require a non-value based rationale.** But we have seen that Kant’s normative theory is based on an unconditionally valuable end. How can a concern for the value of rational beings lead to a refusal to sacrifice rational beings even when this would prevent other more extensive losses of rational beings? If the moral law is based on the value of rational beings and their ends, then what is the rationale for prohibiting a moral agent from maximally promoting these two tiers of value? **If I sacrifice some for the sake of others, I do not use them arbitrarily, and I do not deny the unconditional value of rational beings. Persons may have “dignity,** that is, **an unconditional and incomparable worth” that transcends any market value, but persons also have a fundamental equality that dictates that some must sometimes give way for the sake of others. The concept of the end-in-itself does not support the view that we may never force another to bear some cost in order to benefit others**. If on focuses on the equal value of all rational beings, then **equal consideration suggests that one may have to sacrifice some to save many**.

#### And it solves your impact – reduces militarism

**Barnett 1**, RESEARCH COUNCIL FELLOW IN THE SCHOOL OF SOCIAL AND ENVIRONMENTAL ENQUIRY AT THE UNIVERSITY OF MELBOURNE, 2001 [JON, THE MEANING OF ENVIRONMENTAL SECURITY: ECOLOGICAL POLITICS AND POLICY IN THE NEW SECURITY ERA, CHAPTER 9, 137-41]

The question of whether it is valid to understand environmental problems as security problems recurs throughout any thoughtful discussion of environmental security. The dilemma should by now be apparent; securitising environmental issues runs the risk that the strategic/realist approach will coopt and colonise the, environmental agenda rather than respond positively to environmental problems (as discussed in Chapter 6). For this reason critics of environmental security, such as Deudney (1991) and-Brock (1991), Suggest that it is dangerous to understand environmental problems as security issues: This book's position on the matter has been emerging in previous chapters. It contends that the problem turns not on the presentation of environmental problems as security issues, but on-the meaning and practice of security in present times. Environmental security, wittingly or not, contests the legitimacy of the realist conception of security by pointing to the contradictions of security as the defence of territory and resistance to change. It seeks to work from within the prevailing conception of security, but to be successful it must do so with a strong sense of purpose and a solid theoretical base. Understanding environmental problems as security problems is thus a form of conceptual speculation. It is one manifestation of the pressure the Green movement has exerted on states since the late 1960s. **This**pressure has pushed state legitimacy nearer to collaps**e,**for if the state cannot control a problem as elemental as environmental degradation, then what is its purpose? This legitimacy problem suggests that environmental degradation cannot further intensify without fundamental change or the collapse of the state. This in turn implies that state-sanctioned environmentally degrading practices such as those undertaken in the name of national security cannot extend their power further if it means further exacerbation of environmental insecurity. While the system may resist environmental security's challenge for change, it must also resist changes for the worse. In terms of the conceptual venture, therefore, appropriation by the security apparatus of the concept of environmental security is unlikely to result in an increase in environmental insecurity (although the concept itself may continue to be corrupted). On the other hand, succeeding in the conceptual venture may mean a positive modification of the theory and practice of national security. It may also mean that national governments will take environmental problems more seriously, reduce defence budgets, and generally implement policies for a morepeaceful and environmentally secure world.

# 2AC - Politics

#### We solve the economy

Freeman 9—Technology Editor, Executive Intelligence Review Magazine & Associate Editor, 21st Century Science & Technology Magazine. Has written in Fusion Magazine, Executive Intelligence Review magazine, 21st Century Science & Technology magazine, Acta Astronautica, Space World magazine, New Federalist newspaper, Science Books & Films, Space Governance Journal, The World & I, Quest Magazine,The Encyclopedia of the Midwest, and other periodicals. (Marsha, Stimulate The Economy: Build New Nuclear Plants!, http://www.21stcenturysciencetech.com/Articles\_2009/Stimulate\_Nucl\_sp09.pdf, CMR)

But economic growth will depend upon trillions of dollars of Federal investment that ameliorate the immediate situation by laying the basis for the long-term increased productivity of the economy, as a whole. It is not a question of simply creating jobs, but increasing the capital intensity of the economy, and raising the productive level of the nation’s workforce. This is the function of investments in basic economic infrastructure.¶ There will be no economic recovery, or growth, without a massive expansion and upgrading of the nation’s energy supply and distribution system. Contrary to “popular opinion,” which has been shaped by scam artists like T. Boone “Windbag” Pickens, and “green” ideologues like Al Gore, only a massive expansion of nuclear energy can provide the quality and quantity of energy that a 21st Century economy requires.¶ Although the first tentative steps have been taken by electric utilities to restart the construction of new nuclear power plants, with more than two dozen reactor license applications filed with the Nuclear Regulatory Commission, this “renaissance” in nuclear power will not materialize without a Federally directed “stimulus.” Similarly, the disappearance of the U.S. nuclear manufacturing industry has begun to be reversed, but the reconstitution of a nuclear industry, based on the most modern power plant designs and advanced manufacturing techniques, will not happen without a nationally directed effort.¶ For decades, the mass-production auto industry, and its component manufacturers, created one out of every thirteen industrial jobs in the United States. This was the reservoir of the nation’s machine tool design and industrial engineering talent. The industry, which now lies in ruin, must be retooled and mobilized to recreate a nuclear manufacturing industry.

#### But immigration *doesn’t*

Scruggs 2/23 (Mike, “Immigration Myths: propping up foolish immigration policies”, <http://www.thetribunepapers.com/2013/02/23/immigration-myths-propping-up-foolish-immigration-policies/>, CMR)

Employment is the great magnet for illegal immigration. **Many CIS studies and the work of Harvard labor economist** George **Borjas confirm that**, although there are many notable exceptions, taken as a whole the last several decades of **immigrants are not really adding to the economy**. **They** add to the profits of those who employ cheap imported labor, but they **are displacing American workers**, **and their numbers are creating an excess labor supply driving American wages down.** **This is particularly acute for Americans with a high school education or less** and becoming a problem at higher skill levels. That is the reason American workers are not benefiting from top-line economic growth. As Robert Rector of the Heritage Foundation has pointed out, **the excessive number of unskilled and poorly educated immigrants**—about 80 percent of the total—**has created a considerable fiscal drag** on federal, state, and local governments, and taxpayers. The Federation of Americans for Immigration Reform (FAIR) estimates this to be about $100 billion per year considering ONLY education, healthcare, and law enforcement. There are other significant but less easily quantified burdens impacting society as well.

#### Won’t pass---border security

Byron York 3-27, Chief Political Correspondent - The Washington Examiner, “Border security in exchange for immigration reform? Napolitano says no deal.” 3-27-13, http://washingtonexaminer.com/border-security-in-exchange-for-immigration-reform-napolitano-says-no-deal./article/2525505

Republicans working to craft a comprehensive immigration reform bill say there is one rock-bottom requirement for any deal: The border must be secure, and proven to be secure, before any path to citizenship is created for the millions of immigrants currently in the country illegally. That is the one non-negotiable GOP demand. And on Tuesday, Homeland Security Secretary Janet Napolitano flatly rejected it.¶ “Relying on one thing as a so-called trigger is not the way to go,” Napolitano told a breakfast meeting of journalists. Asked about her department’s recent revelation that it will not produce a long-promised method of measuring border security, known as the Border Condition Index, Napolitano said, “We’re confident that the border is as secure as it’s ever been. But there’s no one number that captures that.” Without a way to measure border security, many Republican reform advocates say, there’s no way to go forward with a reform agreement.¶ Napolitano’s comments were one more bit of evidence, if Republicans needed any, that the Obama administration does not intend to make enhanced border security a precondition of immigration reform. “Every position and action the administration takes is consistent with the idea that they have no desire to accomplish immigration security,” said one GOP Senate aide who spoke on condition of anonymity.¶ “One of the challenges in crafting any reform is that the American people do not have confidence in this administration’s willingness to enforce current immigration law,” said Alex Conant, spokesman for Marco Rubio, the Republican senator and Gang of Eight member who has staked considerable political capital on the negotiations. “Senator Rubio and several members of the immigration working group share these concerns, and it’s reflected in the solution they are trying to craft. Our legislation will include real security triggers to make sure out borders are secured.”¶ Added Conant: “Senator Rubio will not support any legislation that does not include real security triggers to make sure our borders are secured.”¶ As for Napolitano, another aide said, “I wonder if she’s freelancing, or carrying a message from the White House.” At Tuesday’s White House briefing, spokesman Jay Carney was asked that very question, and while he spoke at length without saying anything definitive, Carney appeared to suggest that President Obama agrees with Napolitano. From the transcript:¶ QUESTION: Secretary Napolitano said today that triggers are not necessary before comprehensive immigration reform. So what does the White House do to convince those on the other side? Since there are no reliable metrics about border security, what will you do to convince them that the border is secure enough for immigration and a path to citizenship to begin?¶ MR. CARNEY: Well, I think the question is excellent, and I would note that what Secretary Napolitano has said — Secretary Napolitano has said that the Department of Homeland Security measures progress using a number of metrics to make sure we are putting our resources where they will have the most impact. And I think that while there are different ways to look at this issue, the fact is, by a host of measures, there has been great improvement in our border security.¶ Certainly the facts are there when it comes to the resources that have been applied to border security — the doubling of border security agents, as well as the other metrics that you will often hear Secretary Napolitano or others discuss. So we look at a variety of measures.¶ And I think you can look at what this President has committed to and the record on border security since he came into office to evaluate his assertion that border security is a vital element of comprehensive immigration reform. That has been his position, and it continues to be. And I would note — and this is something that has been acknowledged by important members of the Senate, Republican members — the progress that has been made on this very important issue, border security. Much of — the last time comprehensive immigration reform was essentially abandoned, some of the issues — the principal reason for that was because of concerns about border security. And many of the metrics that were put forward then have been met — the goals and the targets that were said to have to be achieved before we could move forward have been met.¶ But this is an ongoing issue. This is an ongoing concern, and it’s an ongoing project of this administration. And it will certainly be an important part of immigration reform.¶ QUESTION: Do you — does the White House oppose commissions or certain triggers before a path to citizenship can begin?¶ MR. CARNEY: What we have said and I’ll say today is that we are not going to judge the bill before it’s been written. And we are working with the senators who are in the Gang of Eight as they make progress, and they’ve made considerable progress, and that is worth noting. Senator Schumer just the other day talked about where they are in that process and the progress that they’ve been making, and we were heartened by that.¶ But as the President said yesterday, we have to keep pushing. We have to make sure that we follow through on this progress, and that that progress leads to a bill that has bipartisan support and that can be signed by this President. And we’re not there yet. Progress is being made. It’s being made in the Senate, which is where the President hoped it would be made. And we are very much monitoring that process and engaging in that process. But it’s not done yet, and I don’t want to prejudge a bill that hasn’t been written.¶ QUESTION: But if I could just press you on it, it does appear as though that Secretary Napolitano did today prejudge. She said the triggers are not necessary. Does the White House agree with that assessment?¶ MR. CARNEY: I think what she was saying — and the assessment we do agree with — is that there are a variety of metrics by which you can measure, and we do measure, progress on border security. And these are metrics that others use to measure border security, including Democrats and Republicans in the Senate and beyond the Senate, beyond the Congress.¶ So we’re working with Congress on this, with the Senate on this. Progress has been made. Border security is one of the key principles that the President has put forward that has to be part of comprehensive immigration reform. He has demonstrated his seriousness on this issue, as has Secretary Napolitano. But it is something that we’re — it’s not a done project. We have to continue working on it.¶ Cut through all the verbiage, and Carney seemed to say precisely what Napolitano said: If Republicans demand that tougher border enforcement be a precondition for comprehensive immigration reform, they can forget about making a deal, now or ever.

#### --Obama’s staying out of it – even though he calls it a "top priority"

Fox News, 3-28-2013 [http://latino.foxnews.com/latino/politics/2013/03/28/obama-immigration-reform-expected-by-end-summer/-http://latino.foxnews.com/latino/politics/2013/03/28/obama-immigration-reform-expected-by-end-summer/](http://latino.foxnews.com/latino/politics/2013/03/28/obama-immigration-reform-expected-by-end-summer/-http:/latino.foxnews.com/latino/politics/2013/03/28/obama-immigration-reform-expected-by-end-summer/), CMR

President Barack Obama pressed for swift action on a sweeping immigration bill Wednesday, saying last-minute obstacles are “resolvable” and predicting Congress could pass historic legislation by the end of the summer.¶ In back-to-back interviews with Spanish-language television networks, Obama repeatedly voiced confidence in a bipartisan Senate group that appears to be on the cusp of unveiling a draft bill. And he said that while he is still prepared to step in with his own bill if talks break down, he doesn’t expect that step to be necessary.¶ “If we have a bill introduced at the beginning of next month as these senators indicate it will be, then I’m confident that we can get it done certainly before the end of the summer,” Obama told Telemundo.¶ While overhauling the nation’s patchwork immigration laws is a top second term priority for the president, he has ceded the negotiations almost entirely to Congress. He and his advisers have calculated that a bill crafted by Capitol Hill stands a better chance of winning Republican support than one overtly influenced by the president.¶ In his interviews Wednesday, Obama tried to stay out of the prickly policy issues that remain unfinished in the Senate talks, though he said a split between business and labor on wages for new low-skilled workers was unlikely to “doom” the legislation.¶ “This is a resolvable issue,” he said.¶ The president also spoke Wednesday with Univision. His interviews followed a citizenship ceremony conducted Monday at the White House where he pressed Congress to “finish the job” on immigration, an issue that has vexed Washington for years.¶ The president made little progress in overhauling the nation’s fractured immigration laws in his first term, but he redoubled his efforts after winning re-election. The November contest also spurred some Republicans to drop their opposition to immigration reform, given that Hispanics overwhelmingly backed Obama.¶ In an effort to keep Republicans at the negotiation table, Obama has stayed relatively quiet on immigration over the last month. He rolled out his immigration principles during a January rally in Las Vegas and made an impassioned call for overhauling the nation’s laws during his early February State of the Union address, then purposely handed off the effort to lawmakers.

#### Executive actions solves

Kumar 3/19 (Anita, “Obama turning to executive power to get what he wants”, 2013, <http://www.mcclatchydc.com/2013/03/19/186309/obama-turning-to-executive-power.html#storylink=cpy>, CMR)

WASHINGTON — President Barack Obama came into office four years ago skeptical of pushing the power of the White House to the limit, especially if it appeared to be circumventing Congress.¶ Now, as he launches his second term, Obama has grown more comfortable wielding power to try to move his own agenda forward, particularly when a deeply fractured, often-hostile Congress gets in his way.¶ He’s done it with a package of tools, some of which date to George Washington and some invented in the modern era of an increasingly powerful presidency. And he’s done it with a frequency that belies his original campaign criticisms of predecessor George W. Bush, invites criticisms that he’s bypassing the checks and balances of Congress and the courts, and whets the appetite of liberal activists who want him to do even more to advance their goals.¶ While his decision to send drones to kill U.S. citizens suspected of terrorism has garnered a torrent of criticism, his use of executive orders and other powers at home is deeper and wider.¶ He delayed the deportation of young illegal immigrants when Congress wouldn’t agree. He ordered the Centers for Disease Control and Prevention to research gun violence, which Congress halted nearly 15 years ago. He told the Justice Department to stop defending the Defense of Marriage Act, deciding that the 1996 law defining marriage as between a man and a woman was unconstitutional. He’s vowed to act on his own if Congress didn’t pass policies to prepare for climate change.¶ Arguably more than any other president in modern history, he’s using executive actions, primarily orders, to bypass or pressure a Congress where the opposition Republicans can block any proposal.¶ “It’s gridlocked and dysfunctional. The place is a mess,” said Rena Steinzor, a law professor at the University of Maryland. “I think (executive action) is an inevitable tool given what’s happened.”¶ Now that Obama has showed a willingness to use those tactics, advocacy groups, supporters and even members of Congress are lobbying him to do so more and more.¶ The Center for Progressive Reform, a liberal advocacy group composed of law professors, including Steinzor, has pressed Obama to sign seven executive orders on health, safety and the environment during his second term.¶ Seventy environmental groups wrote a letter urging the president to restrict emissions at existing power plants.¶ Sen. Barbara Mikulski, D-Md., the chairwoman of the Appropriations Committee, sent a letter to the White House asking Obama to ban federal contractors from retaliating against employees who share salary information.¶ Gay rights organizations recently demonstrated in front of the White House to encourage the president to sign an executive order to bar discrimination based on sexual orientation or gender identity by companies that have federal contracts, eager for Obama to act after nearly two decades of failed attempts to get Congress to pass a similar bill.¶ “It’s ridiculous that we’re having to push this hard for the president to simply pick up a pen,” said Heather Cronk, the managing director of the gay rights group GetEQUAL. “It’s reprehensible that, after signing orders on gun control, cybersecurity and all manner of other topics, the president is still laboring over this decision.”¶ The White House didn’t respond to repeated requests for comment.¶ In January, Obama said he continued to believe that legislation was “sturdier and more stable” than executive actions, but that sometimes they were necessary, such as his January directive for the federal government to research gun violence.¶ “There are certain issues where a judicious use of executive power can move the argument forward or solve problems that are of immediate-enough import that we can’t afford not to do it,” the former constitutional professor told The New Republic magazine.

#### Disads illogical – the judge is the federal government and can do the plan while passing immigration reform – no reason they’d backlash against themselves

#### Thumper 1st – bill is months away

Altman 3/20 (Alex, “Four Hurdles That Could Block Immigration Reform”, 2013, <http://swampland.time.com/2013/03/20/four-hurdles-that-could-block-immigration-reform/>, CMR)

By all accounts, negotiators are making genuine progress toward a landmark deal that builds on a foundation laid during its last fumbled attempts. But lawmakers still have to thread a bill through a thicket of obstacles in a bitterly divided Congress. Sources close to the negotiations say they expect both chambers to introduce legislation in early April, giving Congress several months to haggle out a pact before members scatter for their summer recess. It sounds like plenty of time, but it’s not. Immigration will have to jockey for attention this spring with gun control, budgets and a potential grand bargain on tax and entitlement reform. Meanwhile, the human cost of the political stalemate is high. Each day, 1,400 undocumented immigrants are deported.

#### Nuclear funding has unanimous support

Press Action ’12 (3/12/12 ("US Nuclear Industry Operates as if Fukushima Never Happened") http://www.pressaction.com/news/weblog/full\_article/nuclearsubsidies03122012/-http://www.pressaction.com/news/weblog/full\_article/nuclearsubsidies03122012/

Both Democrats and Republicans have had a long love affair with commercial nuclear power, and the relationship is showing no signs of losing steam. Since the 1950s, members of both parties have enthusiastically lavished electric utility companies with expensive gifts, ranging from subsidies to protection from liability for disasters to loan guarantees, all underwritten by U.S. taxpayers.¶ The political calculus is simple: nuclear power enjoys unanimous support in Washington. Try to name one member of the U.S. Senate or House of Representatives who favors shutting down the nation’s 104 commercial nuclear reactors. Federal agencies, from the Atomic Energy Commission to the Department of Energy to the Nuclear Regulatory, have worked diligently through the years to promote nuclear power. At the state level, support for nuclear power also is extremely strong, although there are some politicians—albeit a tiny number—who have publicly called for the closure of certain nuclear plants.¶ On the one-year anniversary of the start of the nuclear disaster at the Fukushima Dai-ichi nuclear power plant in Japan, one would assume a voice in official Washington would have emerged calling for an end to the nation’s experiment with nuclear power. In Germany, government officials made the decision to phase out nuclear power by 2022 in response to Fukushima. There’s no such sentiment among the ruling elite in the United States. Locating a member of Congress opposed to the continued operation of nuclear power plants is as hard as finding a lawmaker who favors breaking ties with Israel over its mistreatment of Palestinians for the last 60 years. In fact, it’s more than hard, it’s impossible.¶ It’s very rare to find an issue where there is a noteworthy difference between Democrats and Republicans. When there are differences, they tend to be subtle, although party officials and the corporate media will attempt to sensationalize a slight difference to create an impression that the U.S. political system permits honest and real debate.

# 1AR Case

### Bubble

#### Doesn’t kill innovation

**Xie, ’11** (Yanmei - Nucleonics Week, “Think tanks differ on government's role in SMR development” Inside Stories; Pg. 3 Vol. 52 No. 6)

At an industry-sponsored forum February 7 in Washington, Michael Shellenberger, president of the Breakthrough Institute, said the government has done "far too little" to help advance SMR technologies. According to its website, the Oakland, California-based group is "committed to modernizing liberal thought" on environmental causes. And Shellenberger said the institute believes nuclear energy is the only low-cost source of baseload power that emits no greenhouse gases If the US government is serious about expanding nuclear power, it needs to provide "a much more robust set of R&D investments both for the development and the demonstration and the deployment" of SMR designs, including those for thorium reactors and fast reactors, he said. The IAEA defines small modular reactors as those rated at up to 300 MW. Breakthrough Chairman Ted Nordhaus, who spoke at the same event, said **the government needs to "accelerate the deployment and commercialization" of SMRs** through a "procurement mechanism." A policy paper on energy innovation released by Breakthrough last fall urged that the departments of Energy and Defense "procure and demonstrate small modular reactors at DOE nuclear facilities and DOD military bases." The Washington-based Heritage Foundation, however, warned last week that government subsidies would stifle innovation in the fledgling SMR industry instead of nurturing it. The Heritage Foundation, which promotes conservative values including free enterprise and limited government, released a report February 2 in which it described "a young, robust, innovative and growing" industry with "companies of all sizes investing in these smaller, safer, and more cost-efficient nuclear reactors." But in order for this industry to thrive, "policymakers should reject the temptation to offer the same sort of subsidies and government programs" as it is doing for large reactors, it said. DOE is preparing to launch a program to pay for part of the costs of commercializing two SMR designs. The program is awaiting budget approval from Congress, but it has received bipartisan support at committee levels in both the House and the Senate and is popular among industry supporters. DOE officials have said only light water reactor designs, the type operating in the US, would be eligible to apply. Government subsidies like the DOE's cost-sharing program would be "detrimental to SMRs," the Heritage report said, because "the federal government picks winners and losers through programs where bureaucrats and well-connected lobbyists decide which technologies are permitted." Instead of offering subsidies, the report recommended that the government focus on reforming NRC's licensing process, which the report said is "ill-prepared ? for new reactor technologies." "The NRC is built to regulate large light water reactors. It simply does not have the regulatory capability and resources to efficiently regulate other technologies," the paper said. NRC spokesman Scott Burnell has said the NRC is focusing on reviewing LWR designs and the Next Generation Nuclear Plant, a high-temperature gas-cooled reactor project mandated by Congress. For any other applications, "we are budgeted for limited non-resource intensive activities," which would take "only a few hours of staff time on a non-routine, infrequent basis," Burnell said in a February 1 e-mail. The result of such limits at NRC "is that enthusiasm for building non-light-water SMRs is generally squashed at the NRC as potential customers realize that there is little chance that the NRC will permit the project within a time frame that would promote near-term investment," the Heritage report said. It suggested that Congress provide NRC funding "to develop additional broad expertise for liquid-metal cooled, fast reactors and high-temperature, gas-cooled reactors." The report also urged the SMR industry to resist government loan guarantees, an approach it said has not helped accelerate nuclear construction. A smaller, less expensive modular reactor "would be very attractive to private investors even without government intervention," it said. But the Breakthrough Institute's **Nordhaus said the idea to have the industry reject government subsidies is "ridiculous." "The entire history of** the **commercial nuclear power** Industry **is a history of state support for the development** of those technologies **and** the **deployment** of those technologies," he said.

### Affect

#### Prioritizing emotion overwhelms rationality and ensures that decision-making fails

George F. Loewenstein et al 2001, “Risk as Feelings,” Psychological Bulletin, Vol. 127, No. 2, google it

Although neither the affect-as-information hypothesis nor the affect heuristic rule out the possibility that affective reactions to decisions can diverge from cognitive evaluations, neither perspective draws attention to such divergences or their consequences for behavior, In contrast, other strands of literature in psychology most closely associated with the clinical literature suggest that emotions often conllict with cognitive evaluations and can in some situations produce pathologies of decision making and behavior., Research on anxiety, for example, shows that emoti~l}.al reactions to a risky siruation often diverge from cognitive evaluations of risk severity (Ness & Klaas. 1994), When such departures occur. moreover" the emotional reactions often ex.ert a dominating influence on behavior and frequently produce behavior that does not appear to be adaptive., Fear causes us to slam on the brakes instead of steering into the skid. immobilizes us when we have greatest need for strength, causes sexual dysfUnction. insomnia, ulcers. and gives us dry mouth and jitters at the very moment when there is the greatest premium on clarity and eloquence. Most people, therefore. have at least occasionally experienced their own emotions as a destructive influence that they wish they could turn off, As Rolls (1999) wrote, the puzzle is not only that the emotion is so intense, but also that even with our rationaL reasoning capacities. humans still find themselves in these situations. and may find it difficult to produce reasonable and effet.:tive behaviour for resolving the siruation, (p, 282) RoUs argues that such divergences between emotional reactions and cognitive evaluations arise because in humans. tlte reward and punishment systems may operate implicitly in comparable ways to those in other animals But in addition to this, humans have the explicit system [closely related to consciousness] which enables us consciously to look and predict many steps ahead (p. 282) The divergence of emotional responses from cognitive evaluations of risks; as well as the potency of emotional responses in influencing behaVior, are evident in the large numbers of individuals who suffer from often-debilitating fear- and anxiety-related disorders who. in the words of one anxiety researcher, are typically "well aware that there is little or nothing to fear in situations they find so difficul~' (Barlow, 1988, p. 13). Even people who are not suffering from full-blown phobias commonly experience powerful fears about outcomes that they recognize as highly unlikely (such as airplane crashes) or not objectively tenible (such as public speaking); in contrast, many experience little fear about hazards that are both more likely and probably more severe (such as car accidents). The divergence between emotional reactions to, and cognitive evaluations of~ risk is a common source of the feeling of intrapersonal conflict (see, e.g, Schelling, 1984). As Schelling documented. people often use sophisticated tactics to override their emotional responses to situations-to "conquer their fears .. "

### Technocracy

#### No impact to nuclear technocracy and it’s key to solve

Ted Nordhaus 11, chairman – Breakthrough Instiute, and Michael Shellenberger, president – Breakthrough Institute, MA cultural anthropology – University of California, Santa Cruz, 2-25, http://thebreakthrough.org/archive/the\_long\_death\_of\_environmenta)

Tenth, we are going to have to get over our suspicion of technology, especially nuclear power. There is no credible path to reducing global carbon emissions without an enormous expansion of nuclear power. It is the only low carbon technology we have today with the demonstrated capability to generate large quantities of centrally generated electrtic power. It is the low carbon of technology of choice for much of the rest of the world. Even uber-green nations, like Germany and Sweden, have reversed plans to phase out nuclear power as they have begun to reconcile their energy needs with their climate commitments. Eleventh, we will need to embrace again the role of the state as a direct provider of public goods. The modern environmental movement, borne of the new left rejection of social authority of all sorts, has embraced the notion of state regulation and even creation of private markets while largely rejecting the generative role of the state. In the modern environmental imagination, government promotion of technology - whether nuclear power, the green revolution, synfuels, or ethanol - almost always ends badly. Never mind that virtually the entire history of American industrialization and technological innovation is the story of government investments in the development and commercialization of new technologies. Think of a transformative technology over the last century - computers, the Internet, pharmaceutical drugs, jet turbines, cellular telephones, nuclear power - and what you will find is government investing in those technologies at a scale that private firms simply cannot replicate. Twelveth, big is beautiful. The rising economies of the developing world will continue to develop whether we want them to or not. The solution to the ecological crises wrought by modernity, technology, and progress will be more modernity, technology, and progress. The solutions to the ecological challenges faced by a planet of 6 billion going on 9 billion will not be decentralized energy technologies like solar panels, small scale organic agriculture, and a drawing of unenforceable boundaries around what remains of our ecological inheritance, be it the rainforests of the Amazon or the chemical composition of the atmosphere. Rather, these solutions will be: large central station power technologies that can meet the energy needs of billions of people increasingly living in the dense mega-cities of the global south without emitting carbon dioxide, further intensification of industrial scale agriculture to meet the nutritional needs of a population that is not only growing but eating higher up the food chain, and a whole suite of new agricultural, desalinization and other technologies for gardening planet Earth that might allow us not only to pull back from forests and other threatened ecosystems but also to create new ones. The New Ecological Politics The great ecological challenges that our generation faces demands an ecological politics that is generative, not restrictive. An ecological politics capable of addressing global warming will require us to reexamine virtually every prominent strand of post-war green ideology. From Paul Erlich's warnings of a population bomb to The Club of Rome's "Limits to Growth," contemporary ecological politics have consistently embraced green Malthusianism despite the fact that the Malthusian premise has persistently failed for the better part of three centuries. Indeed, the green revolution was exponentially increasing agricultural yields at the very moment that Erlich was predicting mass starvation and the serial predictions of peak oil and various others resource collapses that have followed have continue to fail. This does not mean that Malthusian outcomes are impossible, but neither are they inevitable. We do have a choice in the matter, but it is not the choice that greens have long imagined. The choice that humanity faces is not whether to constrain our growth, development, and aspirations or die. It is whether we will continue to innovate and accelerate technological progress in order to thrive. Human technology and ingenuity have repeatedly confounded Malthusian predictions yet green ideology continues to cast a suspect eye towards the very technologies that have allowed us to avoid resource and ecological catastrophes. But such solutions will require environmentalists to abandon the "small is beautiful" ethic that has also characterized environmental thought since the 1960's. We, the most secure, affluent, and thoroughly modern human beings to have ever lived upon the planet, must abandon both the dark, zero-sum Malthusian visions and the idealized and nostalgic fantasies for a simpler, more bucolic past in which humans lived in harmony with Nature.

#### Simple rejection fails

Stewart, 2003 (Keith, PhD on environmental politics in Ontario and currently works for the Toronto Environmental Alliance, “If I Can't Dance: Reformism, Anti-Capitalism and the Canadian Environmental Movement”, Canadian Dimension, Vol. 37, No. 5)

Typically this action initially takes the form of seeking out practical, achievable solutions like the Kyoto Protocol, a ban in your community on the use of pesticides for cosmetic purposes, or saving the local wetland. These "reformist" solutions are not to be despised, for you can't build a movement without victories. Indeed, to dream of a movement that suddenly overthrows the existing order and replaces it with a socially and environmentally superior alternative without having won any victories along the way to inspire the collective imagination and from which to learn practical lessons is ludicrous.¶ When Reform Becomes Transformative¶ The real question is whether the victories of a movement — how the problem is framed, what solutions are proposed, how political pressure is brought to bear and the nature of the alliances and the enemies you make along the way — add up to a broader project of social change. The verdict is still out on whether Kyoto evolves into a techno-fix or becomes part of a broader transformation

of the way we live, work and play together. But there is at least some promise in the struggle, so far.