### Plan

#### The United States federal government should revise the Coastal Zone Management Act to:

#### mandate and issue one-stop permits for offshore wind power development where appropriate and feasible in all areas of The United States’ exclusive economic zone;

#### require revisions to states' Coastal Zone Management Plans in accordance with this mandate;

#### increase incentives for offshore wind power development.

### Heg

#### US heg declining – revamping institutional leadership key to solve

Venhaus 13 German PhD candidate at the Graduate School of Global Politics of the Freie Universität Berlin

(Marc, “POWER SHIFT TO THE EAST? AMERICAN HEGEMONY AND CHINA’S ASCENT IN TIMES OF GLOBAL FINANCIAL & MONETARY CRISES”, Graduate School of Global Politics, Academia.edu, [file:///Users/shrushtimehta/Downloads/Venhaus\_Power\_Shift\_to\_the\_East-libre.pdf](file:///C:\Users\shrushtimehta\Downloads\Venhaus_Power_Shift_to_the_East-libre.pdf), Ableism modified)

In the aftermath of the financial crisis many scholars (e.g. see Zakaria 2008; Fingleton 2008; Jacques 2009) started striking up a swansong on American hegemony and more or less clearly predict a soon to come hegemonic shift from the liberal constituted US to authoritarian ruled China with its booming manufacturing and export sector and its decade-long double-digit growth rates. If this statement is the authors’ ultimate judgement or partially based on the fact that stories containing ‘doom and dread’ sell extremely well in turbulent times should not be on me to judge. Anyhow, that power is significantly and irreversibly shifting to China has now become a popular tune in academia and among the public. It is commonly argued that each and every hegemon has a limited lifespan and accordingly - rather sooner than later - will have to face its nemesis. The historically grounded postulation involves that hegemonic powers per se are bound to a cyclical transition in which power is irrevocably shifting from one hegemon to another; this is especially believed to be the case after so-called ‘critical junctures’ like the turbulent financial crisis of 2008ff. during which US hegemony ostensibly had been shattered, whereas China was mostly spared (Clark 2011). Hence, based on current trends it seems to be only a matter of time until US hegemony ends and China will rule the world. Of course, I do not deny that termination of US hegemony will be the case in a not too distant future, but the question is: why should it happen right now? And: has the sovereign debt crisis really been as significant to China’s ascent and US demise as it is widely perceived? Shortly before the crisis accelerated, Michael Cox (2007) rightly asked ‘Is the United States in decline - again?’ and reminded us that only a few decades ago scholars, famously spearheaded by Paul Kennedy (1987), assumed that a hegemonic shift from the US to Japan is going to take place. It is well known today that this prediction turned out to be false - shortly after, during the 1990s, Japan began to stagnate on an admittedly high level and the US entered a period of accelerated growth. Now it seems as if we face a revision of the ‘Kennedy-moment’ however with a new constellation of actors: the US vs. China (Cox 2007). Surely, we are now a long way down the road since Charles Krauthammer (1990) famously announced America’s ‘unipolar moment’ and Francis Fukuyama triumphantly referred to the ‘end of history’ (1992) and, yes, the US has lost some ground to emerging powers like China. But still, we should not fall into the trap of overemphasising the current situation and repeat analytical mistakes that - back in the 1980s - already scholars like Susan Strange (1987) or Bruce Russet (1985) debunked. Furthermore, it is crucial that academics accept that hegemony at one time does not necessarily equal hegemony at another time. Not only is the perception of global hegemons as being all-powerful fully misleading (this has historically never been the case so far; hegemons are at the most dominant in the system) but also is it like ‘comparing apples with oranges’ (Kornprobst 2007) since states and hegemons fully differ in the way they are constituted and in their exertion of power (e.g. the US as a national construct has become a highly adaptable state-societal complex that now manages to disperse its power whereas China still forms a more hierarchical ‘black boxed’ system that mainly exercises power via the party/governmental level) (Langley 2002; Seabrooke 2001). Hence, scholars need to be careful in defining what constitutes a hegemonic state and how exactly power is exercised. Broadly in line with Susan Strange (1987:553) who once stated that ‘the great game of states has changed’, I believe that hegemony (understood as the predominant influence of one nation in the international system) in the current case of the US first and foremost rests on its influence on the financial and monetary order. Along with the process of financialization (i.e. the increasing role of financial markets, financial institutions and financial actors in the operation of the global system), the US has managed to dominate and shape the global order by means of diffuse, diversified and delinked forms of power (see e.g. Langley 2002; Seabrooke 2001; Helleiner 1994; Eichengreen 2008). I therefore assume that US hegemony in global financial and monetary relations is based on three central and inter-related pillars: 1) institutional power (control over outcomes in the International Monetary Fund), 2) structural power (dollar/Wall-Street dominance, forming an ‘exorbitant privilege’) and last but not least 3) ideational power (Neoliberalism as the leading politico-economic ideology - especially since the 1970s). In concerto this has served the countries’ very own interest, whereas other nations have repeatedly been forced to shoulder most of the burdens of adjustment. However, the sovereign debt crisis of 2008ff. which - as indicated before - is widely perceived as a critical juncture not only laid bare the deficiencies of the US-centred order and the increasing vulnerability of the highly indebted and economically ~~stuttering~~ slowing hegemon, but also opened a window of opportunity for its main rival: liquidity-rich and booming China. Accordingly, Beijing is now starting to contest the US in the realm of money and finance by: 1) significantly increasing its influence within the International Monetary Fund, 2) extending the international role and convertibility of the Renminbi and establishing Shanghai as a new global financial center until 2020, and 3) following a Neo- Mercantilist/Listian national approach which is signified by gradual financial liberalization and an accumulation of monetary reserves. After a short but inevitable elaboration on the concept of power (Ch. 1), I am to provide an answer if these efforts (Ch. 2-4) in times of financial and monetary crisis are really sufficient to end US hegemony.

#### Strong domestic manufacturing key to maintain hegemony and stave off China

Welsh 14, Editor, writer and social media consultant. He was the Managing Editor of [FireDogLake](http://firedoglake.com/author/ian-welsh/) and the[Agonist](http://agonist.org/diary/ian_welsh). His work has also appeared at [Huffington Post](http://www.huffingtonpost.com/ian-welsh), [Alternet](http://www.alternet.org/), and [Truthout](http://www.truthout.org/)

Ian Welsh, “How China Can End American Hegemony” 2014 MARCH 25 http://www.ianwelsh.net/how-china-can-end-american-hegemony/

I concentrate on manufacturing because it and resource extraction are the two things which really matter. All the software in the world, all the “financial services” don’t matter if you can’t make, mine, or grow what you need. If you were China, and you wanted to destroy US hegemony, how would you do it? The simple answer is “control the means of production”. Right now many US companies manufacture in China: Apple may be located in California, but its manufacturing base is largely in China. As time goes by, those who make goods, learn how to design them. As companies more and more offshore and outsource their design, this becomes more and more true. Companies like Apple can build their goods in China because of patent law: the Chinese may know how to make them, but it’s illegal to do so. The logical path for China would be to wait till they have the actual production facilities for every key sector, then break the patents and let the factories (which are already Chinese owned subcontractors, as a rule) make the goods themselves. If you do this in one fell-swoop, because the facilities no longer exist in the US or Europe to make the goods, the US and, indeed, Western governments are faced with two choices: go into an economic tailspin, or buy from China either way. The conventional reply to this is “but the Chinese need Western consumers!” Do they? Will they forever? Or can they take their huge population and turn that into a consumer base? Can they turn various developing countries into consumers of their goods? Africa, in particular, has been looking more and more to China, because China offers development: building roads and factories and ports and airports, which the West no longer does, at least not without insisting on crippling IMF conditions. China doesn’t do that, it doesn’t care how other countries run their internal affairs: if they want to subsidize food, that’s fine by China. Russia, of course, will increasingly turn to China as the West isolates it. Much of Latin America is already looking towards China, and find Chinese influence far less problematic than American influence, since the Chinese don’t actively try to overthrow their governments. Will this happen? Perhaps, perhaps not. But, increasingly, it is a route open to the Chinese. They control the actual means of production: the West has very kindly engaged in massive technology and capital transfer to China, moving expertise and the actual production. One might argue that cooperation is better for China. But will it always be? Thanks to massive mismanagement of the economy, the environment and both renewable and non-renewable resources, we are increasingly moving into a period of scarcity. In a negative sum game, cutting America, which consumes far more than its per capita share of resources off at the knees may be exactly what China needs to do to ensure its own prosperity and survival.

#### 3 Internal Links to Hegemony

#### First is Growth

#### Offshore wind promotes fast US growth – employment, manufacturing

N’dolo 10 – associate principal @ Camoin Associates

(Michael and Bruce Bailey, “Offshore development can yield economic benefits,” North American Wind Power, Fall 2010)//BB

Economic opportunities

Wind power is a job-creation engine. According to the American Wind Energy Association, the wind industry supported over 85,000 jobs in 2009 alone. Most of these jobs were in manufacturing, an area of the U.S. labor force that has been declining rapidly for years. The wind energy industry represents a significant opportunity for turning this decline around.¶ Although wind power industry clusters exist in North America, there are many specifics to offshore wind that differentiate it from its onshore cousin. Requirements such as installation vessels, unique turbine components, specialized research focus, and professional and technical experience are not yet present in the North American workforce skill set. All of these unique requirements represent an economic opportunity for job creation, ranging from research, design and manufacturing to operations and maintenance.¶ Vessels. Highly specialized installation vessels must be built, operated, repaired and docked during the off-season. The newest generation of such vessels under development in Europe can cost hundreds of millions of dollars to construct and can require a small army of workers in ports with sufficient ship-building capacity. In addition, other smaller vessels are necessary for ongoing maintenance and repair operations.¶ The Jones Act requires that all goods transported by water between U.S. ports are carried in U.S.-flagged ships that are constructed in the U.S., owned by U.S. citizens and crewed by¶ permanent residents of the U.S. Although some developers have been successful in requesting an exception, allowing them to use foreign vessels, the Jones Act creates a significant barrier for off-shore developers. Investing and developing a domestic vessel industry to serve the offshore market would significantly increase the attractiveness of a region to offshore developers and investors, in addition to creating jobs to support the new industry.¶ Components. Offshore components tend to he larger and bulkier. Certain components are either unique to (foundations) or modified for (hermetically sealed nacelles, seaworthy substations, nacelle-mounted or substation-mounted helicopter pads for maintenance, and corrosion-resistant materials) offshore use. One of the largest portions of the installed cost of a typical offshore wind farm is directly attributable to the manufacturing and pro-assembly of turbine and foundation components. In regions where a high level of wind component manufacturing currently exists, there is significant opportunity for creating offshore wind component manufacturing clusters.¶ Installation. Turbines and foundations must be assembled in a staging area, loaded onto a vessel and installed. There are limitations on the ability of any one state or province to service both coasts, but it is reasonable to assume, for example, that an installation cluster in the Mid-Atlantic region of the¶ U.S. could provide installation capacity for a number of projects on the East Coast.

#### Fast growth promotes US leadership and solves great power war

Khalilzad 11 – PhD, Former Professor of Political Science @ Columbia, Former ambassador to Iraq and Afghanistan

(Zalmay Khalilzad was the United States ambassador to Afghanistan, Iraq, and the United Nations during the presidency of George W. Bush and the director of policy planning at the Defense Department from 1990 to 1992. "The Economy and National Security" Feb 8 http://www.nationalreview.com/articles/259024/economy-and-national-security-zalmay-khalilzad)//BB

Today, economic and fiscal trends pose the most severe long-term threat to the United States’ position as global leader. While the United States suffers from fiscal imbalances and low economic growth, the economies of rival powers are developing rapidly. The continuation of these two trends could lead to a shift from American primacy toward a multi-polar global system, leading in turn to increased geopolitical rivalry and even war among the great powers. The current recession is the result of a deep financial crisis, not a mere fluctuation in the business cycle. Recovery is likely to be protracted. The crisis was preceded by the buildup over two decades of enormous amounts of debt throughout the U.S. economy — ultimately totaling almost 350 percent of GDP — and the development of credit-fueled asset bubbles, particularly in the housing sector. When the bubbles burst, huge amounts of wealth were destroyed, and unemployment rose to over 10 percent. The decline of tax revenues and massive countercyclical spending put the U.S. government on an unsustainable fiscal path. Publicly held national debt rose from 38 to over 60 percent of GDP in three years. Without faster economic growth and actions to reduce deficits, publicly held national debt is projected to reach dangerous proportions. If interest rates were to rise significantly, annual interest payments — which already are larger than the defense budget — would crowd out other spending or require substantial tax increases that would undercut economic growth. Even worse, if unanticipated events trigger what economists call a “sudden stop” in credit markets for U.S. debt, the United States would be unable to roll over its outstanding obligations, precipitating a sovereign-debt crisis that would almost certainly compel a radical retrenchment of the United States internationally. Such scenarios would reshape the international order. It was the economic devastation of Britain and France during World War II, as well as the rise of other powers, that led both countries to relinquish their empires. In the late 1960s, British leaders concluded that they lacked the economic capacity to maintain a presence “east of Suez.” Soviet economic weakness, which crystallized under Gorbachev, contributed to their decisions to withdraw from Afghanistan, abandon Communist regimes in Eastern Europe, and allow the Soviet Union to fragment. If the U.S. debt problem goes critical, the United States would be compelled to retrench, reducing its military spending and shedding international commitments. We face this domestic challenge while other major powers are experiencing rapid economic growth. Even though countries such as China, India, and Brazil have profound political, social, demographic, and economic problems, their economies are growing faster than ours, and this could alter the global distribution of power. These trends could in the long term produce a multi-polar world. If U.S. policymakers fail to act and other powers continue to grow, it is not a question of whether but when a new international order will emerge. The closing of the gap between the United States and its rivals could intensify geopolitical competition among major powers, increase incentives for local powers to play major powers against one another, and undercut our will to preclude or respond to international crises because of the higher risk of escalation. The stakes are high. In modern history, the longest period of peace among the great powers has been the era of U.S. leadership. By contrast, multi-polar systems have been unstable, with their competitive dynamics resulting in frequent crises and major wars among the great powers. Failures of multi-polar international systems produced both world wars. American retrenchment could have devastating consequences. Without an American security blanket, regional powers could rearm in an attempt to balance against emerging threats. Under this scenario, there would be a heightened possibility of arms races, miscalculation, or other crises spiraling into all-out conflict. Alternatively, in seeking to accommodate the stronger powers, weaker powers may shift their geopolitical posture away from the United States. Either way, hostile states would be emboldened to make aggressive moves in their regions.

#### Second is Fuel Sources

#### The plan solves unemployment and diversifies fuel sources

Schroeder 10 – J.D @ Berkeley, M.E.M., Yale School of Forestry & Environmental Studies

(Erica, “Turning Offshore Wind On,” California Law Review, 98.5)//BB

Many of the most compelling benefits of offshore wind are similar to

those of onshore wind, though offshore wind has its own unique set of benefits.¶ To start, wind power generation can help meet the growing energy demand in¶ the United States. The U.S. Energy Information Administration predicts that¶ the demand for electricity in the United States will grow to 5.8 billion MWh in¶ 2030, a 39 percent increase from 2005. The more that wind power can help to meet this demand, the more diversified the United States' energy portfolio will¶ be, and the less susceptible the nation will be to dependency on foreign fuel sources and to price fluctuations in traditional fuels.59 In addition, wind power benefits the United States by creating a substantial number of jobs for building and operating the domestic wind energy facilities. 6 0 In an April 2009 speech at the Trinity Structural Towers Manufacturing Plant in Iowa, President Obama predicted that if the United States "fully pursue[s] our potential for wind energy on land and offshore," wind power could create 250,000 jobs by 2030.61

#### Independent energy control is key to maintain primacy

* don’t endorse the ableist language

Padilla 10 – Harvard Graduate, former Intern @ White House office of Communications, Research Asst. @ Kennedy School of Government, Founder and CEO @ Saber Hoy

Jonathan Padilla, “The Vanguard of Global Leadership: The Case for American Energy Independence in the 21st Century,” 2010, The last date cited in the article is 2-10-2010, http://www.gov.harvard.edu/files/Energy%20Independence%20-%20Padilla%20Final.pdf

"We become just by performing just actions, temperate by performing temperate actions, brave by performing brave actions," said Aristotle over 2,300 years ago. Today, the United States faces a series of challenges that threaten its continued global leadership and more dangerously, transnational stability. While politicians debate semantics and place ideology over ideas and politics over principle, the world drifts ever closer to precipice that overlooks the abyss. The United States can no longer label halfhearted attempts to tackle adversity as true leadership. In deference to Aristotle's wisdom, the United States must secure the mantle of global leadership by surmounting world impediments with domestic solutions that can be exported to the international community. United States dependence on imported energy provides just such an opportunity to rise to the occasion. By scaling the mountain of long-term energy independence the United States can achieve multiple peace through strength objectives, including: economic security, technological superiority, and reaffirm its position of global leadership. United States dependence on foreign sources of energy undermines its entire hard and soft power projection capabilities, while contributing to an economy that is susceptible to externalities outside of domestic control. Harvard Professor, Joseph Nye, describes hard power as "inducements [carrots] and threats [sticks]," while soft power is "getting others to want the outcomes that you want," co-opting them rather than coercing.1 Presently, the U.S.'s ravenous appetite for imported oil and natural gas has led to military engagements in the Middle East where hard power assets have been quagmired and international goodwill, a critical perquisite for soft power, has been severely tarnished, The Economist reported this past February that U.S. consumption of foreign petroleum is so great that it single-handily accounts for over half of the current trade deficit.2 With the price of oil subject to the whimsy of leaders that are often ideologically opposed to American interests, the danger is apparent, as U.S. ability to lead the world is subsumed by the common global need for energy resources that are the lifeblood of modern economies. The U.S. can only expect diminishing capabilities to project ideas and values as lack of energy independence forces the U.S. to overextend hard power assets and detracts from economic security. Without true energy independence our ability to attract the world to shared-goals and endeavors become critically handicapped. Yet, inasmuch as the road to energy dependence is long and arduous it is also the type of aspirational undertaking that holds the potential to completely retool the domestic economy and bring about international cooperation. In order to reach domestic energy independence, the U.S. must work towards the goal as something comparable to President Kennedy's call to place a man on the moon and then subsequently export the technologies abroad in an effort similar to the Marshall Plan. The U.S. was once the global leader in renewables, but is quickly falling behind nations like Germany and China.3 The path to energy independence is technological superiority where the innovative potential held by Americans can develop green-technologies that make renewables cost-competitive with fossil fuels and where next generation biofuels and nuclear generators allows the U.S. to control its own energy destiny. This is not a goal that can be accomplished by the government alone. American business is critical to developing the technologies and then selling them abroad. The government needs to provide the incentive structure and impetus for growth in this direction. As Yale Professor Daniel Esty notes, "Smart companies seize competitive advantage through strategic management of environmental challenges."4 Fossil fuels are finite resources in a world with an incessantly increasing global demand. By investing in new technologies designed to reach domestic energy independence, America can develop a competitive advantage in an industry that will be worth trillions, eliminate most of its trade deficit, and demonstrate to the world that our goals are their goals—that energy independence through technology is the right course and that America's model of innovation is the best approach to tackling global challenges. A world with stable energy reserves is a world that is more secure, more focused on developing economies and commerce rather than jockeying for access to strategic resources. The United States can more easily and less expensively attract other nations to its causes through endeavors like a real attempt for energy independence than by deploying the 101st Airborne abroad. America is strongest when its economy inspires the dreams and desires of others, solving the energy dilemma of the 21st century is America's best shot at remaining at the vanguard of global leadership.

#### Third is Environmental Leadership

#### The US has the potential to remain an environmental leader- now is the time

Steinberg, ‘11, an associate professor of political science and environmental policy at Harvey Mudd College in Claremont, California. His research focuses on global environmental politics, with a special interest in biodiversity conservation and the environmental policy of developing countries. In 2001, he published Environmental Leadership in Developing Countries, in which he explains how Costa Rica and Bolivia have become leaders in environmental conservation. Steinberg holds a M.P.A. from Harvard's Kennedy School and a Ph.D. from the University of California at Santa Cruz. Dr. Paul, “Dr. Paul Steinberg, Harvey Mudd College -Global Environmental Leadership”, http://wamc.org/post/dr-paul-steinberg-harvey-mudd-college-global-environmental-leadership

The U.S. was once the trendsetter in areas like air and water quality standards. There was a time when US officials had to convince the Europeans to protect the ozone layer. And today dozens of countries have put in place ideas first developed in America, from national parks to cap and trade schemes for pollution control, to laws guaranteeing citizens the right to information about government decisions and industrial practices. But over the past two decades we have ceded leadership to the European Union while falling behind in many areas, from alternative energy to the recycling of electronic waste. What might a renaissance in US environmental leadership look like? We need our policy innovations to keep pace with our scientific innovations. The US holds fully half of the world's patents for chemical inventions, and two-thirds of the patents for "green chemistry" that doesn't harm the environment. But while Europe has a suite of new policies to remove harmful chemicals from consumer products, the US lags far behind. The US is the global leader in research on species conservation, with 40 percent of the world's published authors according to a recent survey. But while Europe has implemented new policies for habitat conservation, the US is destroying the mountains of West Virginia - one of the most biologically important regions in the world - in its search for ever-cheaper sources of coal. On the Intergovernmental Panel on Climate Change - the world's top authority on the global warming -the US has more scientific contributors than all of Europe combined. But while Europe is on track to reduce greenhouse gases by 20% by 2020, the US has no energy policy whatsoever. Science and technology only advance sustainability if they are put into use by government agencies and the private sector. This requires good public policy, and now is the time for US policy leadership at home and abroad.

#### Green leadership maintains primacy --- weak and piecemeal measures will cause a collapse

Crawford 2010/2011 (Colin – J.D. Wake Forest University School of Law, Green Warfare: An American Grand Strategy for the 21st Century, Wake Forest Journal of Business and Intellectual Property Law, p. Lexis)

The United States is in desperate need of such farsighted leadership. This country is in the midst of an identity crisis, having struggled to define itself since the end of the Cold War. As the world's lone superpower, the United States has learned the hard way that along with its strong standing comes immense responsibility in terms of leading efforts to eliminate climate change, nonproliferation, and global poverty. n7 Recent developments in international affairs, sustained economic woes, and partisan gridlock have divided the nation's attention and resources. Lawmakers are currently playing whack-a-mole with America's priorities, n8 lacking both the vision and direction needed to combat the long-term challenges that await. However, all is not lost. Despite increasing (and oftentimes overblown) fears of "American decline," the United States remains the world's top dog in terms of economic and military power. n9 What these fears reflect, however, is the very real sentiment that the United States can no longer sustain itself as the head of a purely unipolar world. n10 Economies in emerging markets such as China, India, and Brazil have shaken off their lethargy and are growing in a manner which suggests a global realignment of wealth is beginning to take place, shifting from West to East and from North to South. n11 Because [\*245] this new wealth begets power, it is clear that the United States will face increasing competition in the coming decades. n12 This is a departure point in American history. Increasingly burdened by the prosecution of two wars, a historic financial crisis, and ever-mounting interest on the national debt, the United States faces deep and painful cuts in spending in order to restore its fiscal health. n13 Yet American politicians must take care not to sacrifice long-term programs in pursuit of short-term political gains. It is said that the most dangerous animal in the woods is the wounded one; as the U.S. begins to recapture its economic momentum, it will be poised to make radical changes in terms of aligning the nation's policy objectives. President Obama presented a vision of "Winning the Future" in his 2011 State of the Union address, offering a feel-good story that was ultimately short on detail and made vague calls for investment in high-speed rail and clean energy. n14 As the United States emerges from this economic crisis, it should not fall back on piecemeal measures and disjointed policies. This is a time for a fundamental realignment of American resources toward a defined and overarching national objective. n15 The crafting of a grand strategy for the United States will require radical thought and near-panoramic insight. This Comment seeks to offer a glimpse of what such a grand strategy could look like, drawing on the strengths of the American model to fundamentally reshape the way the U.S. produces, supports, and defends its way of life. In short, this Comment advocates an Apollo Program-type mentality in terms of "greening" American society from the top [\*246] down--beginning with the military--in order to break the country's addiction to fossil fuels. In embracing a broad-based "green" strategy, the United States can weave together a number of priorities heretofore thought irreconcilable: national security, environmental protection, and economic growth. In defining a clear "enemy" - our dependence on fossil fuels--the U.S. can unite various segments of society around a value-neutral and universally beneficial policy objective. By calling upon the resources of academia, the military, and the business community, the government can harness the institutions in which America has traditionally had the most palpable innovative advantages. n16 By becoming the international leader in green technology invention, production, and deployment, the United States can help ameliorate the effects of its last industrial revolution while triggering a new one in the process.

#### The pursuit of hegemony is inevitable, sustainable, and prevents great power war – US decline causes conflict escalation and global lashout

Ikenberry, Brooks, and Wohlforth, Associate Professor of Government at Dartmouth College and the Albert G. Milbank Professor of Politics and International Affairs at Princeton University and Global Eminence Scholar at Kyung Hee University in Seoul and the Daniel Webster Professor of Government at Dartmouth College, 13 (John Ikenberry, Stephen G. Brooks, William C. Wohlforth, January/February 2013, Foreign Affairs, “Lean Forward: In Defense of American Engagement” http://www.foreignaffairs.com/articles/138468/stephen-g-brooks-g-john-ikenberry-and-william-c-wohlforth/lean-forward)

Of course, even if it is true that the costs of deep engagement fall far below what advocates of retrenchment claim, they would not be worth bearing unless they yielded greater benefits. In fact, they do. The most obvious benefit of the current strategy is that it reduces the risk of a dangerous conflict. The United States' security commitments deter states with aspirations to regional hegemony from contemplating expansion and dissuade U.S. partners from trying to solve security problems on their own in ways that would end up threatening other states. Skeptics discount this benefit by arguing that U.S. security guarantees aren't necessary to prevent dangerous rivalries from erupting. They maintain that the high costs of territorial conquest and the many tools countries can use to signal their benign intentions are enough to prevent conflict. In other words, major powers could peacefully manage regional multipolarity without the American pacifier. But that outlook is too sanguine. If Washington got out of East Asia, Japan and South Korea would likely expand their military capabilities and go nuclear, which could provoke a destabilizing reaction from China. It's worth noting that during the Cold War, both South Korea and Taiwan tried to obtain nuclear weapons; the only thing that stopped them was the United States, which used its security commitments to restrain their nuclear temptations. Similarly, were the United States to leave the Middle East, the countries currently backed by Washington--notably, Israel, Egypt, and Saudi Arabia--might act in ways that would intensify the region's security dilemmas. There would even be reason to worry about Europe. Although it's hard to imagine the return of great-power military competition in a post-American Europe, it's not difficult to foresee governments there refusing to pay the budgetary costs of higher military outlays and the political costs of increasing EU defense cooperation. The result might be a continent incapable of securing itself from threats on its periphery, unable to join foreign interventions on which U.S. leaders might want European help, and vulnerable to the influence of outside rising powers. Given how easily a U.S. withdrawal from key regions could lead to dangerous competition, advocates of retrenchment tend to put forth another argument: that such rivalries wouldn't actually hurt the United States. To be sure, few doubt that the United States could survive the return of conflict among powers in Asia or the Middle East--but at what cost? Were states in one or both of these regions to start competing against one another, they would likely boost their military budgets, arm client states, and perhaps even start regional proxy wars, all of which should concern the United States, in part because its lead in military capabilities would narrow. Greater regional insecurity could also produce cascades of nuclear proliferation as powers such as Egypt, Saudi Arabia, Japan, South Korea, and Taiwan built nuclear forces of their own. Those countries' regional competitors might then also seek nuclear arsenals. Although nuclear deterrence can promote stability between two states with the kinds of nuclear forces that the Soviet Union and the United States possessed, things get shakier when there are multiple nuclear rivals with less robust arsenals. As the number of nuclear powers increases, the probability of illicit transfers, irrational decisions, accidents, and unforeseen crises goes up. The case for abandoning the United States' global role misses the underlying security logic of the current approach. By reassuring allies and actively managing regional relations, Washington dampens competition in the world s key areas, thereby preventing the emergence of a hothouse in which countries would grow new military capabilities. For proof that this strategy is working, one need look no further than the defense budgets of the current great powers: on average, since 1991 they have kept their military expenditures as A percentage of GDP to historic lows, and they have not attempted to match the United States' top-end military capabilities. Moreover, all of the world's most modern militaries are U.S. allies, and the United States' military lead over its potential rivals .is by many measures growing. On top of all this, the current grand strategy acts as a hedge against the emergence regional hegemons. Some supporters of retrenchment argue that the U.S. military should keep its forces over the horizon and pass the buck to local powers to do the dangerous work of counterbalancing rising regional powers. Washington, they contend, should deploy forces abroad only when a truly credible contender for regional hegemony arises, as in the cases of Germany and Japan during World War II and the Soviet Union during the Cold War. Yet there is already a potential contender for regional hegemony--China--and to balance it, the United States will need to maintain its key alliances in Asia and the military capacity to intervene there. The implication is that the United States should get out of Afghanistan and Iraq, reduce its military presence in Europe, and pivot to Asia. Yet that is exactly what the Obama administration is doing. MILITARY DOMINANCE, ECONOMIC PREEMINENCE Preoccupied with security issues, critics of the current grand strategy miss one of its most important benefits: sustaining an open global economy and a favorable place for the United States within it. To be sure, the sheer size of its output would guarantee the United States a major role in the global economy whatever grand strategy it adopted. Yet the country's military dominance undergirds its economic leadership. In addition to protecting the world economy from instability, its military commitments and naval superiority help secure the sea-lanes and other shipping corridors that allow trade to flow freely and cheaply. Were the United States to pull back from the world, the task of securing the global commons would get much harder. Washington would have less leverage with which it could convince countries to cooperate on economic matters and less access to the military bases throughout the world needed to keep the seas open. A global role also lets the United States structure the world economy in ways that serve its particular economic interests. During the Cold War, Washington used its overseas security commitments to get allies to embrace the economic policies it preferred--convincing West Germany in the 1960s, for example, to take costly steps to support the U.S. dollar as a reserve currency. U.S. defense agreements work the same way today. For example, when negotiating the 2011 free-trade agreement with South Korea, U.S. officials took advantage of Seoul's desire to use the agreement as a means of tightening its security relations with Washington. As one diplomat explained to us privately, "We asked for changes in labor and environment clauses, in auto clauses, and the Koreans took it all." Why? Because they feared a failed agreement would be "a setback to the political and security relationship." More broadly, the United States wields its security leverage to shape the overall structure of the global economy. Much of what the United States wants from the economic order is more of the same: for instance, it likes the current structure of the World Trade Organization and the International Monetary Fund and prefers that free trade continue. Washington wins when U.S. allies favor this status quo, and one reason they are inclined to support the existing system is because they value their military alliances. Japan, to name one example, has shown interest in the Trans-Pacific Partnership, the Obama administration's most important free-trade initiative in the region, less because its economic interests compel it to do so than because Prime Minister Yoshihiko Noda believes that his support will strengthen Japan's security ties with the United States. The United States' geopolitical dominance also helps keep the U.S. dollar in place as the world's reserve currency, which confers enormous benefits on the country, such as a greater ability to borrow money. This is perhaps clearest with Europe: the EU'S dependence on the United States for its security precludes the EU from having the kind of political leverage to support the euro that the United States has with the dollar. As with other aspects of the global economy, the United States does not provide its leadership for free: it extracts disproportionate gains. Shirking that responsibility would place those benefits at risk. CREATING COOPERATION What goes for the global economy goes for other forms of international cooperation. Here, too, American leadership benefits many countries but disproportionately helps the United States. In order to counter transnational threats, such as terrorism, piracy, organized crime, climate change, and pandemics, states have to work together and take collective action. But cooperation does not come about effortlessly, especially when national interests diverge. The United States' military efforts to promote stability and its broader leadership make it easier for Washington to launch joint initiatives and shape them in ways that reflect U.S. interests. After all, cooperation is hard to come by in regions where chaos reigns, and it flourishes where leaders can anticipate lasting stability. U.S. alliances are about security first, but they also provide the political framework and channels of communication for cooperation on nonmilitary issues. NATO, for example, has spawned new institutions, such as the Atlantic Council, a think tank, that make it easier for Americans and Europeans to talk to one another and do business. Likewise, consultations with allies in East Asia spill over into other policy issues; for example, when American diplomats travel to Seoul to manage the military alliance, they also end up discussing the Trans-Pacific Partnership. Thanks to conduits such as this, the United States can use bargaining chips in one issue area to make progress in others. The benefits of these communication channels are especially pronounced when it comes to fighting the kinds of threats that require new forms of cooperation, such as terrorism and pandemics. With its alliance system in place, the United States is in a stronger position than it would otherwise be to advance cooperation and share burdens. For example, the intelligence-sharing network within NATO, which was originally designed to gather information on the Soviet Union, has been adapted to deal with terrorism. Similarly, after a tsunami in the Indian Ocean devastated surrounding countries in 2004, Washington had a much easier time orchestrating a fast humanitarian response with Australia, India, and Japan, since their militaries were already comfortable working with one another. The operation did wonders for the United States' image in the region. The United States' global role also has the more direct effect of facilitating the bargains among governments that get cooperation going in the first place. As the scholar Joseph Nye has written, "The American military role in deterring threats to allies, or of assuring access to a crucial resource such as oil in the Persian Gulf, means that the provision of protective force can be used in bargaining situations. Sometimes the linkage may be direct; more often it is a factor not mentioned openly but present in the back of statesmen's minds." THE DEVIL WE KNOW Should America come home? For many prominent scholars of international relations, the answer is yes--a view that seems even wiser in the wake of the disaster in Iraq and the Great Recession. Yet their arguments simply don't hold up. There is little evidence that the United States would save much money switching to a smaller global posture. Nor is the current strategy self-defeating: it has not provoked the formation of counterbalancing coalitions or caused the country to spend itself into economic decline. Nor will it condemn the United States to foolhardy wars in the future. What the strategy does do is help prevent the outbreak of conflict in the world's most important regions, keep the global economy humming, and make international cooperation easier. Charting a different course would threaten all these benefits. This is not to say that the United States' current foreign policy can't be adapted to new circumstances and challenges. Washington does not need to retain every commitment at all costs, and there is nothing wrong with rejiggering its strategy in response to new opportunities or setbacks. That is what the Nixon administration did by winding down the Vietnam War and increasing the United States' reliance on regional partners to contain Soviet power, and it is what the Obama administration has been doing after the Iraq war by pivoting to Asia. These episodes of rebalancing belie the argument that a powerful and internationally engaged America cannot tailor its policies to a changing world. A grand strategy of actively managing global security and promoting the liberal economic order has served the United States exceptionally well for the past six decades, and there is no reason to give it up now. The country's globe-spanning posture is the devil we know, and a world with a disengaged America is the devil we don't know. Were American leaders to choose retrenchment, they would in essence be running a massive experiment to test how the world would work without an engaged and liberal leading power. The results could well be disastrous.

#### War is inevitable in the status quo – States will always compete for regional status even when it is at their disadvantage – only unquestioned primacy stops it from escalating

Wohlforth 9 - Professor of government at Dartmouth

(William, “Unipolarity, Status Competition, and Great Power War” World Politics, 61:1, January, Project Muse)

Second, I question the dominant view that status quo evaluations are relatively independent of the distribution of capabilities. If the status of states depends in some measure on their relative capabilities, and if states derive utility from status, then different distributions of capabilities may affect levels of satisfaction, just as different income distributions may affect levels of status competition in domestic settings. 6 Building on research in psychology and sociology, I argue that even capabilities distributions among major powers foster ambiguous status hierarchies, which generate more dissatisfaction and clashes over the status quo. And the more stratified the distribution of capabilities, the less likely such status competition is. Unipolarity thus generates far fewer incentives than either bipolarity or multipolarity for direct great power positional competition over status. Elites in the other major powers continue to prefer higher status, but in a unipolar system they face comparatively weak incentives to translate that preference into costly action. And the absence of such incentives matters because social status is a positional good—something whose value depends on how much one has in relation to others.7 “If everyone has high status,” Randall Schweller notes, “no one does.”8 While one actor might increase its status, all cannot simultaneously do so. High status is thus inherently scarce, and competitions for status tend to be zero sum.9 I begin by describing the puzzles facing predominant theories that status competition might solve. Building on recent research on social identity and status seeking, I then show that under certain conditions the ways decision makers identify with the states they represent may prompt them to frame issues as positional disputes over status in a social hierarchy. I develop hypotheses that tailor this scholarship to the domain of great power politics, showing how the probability of status competition is likely to be linked to polarity. The rest of the article investigates whether there is sufficient evidence for these hypotheses to warrant further refinement and testing. I pursue this in three ways: by showing that the theory advanced here is consistent with what we know about large-scale patterns of great power conflict through history; by [End Page 30] demonstrating that the causal mechanisms it identifies did drive relatively secure major powers to military conflict in the past (and therefore that they might do so again if the world were bipolar or multipolar); and by showing that observable evidence concerning the major powers’ identity politics and grand strategies under unipolarity are consistent with the theory’s expectations. Puzzles of Power and War Recent research on the connection between the distribution of capabilities and war has concentrated on a hypothesis long central to systemic theories of power transition or hegemonic stability: that major war arises out of a power shift in favor of a rising state dissatisfied with a status quo defended by a declining satisfied state.10 Though they have garnered substantial empirical support, these theories have yet to solve two intertwined empirical and theoretical puzzles—each of which might be explained by positional concerns for status. First, if the material costs and benefits of a given status quo are what matters, why would a state be dissatisfied with the very status quo that had abetted its rise? The rise of China today naturally prompts this question, but it is hardly a novel situation. Most of the best known and most consequential power transitions in history featured rising challengers that were prospering mightily under the status quo. In case after case, historians argue that these revisionist powers sought recognition and standing rather than specific alterations to the existing rules and practices that constituted the order of the day. In each paradigmatic case of hegemonic war, the claims of the rising power are hard to reduce to instrumental adjustment of the status quo. In R. Ned Lebow’s reading, for example, Thucydides’ account tells us that the rise of Athens posed unacceptable threats not to the security or welfare of Sparta but rather to its identity as leader of the Greek world, which was an important cause of the Spartan assembly’s vote for war.11 The issues that inspired Louis XIV’s and Napoleon’s dissatisfaction with the status quo were many and varied, but most accounts accord [End Page 31] independent importance to the drive for a position of unparalleled primacy. In these and other hegemonic struggles among leading states in post-Westphalian Europe, the rising challenger’s dissatisfaction is often difficult to connect to the material costs and benefits of the status quo, and much contemporary evidence revolves around issues of recognition and status.12 Wilhemine Germany is a fateful case in point. As Paul Kennedy has argued, underlying material trends as of 1914 were set to propel Germany’s continued rise indefinitely, so long as Europe remained at peace.13 Yet Germany chafed under the very status quo that abetted this rise and its elite focused resentment on its chief trading partner—the great power that presented the least plausible threat to its security: Great Britain. At fantastic cost, it built a battleship fleet with no plausible strategic purpose other than to stake a claim on global power status.14 Recent historical studies present strong evidence that, far from fearing attacks from Russia and France, German leaders sought to provoke them, knowing that this would lead to a long, expensive, and sanguinary war that Britain was certain to join.15 And of all the motivations swirling round these momentous decisions, no serious historical account fails to register German leaders’ oft-expressed yearning for “a place in the sun.” The second puzzle is bargaining failure. Hegemonic theories tend to model war as a conflict over the status quo without specifying precisely what the status quo is and what flows of benefits it provides to states.16 Scholars generally follow Robert Gilpin in positing that the underlying issue concerns a “desire to redraft the rules by which relations among nations work,” “the nature and governance of the system,” and “the distribution of territory among the states in the system.”17 If these are the [End Page 32] issues at stake, then systemic theories of hegemonic war and power transition confront the puzzle brought to the fore in a seminal article by James Fearon: what prevents states from striking a bargain that avoids the costs of war? 18 Why can’t states renegotiate the international order as underlying capabilities distributions shift their relative bargaining power? Fearon proposed that one answer consistent with strict rational choice assumptions is that such bargains are infeasible when the issue at stake is indivisible and cannot readily be portioned out to each side. Most aspects of a given international order are readily divisible, however, and, as Fearon stressed, “both the intrinsic complexity and richness of most matters over which states negotiate and the availability of linkages and side-payments suggest that intermediate bargains typically will exist.”19 Thus, most scholars have assumed that the indivisibility problem is trivial, focusing on two other rational choice explanations for bargaining failure: uncertainty and the commitment problem.20 In the view of many scholars, it is these problems, rather than indivisibility, that likely explain leaders’ inability to avail themselves of such intermediate bargains. Yet recent research inspired by constructivism shows how issues that are physically divisible can become socially indivisible, depending on how they relate to the identities of decision makers.21 Once issues surrounding the status quo are framed in positional terms as bearing on the disputants’ relative standing, then, to the extent that they value their standing itself, they may be unwilling to pursue intermediate bargaining solutions. Once linked to status, easily divisible issues that theoretically provide opportunities for linkages and side payments of various sorts may themselves be seen as indivisible and thus unavailable as avenues for possible intermediate bargains. The historical record surrounding major wars is rich with evidence suggesting that positional concerns over status frustrate bargaining: expensive, protracted conflict over what appear to be minor issues; a propensity on the part of decision makers to frame issues in terms of relative rank even when doing so makes bargaining harder; decision-makers’ [End Page 33] inability to accept feasible divisions of the matter in dispute even when failing to do so imposes high costs; demands on the part of states for observable evidence to confirm their estimate of an improved position in the hierarchy; the inability of private bargains to resolve issues; a frequently observed compulsion for the public attainment of concessions from a higher ranked state; and stubborn resistance on the part of states to which such demands are addressed even when acquiescence entails limited material cost. The literature on bargaining failure in the context of power shifts remains inconclusive, and it is premature to take any empirical pattern as necessarily probative. Indeed, Robert Powell has recently proposed that indivisibility is not a rationalistic explanation for war after all: fully rational leaders with perfect information should prefer to settle a dispute over an indivisible issue by resorting to a lottery rather than a war certain to destroy some of the goods in dispute. What might prevent such bargaining solutions is not indivisibility itself, he argues, but rather the parties’ inability to commit to abide by any agreement in the future if they expect their relative capabilities to continue to shift.22 This is the credible commitment problem to which many theorists are now turning their attention. But how it relates to the information problem that until recently dominated the formal literature remains to be seen.23 The larger point is that positional concerns for status may help account for the puzzle of bargaining failure. In the rational choice bargaining literature, war is puzzling because it destroys some of the benefits or flows of benefits in dispute between the bargainers, who would be better off dividing the spoils without war. Yet what happens to these models if what matters for states is less the flows of material benefits themselves than their implications for relative status? The salience of this question depends on the relative importance of positional concern for status among states. Do Great Powers Care about Status? Mainstream theories generally posit that states come to blows over an international status quo only when it has implications for their security or material well-being. The guiding assumption is that a state’s satisfaction [End Page 34] with its place in the existing order is a function of the material costs and benefits implied by that status.24 By that assumption, once a state’s status in an international order ceases to affect its material wellbeing, its relative standing will have no bearing on decisions for war or peace. But the assumption is undermined by cumulative research in disciplines ranging from neuroscience and evolutionary biology to economics, anthropology, sociology, and psychology that human beings are powerfully motivated by the desire for favorable social status comparisons. This research suggests that the preference for status is a basic disposition rather than merely a strategy for attaining other goals.25 People often seek tangibles not so much because of the welfare or security they bring but because of the social status they confer. Under certain conditions, the search for status will cause people to behave in ways that directly contradict their material interest in security and/or prosperity.

#### There are hundreds of causes of conflict – hegemony deters and controls escalation by internalizing costs

Moore 4 – Dir. Center for Security Law and Professor of Law @ University of Virginia, Editor of the American Journal of International Law

(John Norton, “Solving the War Puzzle: Beyond the Democratic Peace,” pg. 41-43)

If major interstate war is predominantly a product of a synergy between a potential nondemocratic aggressor and an absence of effective deterrence, what is the role of the many traditional "causes" of war? Past, and many contemporary, theories of war have focused on the role of specific disputes between nations, ethnic and religious differences, arms races, poverty or social injustice, competition for resources, incidents and accidents, greed, fear, and perceptions of "honor," or many other such factors. Such factors may well play a role in motivating aggression or in serving as a means for generating fear and manipulating public opinion. The reality, however, is that while some of these may have more potential to contribute to war than others, there may well be an infinite set of motivating factors, or human wants, motivating aggression. It is not independent the  existence of such motivating factors for war but rather the circumstances permitting or encouraging high risk decisions leading to war that is the key to more effectively controlling war. And the same may also be true of democide. The early focus in the Rwanda slaughter on "ethnic conflict," as though Hutus and Tutsis had begun to slaughter each other through spontaneous combustion, distracted our attention from the reality that a nondemocratic Hutu regime had carefully planned and orchestrated a genocide against Rwandan Tutsis as well as its Hutu opponents.I1 Certainly if we were able to press a button and end poverty, racism, religious intolerance, injustice, and endless disputes, we would want to do so. Indeed, democratic governments must remain committed to policies that will produce a better world by all measures of human progress. The broader achievement of democracy and the rule of law will itself assist in this progress. No one, however, has yet been able to demonstrate the kind of robust correlation with any of these "traditional" causes of war as is reflected in the "democratic peace." Further, given the difficulties in overcoming many of these social problems, an approach to war exclusively dependent on their solution may be to doom us to war for generations to come. A useful framework in thinking about the war puzzle is provided in the Kenneth Waltz classic Man, the State, and War,12 first published in 1954 for the Institute of War and Peace Studies, in which he notes that previous thinkers about the causes of war have tended to assign responsibility at one of the three levels of individual psychology, the nature of the state, or the nature of the international system. This tripartite level of analysis has subsequently been widely copied in the study of international relations. We might summarize my analysis in this classical construct by suggesting that the most critical variables are the second and third levels, or "images," of analysis. Government structures, at the second level, seem to play a central role in levels of aggressiveness in high risk behavior leading to major war. In this, the "democratic peace" is an essential insight. The third level of analysis, the international system, or totality of external incentives influencing the decision for war, is also critical when government structures do not restrain such high risk behavior on their own. Indeed, nondemocratic systems may not only fail to constrain inappropriate aggressive behavior, they may even massively enable it by placing the resources of the state at the disposal of a ruthless regime elite. It is not that the first level of analysis, the individual, is unimportant. I have already argued that it is important in elite perceptions about the permissibility and feasibility of force and resultant necessary levels of deterrence. It is, instead, that the second level of analysis, government structures, may be a powerful proxy for settings bringing to power those who may be disposed to aggressive military adventures and in creating incentive structures predisposing to high risk behavior. We should keep before us, however, the possibility, indeed probability, that a war/peace model focused on democracy and deterrence might be further usefully refined by adding psychological profiles of particular leaders, and systematically applying other findings of cognitive psychology, as we assess the likelihood of aggression and levels of necessary deterrence in context. A post-Gulf War edition of Gordon Craig and Alexander George's classic, Force and Statecraft,13 presents an important discussion of the inability of the pre-war coercive diplomacy effort to get Saddam Hussein to withdraw from Kuwait without war.14 This discussion, by two of the recognized masters of deterrence theory, reminds us of the many important psychological and other factors operating at the individual level of analysis that may well have been crucial in that failure to get Hussein to withdraw without war. We should also remember that nondemocracies can have differences between leaders as to the necessity or usefulness of force and, as Marcus Aurelius should remind us, not all absolute leaders are Caligulas or Neros. Further, the history of ancient Egypt reminds us that not all Pharaohs were disposed to make war on their neighbors. Despite the importance of individual leaders, however, we should also keep before us that major international war is predominantly and critically an interaction, or synergy, of certain characteristics at levels two and three, specifically an absence of democracy and an absence of effective deterrence. Yet another way to conceptualize the importance of democracy and deterrence in war avoidance is to note that each in its own way internalizes the costs to decision elites of engaging in high risk aggressive behavior. Democracy internalizes these costs in a variety of ways including displeasure of the electorate at having war imposed upon it by its own government. And deterrence either prevents achievement of the objective altogether or imposes punishing costs making the gamble not worth the risk.I5 VI Testing the Hypothesis Theory without truth is but costly entertainment. HYPOTHESES, OR PARADIGMS, are useful if they reflect the real world better than previously held paradigms. In the complex world of foreign affairs and the war puzzle, perfection is unlikely. No general construct will fit all cases even in the restricted category of "major interstate war"; there are simply too many variables. We should insist, however, on testing against the real world and on results that suggest enhanced usefulness over other constructs. In testing the hypothesis, we can test it for consistency with major wars; that is, in looking, for example, at the principal interstate wars in the twentieth century, did they present both a nondemocratic aggressor and an absence of effective deterrence?' And although it is by itself not going to prove causation, we might also want to test the hypothesis against settings of potential wars that did not occur. That is, in nonwar settings, was there an absence of at least one element of the synergy? We might also ask questions about the effect of changes on the international system in either element of the synergy; that is, what, in general, happens when a totalitarian state makes a transition to stable democracy or vice versa? And what, in general, happens when levels of deterrence are dramatically increased or decreased?

### Warming

#### Climate change is anthropogenic and coming now – the most comprehensive data-sets are conclusive

Green 13 – Professor of Chemistry @ Michigan Tech

\*John Cook – Fellow @ Global Change Institute, produced climate communication resources adopted by organisations such as NOAA and the U.S. Navy

\*\*Dana Nuccitelli – MA in Physics @ UC-Davis

\*\*\*Mark Richardson – PhD Candidate in Meteorology, et al.,

(“Quantifying the consensus on anthropogenic global warming in the scientific literature,” Environmental Research Letters, 8.2)//BB

An accurate perception of the degree of scientific consensus is an essential element to public support for climate policy (Ding et al 2011). Communicating the scientific consensus also increases people's acceptance that climate change (CC) is happening (Lewandowsky et al 2012). Despite numerous indicators of a consensus, there is wide public perception that climate scientists disagree over the fundamental cause of global warming (GW; Leiserowitz et al 2012, Pew 2012). In the **most comprehensive analysis** performed to date, we have extended the analysis of peer-reviewed climate papers in Oreskes (2004). We examined a large sample of the scientific literature on global CC, published over a 21 year period, in order to determine the level of scientific consensus that human activity is very likely causing most of the current GW (anthropogenic global warming, or AGW).¶ Surveys of climate scientists have found strong agreement (97–98%) regarding AGW amongst publishing climate experts (Doran and Zimmerman 2009, Anderegg et al 2010). Repeated surveys of scientists found that scientific agreement about AGW steadily increased from 1996 to 2009 (Bray 2010). This is reflected in the increasingly definitive statements issued by the Intergovernmental Panel on Climate Change on the attribution of recent GW (Houghton et al 1996, 2001, Solomon et al 2007).¶ The peer-reviewed scientific literature provides a ground-level assessment of the degree of consensus among publishing scientists. An analysis of abstracts published from 1993–2003 matching the search 'global climate change' found that none of 928 papers disagreed with the consensus position on AGW (Oreskes 2004). This is consistent with an analysis of citation networks that found a consensus on AGW forming in the early 1990s (Shwed and Bearman 2010).¶ Despite these independent indicators of a scientific consensus, the perception of the US public is that the scientific community still disagrees over the fundamental cause of GW. From 1997 to 2007, public opinion polls have indicated around 60% of the US public believes there is significant disagreement among scientists about whether GW was happening (Nisbet and Myers 2007). Similarly, 57% of the US public either disagreed or were unaware that scientists agree that the earth is very likely warming due to human activity (Pew 2012).¶ Through analysis of climate-related papers published from 1991 to 2011, this study provides the most comprehensive analysis of its kind to date in order to quantify and evaluate the level and evolution of consensus over the last two decades.¶ 2. Methodology¶ This letter was conceived as a 'citizen science' project by volunteers contributing to the Skeptical Science website (www.skepticalscience.com). In March 2012, we searched the ISI Web of Science for papers published from 1991–2011 using topic searches for 'global warming' or 'global climate change'. Article type was restricted to 'article', excluding books, discussions, proceedings papers and other document types. The search was updated in May 2012 with papers added to the Web of Science up to that date.¶ We classified each abstract according to the type of research (category) and degree of endorsement. Written criteria were provided to raters for category (table 1) and level of endorsement of AGW (table 2). Explicit endorsements were divided into non-quantified (e.g., humans are contributing to global warming without quantifying the contribution) and quantified (e.g., humans are contributing more than 50% of global warming, consistent with the 2007 IPCC statement that most of the global warming since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations).¶ Table 1. Definitions of each type of research category.¶ Category Description Example¶ (1) Impacts Effects and impacts of climate change on the environment, ecosystems or humanity '...global climate change together with increasing direct impacts of human activities, such as fisheries, are affecting the population dynamics of marine top predators'¶ (2) Methods Focus on measurements and modeling methods, or basic climate science not included in the other categories 'This paper focuses on automating the task of estimating Polar ice thickness from airborne radar data...'¶ (3) Mitigation Research into lowering CO2 emissions or atmospheric CO2 levels 'This paper presents a new approach for a nationally appropriate mitigation actions framework that can unlock the huge potential for greenhouse gas mitigation in dispersed energy end-use sectors in developing countries'¶ (4) Not climate-related Social science, education, research about people's views on climate 'This paper discusses the use of multimedia techniques and augmented reality tools to bring across the risks of global climate change'¶ (5) Opinion Not peer-reviewed articles 'While the world argues about reducing global warming, chemical engineers are getting on with the technology. Charles Butcher has been finding out how to remove carbon dioxide from flue gas'¶ (6) Paleoclimate Examining climate during pre-industrial times 'Here, we present a pollen-based quantitative temperature reconstruction from the midlatitudes of Australia that spans the last 135 000 years...'¶ Table 2. Definitions of each level of endorsement of AGW.¶ Level of endorsement Description Example¶ (1) Explicit endorsement with quantification Explicitly states that humans are the primary cause of recent global warming 'The global warming during the 20th century is caused mainly by increasing greenhouse gas concentration especially since the late 1980s'¶ (2) Explicit endorsement without quantification Explicitly states humans are causing global warming or refers to anthropogenic global warming/climate change as a known fact 'Emissions of a broad range of greenhouse gases of varying lifetimes contribute to global climate change'¶ (3) Implicit endorsement Implies humans are causing global warming. E.g., research assumes greenhouse gas emissions cause warming without explicitly stating humans are the cause '...carbon sequestration in soil is important for mitigating global climate change'¶ (4a) No position Does not address or mention the cause of global warming ¶ (4b) Uncertain Expresses position that human's role on recent global warming is uncertain/undefined 'While the extent of human-induced global warming is inconclusive...'¶ (5) Implicit rejection Implies humans have had a minimal impact on global warming without saying so explicitly E.g., proposing a natural mechanism is the main cause of global warming '...anywhere from a major portion to all of the warming of the 20th century could plausibly result from natural causes according to these results'¶ (6) Explicit rejection without quantification Explicitly minimizes or rejects that humans are causing global warming '...the global temperature record provides little support for the catastrophic view of the greenhouse effect'¶ (7) Explicit rejection with quantification Explicitly states that humans are causing less than half of global warming 'The human contribution to the CO2 content in the atmosphere and the increase in temperature is negligible in comparison with other sources of carbon dioxide emission'¶ Abstracts were randomly distributed via a web-based system to raters with only the title and abstract visible. All other information such as author names and affiliations, journal and publishing date were hidden. Each abstract was categorized by two independent, anonymized raters. A team of 12 individuals completed 97.4% (23 061) of the ratings; an additional 12 contributed the remaining 2.6% (607). Initially, 27% of category ratings and 33% of endorsement ratings disagreed. Raters were then allowed to compare and justify or update their rating through the web system, while maintaining anonymity. Following this, 11% of category ratings and 16% of endorsement ratings disagreed; these were then resolved by a third party.¶ Upon completion of the final ratings, a random sample of 1000 'No Position' category abstracts were re-examined to differentiate those that did not express an opinion from those that take the position that the cause of GW is uncertain. An 'Uncertain' abstract explicitly states that the cause of global warming is not yet determined (e.g., '...the extent of human-induced global warming is inconclusive...') while a 'No Position' abstract makes no statement on AGW.¶ To complement the abstract analysis, email addresses for 8547 authors were collected, typically from the corresponding author and/or first author. For each year, email addresses were obtained for at least 60% of papers. Authors were emailed an invitation to participate in a survey in which they rated their own published papers (the entire content of the article, not just the abstract) with the same criteria as used by the independent rating team. Details of the survey text are provided in the supplementary information (available at stacks.iop.org/ERL/8/024024/mmedia).¶ 3. Results¶ The ISI search generated 12 465 papers. Eliminating papers that were not peer-reviewed (186), not climate-related (288) or without an abstract (47) reduced the analysis to 11 944 papers written by 29 083 authors and published in 1980 journals. To simplify the analysis, ratings were consolidated into three groups: endorsements (including implicit and explicit; categories 1–3 in table 2), no position (category 4) and rejections (including implicit and explicit; categories 5–7).¶ We examined four metrics to quantify the level of endorsement:¶ (1) The percentage of endorsements/rejections/undecideds among all abstracts.¶ (2) The percentage of endorsements/rejections/undecideds among only those abstracts expressing a position on AGW.¶ (3) The percentage of scientists authoring endorsement/ rejection abstracts among all scientists.¶ (4) The same percentage among only those scientists who expressed a position on AGW (table 3).¶ Table 3. Abstract ratings for each level of endorsement, shown as percentage and total number of papers.¶ Position % of all abstracts % among abstracts with AGW position (%) % of all authors % among authors with AGW position (%)¶ Endorse AGW 32.6% (3896) 97.1 34.8% (10 188) 98.4¶ No AGW position 66.4% (7930) — 64.6% (18 930) —¶ Reject AGW 0.7% (78) 1.9 0.4% (124) 1.2¶ Uncertain on AGW 0.3% (40) 1.0 0.2% (44) 0.4¶ 3.1. Endorsement percentages from abstract ratings¶ Among abstracts that expressed a position on AGW, 97.1% endorsed the scientific consensus. Among scientists who expressed a position on AGW in their abstract, 98.4% endorsed the consensus.¶ The time series of each level of endorsement of the consensus on AGW was analyzed in terms of the number of abstracts (figure 1(a)) and the percentage of abstracts (figure 1(b)). Over time, the no position percentage has increased (simple linear regression trend 0.87% ± 0.28% yr−1, 95% CI, R2 = 0.66,p < 0.001) and the percentage of papers taking a position on AGW has equally decreased.¶ Reset¶ Figure 1. (a) Total number of abstracts categorized into endorsement, rejection and no position. (b) Percentage of endorsement, rejection and no position/undecided abstracts. Uncertain comprise 0.5% of no position abstracts.¶ Export PowerPoint slide¶ Download figure: Standard (154 KB)High-resolution (248 KB)¶ The average numbers of authors per endorsement abstract (3.4) and per no position abstract (3.6) are both significantly larger than the average number of authors per rejection abstract (2.0). The scientists originated from 91 countries (identified by email address) with the highest representation from the USA (N = 2548) followed by the United Kingdom (N = 546), Germany (N = 404) and Japan (N = 379) (see supplementary table S1 for full list, available at stacks.iop.org/ERL/8/024024/mmedia).¶ 3.2. Endorsement percentages from self-ratings¶ We emailed 8547 authors an invitation to rate their own papers and received 1200 responses (a 14% response rate). After excluding papers that were not peer-reviewed, not climate-related or had no abstract, 2142 papers received self-ratings from 1189 authors. The self-rated levels of endorsement are shown in table 4. Among self-rated papers that stated a position on AGW, 97.2% endorsed the consensus. Among self-rated papers not expressing a position on AGW in the abstract, 53.8% were self-rated as endorsing the consensus. Among respondents who authored a paper expressing a view on AGW, 96.4% endorsed the consensus.¶ Table 4. Self-ratings for each level of endorsement, shown as percentage and total number of papers.¶ Position % of all papers % among papers with AGW position (%) % of respondents % among respondents with AGW position (%)¶ Endorse AGWa 62.7% (1342) 97.2 62.7% (746) 96.4¶ No AGW positionb 35.5% (761) — 34.9% (415) —¶ Reject AGWc 1.8% (39) 2.8 2.4% (28) 3.6¶ aSelf-rated papers that endorse AGW have an average endorsement rating less than 4 (1 =explicit endorsement with quantification, 7 = explicit rejection with quantification). bUndecided self-rated papers have an average rating equal to 4. cRejection self-rated papers have an average rating greater than 4.¶ Figure 2(a) shows the level of self-rated endorsement in terms of number of abstracts (the corollary to figure 1(a)) and figure 2(b) shows the percentage of abstracts (the corollary to figure 1(b)). The percentage of self-rated rejection papers decreased (simple linear regression trend −0.25% ± 0.18% yr−1, 95% CI, R2 = 0.28,p = 0.01, figure 2(b)). The time series of self-rated no position and consensus endorsement papers both show no clear trend over time.¶ Reset¶ Figure 2. (a) Total number of endorsement, rejection and no position papers as self-rated by authors. Year is the published year of each self-rated paper. (b) Percentage of self-rated endorsement, rejection and no position papers.¶ Export PowerPoint slide¶ Download figure: Standard (149 KB)High-resolution (238 KB)¶ A direct comparison of abstract rating versus self-rating endorsement levels for the 2142 papers that received a self-rating is shown in table 5. More than half of the abstracts that we rated as 'No Position' or 'Undecided' were rated 'Endorse AGW' by the paper's authors.¶ Table 5. Comparison of our abstract rating to self-rating for papers that received self-ratings.¶ Position Abstract rating Self-rating¶ Endorse AGW 791 (36.9%) 1342 (62.7%)¶ No AGW position or undecided 1339 (62.5%) 761 (35.5%)¶ Reject AGW 12 (0.6%) 39 (1.8%)¶ Figure 3 compares the percentage of papers endorsing the scientific consensus among all papers that express a position endorsing or rejecting the consensus. The year-to-year variability is larger in the self-ratings than in the abstract ratings due to the smaller sample sizes in the early 1990s. The percentage of AGW endorsements for both self-rating and abstract-rated papers increase marginally over time (simple linear regression trends 0.10 ± 0.09% yr−1, 95% CI, R2 = 0.20,p = 0.04 for abstracts, 0.35 ± 0.26% yr−1, 95% CI, R2 = 0.26,p = 0.02 for self-ratings), with both series approaching approximately 98% endorsements in 2011.¶ Reset¶ Figure 3. Percentage of papers endorsing the consensus among only papers that express a position endorsing or rejecting the consensus.¶ Export PowerPoint slide¶ Download figure: Standard (83 KB)High-resolution (128 KB)¶ 4. Discussion¶ Of note is the large proportion of abstracts that state no position on AGW. This result is expected in consensus situations where scientists '...generally focus their discussions on questions that are still disputed or unanswered rather than on matters about which everyone agrees' (Oreskes 2007, p 72). This explanation is also consistent with a description of consensus as a 'spiral trajectory' in which 'initially intense contestation generates rapid settlement and induces a spiral of new questions' (Shwed and Bearman 2010); the fundamental science of AGW is no longer controversial among the publishing science community and the remaining debate in the field has moved to other topics. This is supported by the fact that more than half of the self-rated endorsement papers did not express a position on AGW in their abstracts.¶ The self-ratings by the papers' authors provide insight into the nature of the scientific consensus amongst publishing scientists. For both self-ratings and our abstract ratings, the percentage of endorsements among papers expressing a position on AGW marginally increased over time, consistent with Bray (2010) in finding a strengthening consensus.¶ 4.1. Sources of uncertainty¶ The process of determining the level of consensus in the peer-reviewed literature contains several sources of uncertainty, including the representativeness of the sample, lack of clarity in the abstracts and subjectivity in rating the abstracts.¶ We address the issue of representativeness by selecting the largest sample to date for this type of literature analysis. Nevertheless, 11 944 papers is only a fraction of the climate literature. A Web of Science search for 'climate change' over the same period yields 43 548 papers, while a search for 'climate' yields 128 440 papers. The crowd-sourcing techniques employed in this analysis could be expanded to include more papers. This could facilitate an approach approximating the methods of Doran and Zimmerman (2009), which measured the level of scientific consensus for varying degrees of expertise in climate science. A similar approach could analyze the level of consensus among climate papers depending on their relevance to the attribution of GW.¶ Another potential area of uncertainty involved the text of the abstracts themselves. In some cases, ambiguous language made it difficult to ascertain the intended meaning of the authors. Naturally, a short abstract could not be expected to communicate all the details of the full paper. The implementation of the author self-rating process allowed us to look beyond the abstract. A comparison between self-ratings and abstract ratings revealed that categorization based on the abstract alone underestimates the percentage of papers taking a position on AGW.¶ Lastly, some subjectivity is inherent in the abstract rating process. While criteria for determining ratings were defined prior to the rating period, some clarifications and amendments were required as specific situations presented themselves. Two sources of rating bias can be cited: first, given that the raters themselves endorsed the scientific consensus on AGW, they may have been more likely to classify papers as sharing that endorsement. Second, scientific reticence (Hansen 2007) or 'erring on the side of least drama' (ESLD; Brysse et al 2012) may have exerted an opposite effect by biasing raters towards a 'no position' classification. These sources of bias were partially addressed by the use of multiple independent raters and by comparing abstract rating results to author self-ratings. A comparison of author ratings of the full papers and abstract ratings reveals a bias toward an under-counting of endorsement papers in the abstract ratings (mean difference 0.6 in units of endorsement level). This mitigated concerns about rater subjectivity, but suggests that scientific reticence and ESLD remain possible biases in the abstract ratings process. The potential impact of initial rating disagreements was also calculated and found to have minimal impact on the level of consensus (see supplemental information, section S1 available at stacks.iop.org/ERL/8/024024/mmedia).¶ 4.2. Comparisons with previous studies¶ Our sample encompasses those surveyed by Oreskes (2004) and Schulte (2008) and we can therefore directly compare the results. Oreskes (2004) analyzed 928 papers from 1993 to 2003. Over the same period, we found 932 papers matching the search phrase 'global climate change' (papers continue to be added to the ISI database). From that subset we eliminated 38 papers that were not peer-reviewed, climate-related or had no abstract. Of the remaining 894, none rejected the consensus, consistent with Oreskes' result. Oreskes determined that 75% of papers endorsed the consensus, based on the assumption that mitigation and impact papers implicitly endorse the consensus. By comparison, we found that 28% of the 894 abstracts endorsed AGW while 72% expressed no position. Among the 71 papers that received self-ratings from authors, 69% endorse AGW, comparable to Oreskes' estimate of 75% endorsements.¶ An analysis of 539 'global climate change' abstracts from the Web of Science database over January 2004 to mid-February 2007 found 45% endorsement and 6% rejection (Schulte 2008). Our analysis over a similar period (including all of February 2007) produced 529 papers—the reason for this discrepancy is unclear as Schulte's exact methodology is not provided. Schulte estimated a higher percentage of endorsements and rejections, possibly because the strict methodology we adopted led to a greater number of 'No Position' abstracts. Schulte also found a significantly greater number of rejection papers, including 6 explicit rejections compared to our 0 explicit rejections. See the supplementary information (available at stacks.iop.org/ERL/8/024024/mmedia) for a tabulated comparison of results. Among 58 self-rated papers, only one (1.7%) rejected AGW in this sample. Over the period of January 2004 to February 2007, among 'global climate change' papers that state a position on AGW, we **found 97% endorsements**.¶ 5. Conclusion¶ The public perception of a scientific consensus on AGW is a necessary element in public support for climate policy (Ding et al 2011). However, there is a significant gap between public perception and reality, with 57% of the US public either disagreeing or unaware that scientists overwhelmingly agree that the earth is warming due to human activity (Pew 2012).¶ Contributing to this 'consensus gap' are **campaigns** designed to **confuse the public** about the level of agreement among climate scientists. In 1991, Western Fuels Association conducted a $510 000 campaign whose primary goal was to 'reposition global warming as theory (not fact)'. A key strategy involved constructing the impression of active scientific debate using dissenting scientists as spokesmen (Oreskes 2010). The situation is exacerbated by media treatment of the climate issue, where the normative practice of providing opposing sides with equal attention has allowed a vocal minority to have their views amplified (Boykoff and Boykoff 2004). While there are indications that the situation has improved in the UK and USA prestige press (Boykoff 2007), the UK tabloid press showed no indication of improvement from 2000 to 2006 (Boykoff and Mansfield 2008).¶ The narrative presented by some dissenters is that the scientific consensus is '...on the point of collapse' (Oddie 2012) while '...the number of scientific "heretics" is growing with each passing year' (Allègre et al 2012). A **systematic**, **comprehensive** review of the literature provides quantitative evidence countering this assertion. The number of papers rejecting AGW is a miniscule proportion of the published research, with the percentage slightly **decreasing over time**. Among papers expressing a position on AGW, an overwhelming percentage (97.2% based on self-ratings, 97.1% based on abstract ratings) endorses the scientific consensus on AGW.

#### Status quo is insufficient to solve for warming – it causes war and instability without drastic changes

Stern 14 – Professor of Economics, chair of the Grantham Research Institute on Climate Change and the Environment at the LSE

(Nicholas, “Climate change is here now and it could lead to global conflict,” The Guardian, http://www.theguardian.com/environment/2014/feb/13/storms-floods-climate-change-upon-us-lord-stern)//BB

If we do not cut emissions, we face even more devastating consequences, as unchecked they could raise global average temperature to 4C or more above pre-industrial levels by the end of the century.¶ This would be far above the threshold warming of 2C that countries have already agreed that it would be dangerous to breach. The average temperature has not been 2C above pre-industrial levels for about 115,000 years, when the ice-caps were smaller and global sea level was at least five metres higher than today.¶ The shift to such a world could cause mass migrations of hundreds of millions of people away from the worst-affected areas. That would lead to conflict and war, not peace and prosperity.¶ In fact, the risks are even bigger than I realised when I was working on the review of the economics of climate change for the UK government in 2006. Since then, annual greenhouse gas emissions have increased steeply and some of the impacts, such as the decline of Arctic sea ice, have started to happen much more quickly.¶ We also underestimated the potential importance of strong feedbacks, such as the thawing of the permafrost to release methane, a powerful greenhouse gas, as well as tipping points beyond which some changes in the climate may become effectively irreversible.¶ What we have experienced so far is surely small relative to what could happen in the future. We should remember that the last time global temperature was 5C different from today, the Earth was gripped by an ice age.¶ So the risks are immense and can only be sensibly managed by reducing greenhouse gas emissions, which will require a new low-carbon industrial revolution.¶ History teaches us how quickly industrial transformations can occur through waves of technological development, such as the introduction of electricity, based on innovation and discovery.¶ We are already seeing low-carbon technologies being deployed across the world, but further progress will require investment and facing up to the real prices of energy, including the very damaging emissions from fossil fuels.¶ Unfortunately, the current pace of progress is not nearly rapid enough, with many rich industrialised countries being slow to make the transition to cleaner and more efficient forms of economic growth.

#### US offshore wind development curbs carbon emissions – creates globalized modeling of renewables and generates 4 times the worlds needed electricity

Thaler 12 - Professor of Energy Policy, Law & Ethics

(Jeff, “FIDDLING AS THE WORLD BURNS: HOW CLIMATE CHANGE URGENTLY REQUIRES A PARADIGM SHIFT IN THE PERMITTING OF RENEWABLE ENERGY PROJECTS,” 42 Environmental Law Journal 1101)//BB

Unfortunately, as the economic and health costs from fossil fuel emissions have grown so too has the byzantine labyrinth of laws and regulations to be navigated before a renewable energy project can be approved, let alone financed and developed. 6 The root cause goes back to the 1970s when some of our fundamental environmental laws were enacted, before we were aware of climate change threats, to slow down the review of proposed projects by requiring more studies of potential project impacts before approval.7 But in our increasingly carbon-based 21st century, we need a paradigm shift. While achieving important goals, those federal laws and regulations, and similar ones at the state and local levels, have become so unduly burdensome, slow, and expensive that they will chill investment in, and kill any significant growth of, renewable carbon-free energy sources and projects, thereby imposing huge economic, environmental and social costs upon both our country and the world8 unless they are substantially changed. Indeed, by 2050 the U.S. must reduce its greenhouse gas emissions by 80% to even stabilize atmospheric levels of carbon, and can do so by increasing generated electricity from renewable sources from the current thirteen percent up to eighty percent9-- but only if there are targeted new policy efforts to accelerate, fifty times faster than since 1990, implementation of clean, renewable energy sources.10 Thus, Part II focuses on one promising technology to demonstrate the flaws in its current licensing permitting regimes, and makes concrete recommendations for reform.11 Wind power generation from onshore installations is proven, generates no GHGs and consumes no water,12 is increasingly cost-competitive with most fossil fuel sources, and can be employed relatively quickly in many parts of the United States and world. Offshore wind power is a relatively newer technology, especially deep-water floating projects, and presently less cost-competitive than onshore wind. However, because wind speeds are on average about ninety percent stronger and more consistent over water than over land, with higher power densities and lower shear and turbulence,13 America’s offshore resources can provide more than our current electricity use.14 Moreover, these resources are near many majorcities that are home to much of the population and electricity demand thereby “reducing the need for new high-voltage transmission from the Midwest and Great Plains to serve coastal lands…”15 Therefore, in light Part II’s spotlight on literally dozens of different federal (yet alone state and local) statutes and their hundreds of regulations standing between an offshore wind project applicant and construction, Part III makes concrete statutory and regulatory recommendations to much more quickly enable the full potential of offshore wind energy to become a reality before it is too late. Greenhouse gases (GHGs) trap heat in the atmosphere; the primary GHG emitted by human activities is carbon dioxide (CO2), which in 2012 represented 84 percent of all human-sourced U.S. GHG emissions.16 “The combustion of fossil fuels to generate electricity is the largest single source of CO2 emissions in the nation, accounting for about 40% of total U.S. CO2 emissions and 33% of total U.S. greenhouse gas emissions in 2009.”17 The significant increased concentrations of GHGs into our atmosphere since the 1750 Industrial Revolution began greater use of fossil fuel sources have caused our world to warm and climate to change.18 Climate change may be the single greatest threat to human society and wildlife, as well as to the ecosystems upon which each depends for survival.19 In 1992, the U.S. signed and ratified the United Nations Framework Convention on Climate Change (UNFCC), whose stated objective was: “[s]tabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”20 In 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that it is “very likely,” at least ninety percent certain, that humans are responsible for most of the “unequivocal” increases in globally averaged temperatures of the previous fifty years. 21 Yet in the twenty years since the UNFCCC, it also is unequivocal that GHG levels have not stabilized but continue to grow, ecosystems and food production have not been able to adapt, and our heavy reliance on fossil-fueled energy continues “dangerous anthropogenic interference with the climate system.”22 Equally unequivocal is that 2011 global temperatures were “the tenth highest on record and [were] higher than any previous year with a La Nina event, which [normally] has a relative cooling influence”; “the warmest 13 years of average global temperatures [also] have all occurred in the 15 years since 1997.”23 Global emissions of carbon dioxide also jumped 5.9% in 2010 by the largest amount on record -- 500 million extra tons of carbon was pumped into the air, “the largest absolute jump in any year since the Industrial Revolution [began in 1750], and the largest percentage increase since 2003.”24 In order to even have a fifty-fifty chance that the average global temperature will not rise more than 2° C25 beyond the temperature of 1750,26 our cumulative emissions of CO2 after 1750 must not exceed one trillion tons; but by mid-July 2012 we had already emitted over 559 billion tons and rising, and at current rates will emit the trillionth ton in July 2043.27 The consequence is that “the current generation are uniquely placed in human history: the choices we make now—in the next 10-20 years—will alter the destiny of our species (let alone every other species) unalterably, and forever.”28 Unfortunately, by the end of 2011 the more than 10,000 government and U.N. officials from all over the world attending the Durban climate change conference29 agreed that there is a “significant gap between the aggregate effect of Parties’ mitigation pledges in terms of global annual emissions of greenhouse gases by 2020 and aggregate emission pathways consistent with having a likely chance of holding the increase in global average temperature below 2 °C or 1.5 °C above pre-industrial levels.”30 What are some of the growing economic, public health, and environmental costs to our country proximately31 caused by our daily burning of fossil fuels? The National Research Council (NRC) analyzed the "hidden" costs of energy production and use not reflected in market prices of coal, oil, other energy sources, or the electricity and gasoline produced from them. For the year 2005 alone, the NRC estimated $120 billion of damages to the U.S. from fossil fuel energy, reflecting primarily health damages from air pollution associated with electricity generation and motor vehicle transportation. Of that total, $62 billion was due to coal-fired electricity generation; $56 billion from ground transportation (oil-petroleum); and over $2.1 billion from electricity from and heating with natural gas. The $120 billion figure did not include damages from climate change, harm to ecosystems and infrastructure, insurance costs, effects of some air pollutants, and risks to national security, which the NRC examined but did not specifically monetize. 32 The NRC did, however, suggest that under some scenarios climate damages from energy use could equal $120 billion.33 Thus, adding natural resource damages from harm to ecosystems, infrastructure damages, insurance costs, air pollutant costs, and fossil-fueled national security costs to $240 billion, our burning of fossil fuels appears to be costing Americans about $300 billion each year—a “hidden” number likely to be larger in the future. What does the future hold for a carbon-stressed world? Most scientific analyses presently predict that by 2050 the Earth may warm by 2 to 2.5° C due to the rising level of greenhouse gases in the atmosphere; at the high-end of projections, the 2050 warming could exceed 4.5° C.34 But those increases are not consistent globally; rather, “[i]n all possible [predicted] outcomes, the warming over land would be roughly twice the global average, and the warming in the Arctic greater still.”35 For example, the NRC expects that each degree Celsius increase will produce in the U.S. double to quadruple the area burned by wildfires in the western U.S.; a 5-15 percent reduction in crop yields; more destructive power from hurricanes; greater risk of very hot summers; and more changes in precipitation frequency and amounts.36 Globally, a summary of studies predicts that a 1°C global average temperature rise will reduce Arctic sea ice by an annual average of fifteen percent and by twenty-five percent in Septembers 37; at 2°C Europe suffers greater heat waves, the Greenland Ice Sheet significantly melts, and many land and marine species are driven to extinction; at 3°C the Amazon suffers severe drought and resultant firestorms that will release significantly more carbon into the atmosphere38; at 4°C hundreds of billions of tons of carbon in permafrost melt, releasing methane in immense quantities, while the Arctic Ocean ice cap disappears and Europe suffers greater droughts.39 To presently assess what a 5°C rise will mean, we must look back into geological time, 55 million years ago, when the Earth abruptly experienced dramatic global warming due to the release of methane hydrates--a substance presently found on subsea continental shelves. Fossils demonstrate that crocodiles were in the Canadian high Arctic, breadfruit trees were growing on the coast of Greenland, and the Arctic Ocean saw water temperatures of 20 °C within 200km of the North Pole itself.40 And a 6°C average rise takes us even further back, to the end of the Permian period, 251 million years ago, when up to 95% of species relatively abruptly became extinct.41 This may sound extreme, but the International Energy Administration warned this year that the 6°C mark is in reach by 2050 at current rates of fossil fuel usage.42 However, even given the severity of these forecasts, many still question the extent that our climate is changing,43 and thus reject moving away from our largely fossil-fueled electricity, transportation and heating sources. Therefore, in this next subsection I provide the latest scientific data documenting specific climate impacts to multiple parts of U.S. and global daily lives, and the costly consequences that establish the urgency for undertaking the major regulatory reforms I recommend in Part III of this Article. B. Specific Climate Threats and Consequences 1. When Weather Extremes Increase A 2011 IPCC Special Report predicted that it is virtually certain [99-100% probability] that increases in the frequency of warm daily temperature extremes and decreases in cold extremes will occur throughout the 21st century on a global scale. It is very likely [90% to 100% probability] that heat waves will increase in length, frequency, and/or intensity over most land areas…. It is very likely that average sea level rise will contribute to upward trends in extreme sea levels and extreme coastal high water levels. 44 Similarly, a House of Representatives Committee report (ACESA Report) found that “[t]here is a broad scientific consensus that the United States is vulnerable to weather hazards that will be exacerbated by climate change.”45 It also found that the “cost of damages from weather disasters has increased markedly from the 1980s, rising to more than $100 billion in 2007. In addition to a rise in total cost, the frequency of weather disasters costing more than one billion dollars has increased."46 In 2011, the U.S. faced the most billion-dollar climate disasters ever, with fourteen distinct disasters alone costing at least $53 billion to our economy.47 In the first six months of 2012 in the U.S., there were more than 40,000 hot temperature records, horrendous wildfires, major droughts, oppressive heat waves, major flooding, and a powerful derecho wind storm.48 The IPCC Fourth Assessment Report identified impacts from growing weather hazards upon public health to include: more frequent and more intense heat waves; more people suffering death, disease and injury from floods, storms, fires, and droughts; increased cardio-respiratory morbidity and mortality associated with ground-level ozone pollution; changes in the range of some infectious disease carriers spreading, for example, malaria and the West Nile virus; and increased malnutrition and consequent disorders.49 As noted above, $120 billion per year of the NRC’s Hidden Energy report’s damage assessment were based on health damages,50 including an additional 10,000-20,000 deaths per year.51 And by 2050, cumulative heat-related deaths from unabated climate change are predicted to be an additional 33,000 in the forty largest U.S. cities, with more than 150,000 additional deaths by 2100.52 Weather extremes also threaten our national security, whose policy is premised on stability. In 2007 the CNA Corporation’s report National Security and the Threat of Climate Change described climate change as a “threat multiplier for instability” and warned that p]rojected climate change poses a serious threat to America's national security. The predicted effects of climate change over the coming decades include extreme weather events, drought, flooding, sea level rise, retreating glaciers, habitat shifts, and the increased spread of life-threatening diseases. These conditions have the potential to disrupt our way of life and to force changes in the way we keep ourselves safe and secure.53 The following year, in the first-ever U.S. government analysis of climate change security threats, the National Intelligence Council issued an assessment warning, in part, that climate change could threaten U.S. security by leading to political instability, mass movements of refugees, terrorism, and conflicts over water and other resources.54 2. When Frozen Water Melts In 2007 the IPCC predicted that sea levels would rise by 8 to 24 inches above current levels by 2100; since then, however, numerous scientists and studies have suggested that the 2007 prediction is already out-of-date and that sea levels will likely rise up to 1.4 meters (55 inches) given upwardly trending CO2 emissions.55 The 2009 ACESA Report found that rising sea levels are already causing inundation of low-lying lands, corrosion of wetlands and beaches, exacerbation of storm surges and flooding, and increases in the salinity of coastal estuaries and aquifers…. Further, about one billion people live in areas within 75 feet elevation of today's sea level, including many US cities on the East Coast and Gulf of Mexico, almost all of Bangladesh, and areas occupied by more than 250 million people in China.56 This year NASA’s Chief Scientist testified to Congress that two-thirds of sea level rise from the last three decades is derived from the Greenland and Antarctic ice sheets and the melting Arctic region, then warned: [t]he West Antarctic ice sheet (WAIS), an area about the size of the states of Texas and Oklahoma combined….contains the equivalent of 3.3 m of sea level, and all that ice rests on a soft-bed that lies below sea level. In this configuration, as warm seawater melts the floating ice shelves, causing them to retreat and the glaciers that feed them to speed up, there is no mechanism to stop the retreat and associated discharge, if warming continues. Thus the WAIS exhibits great potential for substantial and relatively rapid contributions to sea level rise. … In Greenland, the situation is not as dramatic, since the bed that underlies most of the ice is not below sea level, and the potential for unabated retreat is limited to a few outlet glaciers. In Greenland, however, summer air temperatures are warmer and closer to ice’s melting point, and we have observed widespread accumulation of meltwater in melt ponds on the ice sheet surface..57 In the West Antarctic ice sheet region, glacier retreat appears to be widespread, as the air has “warmed by nearly 6°F since 1950.”58 As for Greenland’s Ice Sheet, it also is at greater risk than the IPCC had thought. Recent studies with more complete modeling suggest that the warming threshold leading to an essentially ice-free state is not the previous estimate of an additional 3.1°C, but only 1.6°C. Thus, the 2°C target may be insufficient to prevent loss of much of the Ice Sheet and resultant significant sea level rise.59 The ACESA Report also identified the Arctic as “one of the hotspots of global warming”60 because “[o]ver the past 50 years average temperatures in the Arctic have increased as much as 7 °F, five times the global average.”61 Moreover, in “2007, a record 386,000 square miles of Arctic sea ice melted away, an area larger than Texas and Arizona combined and as big a decline in one year as had occurred over the previous decade”.62 “Arctic sea ice is melting faster than climate models [had] predict[ed], and is about thirty years ahead” of the 2007 IPCC predictions, thus heading toward the Arctic Ocean being ice-free in the late summer beginning sometime between 2020 and 2037.63 How is the Arctic’s plight linked to non-Arctic impacts? “The Arctic region arguably has the greatest concentration of potential tipping elements in the Earth system, including Arctic sea ice, the Greenland ice sheet, North Atlantic deep-water formation regions, boreal forests, permafrost and marine methane hydrates.”64 Additionally: Warming of the Arctic region is proceeding at three times the global average….Loss of Arctic sea ice has been tentatively linked to extreme cold winters in Europe… Near complete loss of the summer sea ice, as forecast for the middle of this century, if not before, will probably have knock-on effects for the northern mid-latitudes, shifting jet streams and storm tracks.65 Since 1980, sea levels have been rising three to four times faster than the global average between Cape Hatteras, N.C. and Boston.66 “[P]ast and future global warming more than doubles the estimated odds of ‘century’ or worse floods occurring within the next 18 years” for most coastal U.S. locations.67 Although land-based glacier melts are not major contributors to sea level rise, they do impact peoples’ food and water supplies. Virtually all of the world's glaciers, which store seventy-five percent of the world’s freshwater, are receding in direct response to global warming, aggravating already severe water scarcity--both in the United States and abroad.68 While over fifteen percent of the world population currently relies on melt water from glaciers and snow cover for drinking water and irrigation for agriculture, the IPCC projects a sixty percent volume loss in glaciers in various regions and widespread reductions in snow cover throughout the twenty-first century.69 Likewise, snowpack has been decreasing, and it is expected that snow cover duration will significantly decrease in eastern and western North America and Scandinavia by 2020, and globally by 2080.70 Climate change thus increases food insecurity by reducing yields of grains, such as corn and wheat, from increased water scarcity and intensification of severe hot conditions, thereby causing corn price volatility to sharply increase.71 Globally, the number of people living in "severely stressed" river basins will increase “by one to two billion people in the 2050s”…About two-thirds of the global land area is expected to experience increased water stress”.72 3. When Liquid Water Warms Over the past century, oceans, which cover seventy percent of the Earth’s surface, are warming. Global sea-surface temperature has increased about 1.3°F, while the heat has also penetrated almost two miles into the deep ocean.73 This increased warming is contributing to the destruction of seagrass meadows, causing an annual release back into the environment of 299 million tons of carbon.74 Elevated atmospheric carbon dioxide concentrations also are leading to higher absorption of CO2 into the upper ocean, making the surface waters more acidic (lower Ph).75 “[O]cean chemistry currently is changing at least 100 times more rapidly than it has changed during the 650,000 years preceding our [fossil-fueled] industrial era.”76 The acidification has serious implications for the calcification rates of organisms and plants living at all levels within the global ocean. Coral reefs, the habitat for about a quarter of (over a million ) of marine species, are collapsing, endangering more than a third of all coral species77; indeed, temperature thresholds for the majority of coral reefs worldwide are expected to be exceeded, causing mass bleaching and complete coral mortality.78 “[T]he productivity of plankton, krill, and marine snails, which compose the base of the ocean food-chain, [also] declines as the ocean acidifies,”79 adversely impacting populations of everything from whales to salmon80-- who also are being harmed by the oceans’ warming up. 81 Extinctions from climate change also are expected to be significant and widespread. The IPCC Fourth Assessment found that “approximately 20-30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperature exceed 1.5-2.5°C82—a range likely to be exceeded in the coming decades. “[R]ecent studies have linked global warming to declines in such [] species as [] blue crabs, penguins, gray whales, salmon, walruses, and ringed seals[; b]ird extinction rates are predicted to be as high as 38 percent in Europe and 72 percent in northeastern Australia, if global warming exceeds 2°C above pre-industrial levels.”83 Between now and 2050, Conservation International estimates one species will face extinction every twenty minutes; the current extinction rate is one thousand times faster than the average during Earth's history, 84 in part because the climate is changing more than 100 times faster than the rate at which many species can adapt.85 4. When Land Dries Out The warming trends toward the Earth’s poles and higher latitudes are threatening people not just from melting ice and sea level rise, but also from the predicted thawing of permafrost of thirty to fifty percent by 2050, and as much or more of it by 2100.86 “The term permafrost refers to soil or rock that has been below 0°C (32°F) and frozen for at least two years.”87 Permafrost underlies about twenty-five percent of the land area in the northern hemisphere, and is “estimated to hold 30 percent or more of all carbon stored in soils worldwide”—which equates to four times more than all the carbon humans have emitted in modern times.88 Given the increasing average air temperatures in Eastern Siberia, Alaska and northwestern Canada, thawing of the Northern permafrost would release massive amounts of carbon dioxide (doubling current atmospheric levels) and methane89 into the atmosphere. Indeed, there are about 1.7 trillion tons of carbon in northern soils (roughly twice the amount in the atmosphere), about eighty-eight percent of it in thawing permafrost.90 Permafrost thus may become an annual source of carbon equal to fifteen to thirty-five percent of today's annual human emissions.91 But like seagrass meadows and unlike power plant emissions, we cannot trap or prevent permafrost carbon emissions at the source. 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Overview of Technology and Attributes As noted in the Introduction, offshore wind energy projects have the potential to generate large quantities of pollutant-free electricity near many of the world’s major population centers, and thus to help reduce the ongoing and projected economic, health, and environmental damages from climate change.99 Wind speeds over water are stronger and more consistent than over land, and “have a gross potential generating capacity four times greater than the nation’s present electric capacity.”100 The net capacity factor101 for offshore turbines is greater than standard land-based turbines, and their blade-tip speeds are higher than their land-based counterparts.102 Offshore wind turbine substructure designs mainly fall into three depth categories: shallow (30 m or less), transitional (>30 m to 60 m), and deep water (>60 m).103 All of the grid-scale offshore wind farms in Europe have monopole foundations embedded into the seabed in water depths ranging from 5m to 30m; the proposed American projects such as Cape Wind in Massachusetts and Block Island in Rhode Island would likewise be shallow-water installations.

#### Offshore wind is comparatively the cleanest and most productive renewable energy

Jensen 13 – partner in the Washington, DC office of Holland & Hart LLP

(Thomas, et al, “From the 35th Public Land Law Conference: Balancing Act and Paradigm Shift: The Role of Public Lands in America's Energy Future: Oceans: Are Ocean Wind Turbines like Homesteads and Gold Mines and Railroads? A Public Lands Policy Question for the Climate Change Era,” 34 Pub. Land & Resources L. Rev. 93)//BB

The ocean wind resource in United States marine waters is estimated to be as large as 4,223 gigawatts ("GW"), 12 with as many as 1,372 terawatt hours of electricity available off the East Coast alone. 13 The low estimate of the resource is roughly four times the generating capacity of the current United States electric grid. 14¶ Ocean wind is a green energy asset owned by the American people. It is an energy source for the country that will be available forever. It can be found in undeveloped areas near almost all coastal urban centers. It is of a potential scale that dwarfs most other alternatives, and is big enough to shrink the United States' carbon footprint toward fitting even the most constrictive greenhouse gas policy.¶ [99] Today, America's ocean wind energy is unharvested. While thousands of turbines spin onshore, and nations around the globe have developed at least 57 marine wind projects, 15 no turbines have been sited in United States waters. An energy resource area larger than the total landmass of the United States, 16 one wholly owned by the American people, is unused and wasted as a tool to power our communities.

#### US offshore wind development curbs carbon emissions – creates globalized modeling of renewables and generates 4 times the worlds needed electricity

Thaler 12 - Professor of Energy Policy, Law & Ethics

(Jeff, “FIDDLING AS THE WORLD BURNS: HOW CLIMATE CHANGE URGENTLY REQUIRES A PARADIGM SHIFT IN THE PERMITTING OF RENEWABLE ENERGY PROJECTS,” 42 Environmental Law Journal 1101)//BB

Unfortunately, as the economic and health costs from fossil fuel emissions have grown so too has the byzantine labyrinth of laws and regulations to be navigated before a renewable energy project can be approved, let alone financed and developed. 6 The root cause goes back to the 1970s when some of our fundamental environmental laws were enacted, before we were aware of climate change threats, to slow down the review of proposed projects by requiring more studies of potential project impacts before approval.7 But in our increasingly carbon-based 21st century, we need a paradigm shift. While achieving important goals, those federal laws and regulations, and similar ones at the state and local levels, have become so unduly burdensome, slow, and expensive that they will chill investment in, and kill any significant growth of, renewable carbon-free energy sources and projects, thereby imposing huge economic, environmental and social costs upon both our country and the world8 unless they are substantially changed. Indeed, by 2050 the U.S. must reduce its greenhouse gas emissions by 80% to even stabilize atmospheric levels of carbon, and can do so by increasing generated electricity from renewable sources from the current thirteen percent up to eighty percent9-- but only if there are targeted new policy efforts to accelerate, fifty times faster than since 1990, implementation of clean, renewable energy sources.10 Thus, Part II focuses on one promising technology to demonstrate the flaws in its current licensing permitting regimes, and makes concrete recommendations for reform.11 Wind power generation from onshore installations is proven, generates no GHGs and consumes no water,12 is increasingly cost-competitive with most fossil fuel sources, and can be employed relatively quickly in many parts of the United States and world. Offshore wind power is a relatively newer technology, especially deep-water floating projects, and presently less cost-competitive than onshore wind. However, because wind speeds are on average about ninety percent stronger and more consistent over water than over land, with higher power densities and lower shear and turbulence,13 America’s offshore resources can provide more than our current electricity use.14 Moreover, these resources are near many majorcities that are home to much of the population and electricity demand thereby “reducing the need for new high-voltage transmission from the Midwest and Great Plains to serve coastal lands…”15 Therefore, in light Part II’s spotlight on literally dozens of different federal (yet alone state and local) statutes and their hundreds of regulations standing between an offshore wind project applicant and construction, Part III makes concrete statutory and regulatory recommendations to much more quickly enable the full potential of offshore wind energy to become a reality before it is too late. Greenhouse gases (GHGs) trap heat in the atmosphere; the primary GHG emitted by human activities is carbon dioxide (CO2), which in 2012 represented 84 percent of all human-sourced U.S. GHG emissions.16 “The combustion of fossil fuels to generate electricity is the largest single source of CO2 emissions in the nation, accounting for about 40% of total U.S. CO2 emissions and 33% of total U.S. greenhouse gas emissions in 2009.”17 The significant increased concentrations of GHGs into our atmosphere since the 1750 Industrial Revolution began greater use of fossil fuel sources have caused our world to warm and climate to change.18 Climate change may be the single greatest threat to human society and wildlife, as well as to the ecosystems upon which each depends for survival.19 In 1992, the U.S. signed and ratified the United Nations Framework Convention on Climate Change (UNFCC), whose stated objective was: “[s]tabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”20 In 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that it is “very likely,” at least ninety percent certain, that humans are responsible for most of the “unequivocal” increases in globally averaged temperatures of the previous fifty years. 21 Yet in the twenty years since the UNFCCC, it also is unequivocal that GHG levels have not stabilized but continue to grow, ecosystems and food production have not been able to adapt, and our heavy reliance on fossil-fueled energy continues “dangerous anthropogenic interference with the climate system.”22 Equally unequivocal is that 2011 global temperatures were “the tenth highest on record and [were] higher than any previous year with a La Nina event, which [normally] has a relative cooling influence”; “the warmest 13 years of average global temperatures [also] have all occurred in the 15 years since 1997.”23 Global emissions of carbon dioxide also jumped 5.9% in 2010 by the largest amount on record -- 500 million extra tons of carbon was pumped into the air, “the largest absolute jump in any year since the Industrial Revolution [began in 1750], and the largest percentage increase since 2003.”24 In order to even have a fifty-fifty chance that the average global temperature will not rise more than 2° C25 beyond the temperature of 1750,26 our cumulative emissions of CO2 after 1750 must not exceed one trillion tons; but by mid-July 2012 we had already emitted over 559 billion tons and rising, and at current rates will emit the trillionth ton in July 2043.27 The consequence is that “the current generation are uniquely placed in human history: the choices we make now—in the next 10-20 years—will alter the destiny of our species (let alone every other species) unalterably, and forever.”28 Unfortunately, by the end of 2011 the more than 10,000 government and U.N. officials from all over the world attending the Durban climate change conference29 agreed that there is a “significant gap between the aggregate effect of Parties’ mitigation pledges in terms of global annual emissions of greenhouse gases by 2020 and aggregate emission pathways consistent with having a likely chance of holding the increase in global average temperature below 2 °C or 1.5 °C above pre-industrial levels.”30 What are some of the growing economic, public health, and environmental costs to our country proximately31 caused by our daily burning of fossil fuels? The National Research Council (NRC) analyzed the "hidden" costs of energy production and use not reflected in market prices of coal, oil, other energy sources, or the electricity and gasoline produced from them. For the year 2005 alone, the NRC estimated $120 billion of damages to the U.S. from fossil fuel energy, reflecting primarily health damages from air pollution associated with electricity generation and motor vehicle transportation. Of that total, $62 billion was due to coal-fired electricity generation; $56 billion from ground transportation (oil-petroleum); and over $2.1 billion from electricity from and heating with natural gas. The $120 billion figure did not include damages from climate change, harm to ecosystems and infrastructure, insurance costs, effects of some air pollutants, and risks to national security, which the NRC examined but did not specifically monetize. 32 The NRC did, however, suggest that under some scenarios climate damages from energy use could equal $120 billion.33 Thus, adding natural resource damages from harm to ecosystems, infrastructure damages, insurance costs, air pollutant costs, and fossil-fueled national security costs to $240 billion, our burning of fossil fuels appears to be costing Americans about $300 billion each year—a “hidden” number likely to be larger in the future. What does the future hold for a carbon-stressed world? Most scientific analyses presently predict that by 2050 the Earth may warm by 2 to 2.5° C due to the rising level of greenhouse gases in the atmosphere; at the high-end of projections, the 2050 warming could exceed 4.5° C.34 But those increases are not consistent globally; rather, “[i]n all possible [predicted] outcomes, the warming over land would be roughly twice the global average, and the warming in the Arctic greater still.”35 For example, the NRC expects that each degree Celsius increase will produce in the U.S. double to quadruple the area burned by wildfires in the western U.S.; a 5-15 percent reduction in crop yields; more destructive power from hurricanes; greater risk of very hot summers; and more changes in precipitation frequency and amounts.36 Globally, a summary of studies predicts that a 1°C global average temperature rise will reduce Arctic sea ice by an annual average of fifteen percent and by twenty-five percent in Septembers 37; at 2°C Europe suffers greater heat waves, the Greenland Ice Sheet significantly melts, and many land and marine species are driven to extinction; at 3°C the Amazon suffers severe drought and resultant firestorms that will release significantly more carbon into the atmosphere38; at 4°C hundreds of billions of tons of carbon in permafrost melt, releasing methane in immense quantities, while the Arctic Ocean ice cap disappears and Europe suffers greater droughts.39 To presently assess what a 5°C rise will mean, we must look back into geological time, 55 million years ago, when the Earth abruptly experienced dramatic global warming due to the release of methane hydrates--a substance presently found on subsea continental shelves. Fossils demonstrate that crocodiles were in the Canadian high Arctic, breadfruit trees were growing on the coast of Greenland, and the Arctic Ocean saw water temperatures of 20 °C within 200km of the North Pole itself.40 And a 6°C average rise takes us even further back, to the end of the Permian period, 251 million years ago, when up to 95% of species relatively abruptly became extinct.41 This may sound extreme, but the International Energy Administration warned this year that the 6°C mark is in reach by 2050 at current rates of fossil fuel usage.42 However, even given the severity of these forecasts, many still question the extent that our climate is changing,43 and thus reject moving away from our largely fossil-fueled electricity, transportation and heating sources. Therefore, in this next subsection I provide the latest scientific data documenting specific climate impacts to multiple parts of U.S. and global daily lives, and the costly consequences that establish the urgency for undertaking the major regulatory reforms I recommend in Part III of this Article. B. Specific Climate Threats and Consequences 1. When Weather Extremes Increase A 2011 IPCC Special Report predicted that it is virtually certain [99-100% probability] that increases in the frequency of warm daily temperature extremes and decreases in cold extremes will occur throughout the 21st century on a global scale. It is very likely [90% to 100% probability] that heat waves will increase in length, frequency, and/or intensity over most land areas…. It is very likely that average sea level rise will contribute to upward trends in extreme sea levels and extreme coastal high water levels. 44 Similarly, a House of Representatives Committee report (ACESA Report) found that “[t]here is a broad scientific consensus that the United States is vulnerable to weather hazards that will be exacerbated by climate change.”45 It also found that the “cost of damages from weather disasters has increased markedly from the 1980s, rising to more than $100 billion in 2007. In addition to a rise in total cost, the frequency of weather disasters costing more than one billion dollars has increased."46 In 2011, the U.S. faced the most billion-dollar climate disasters ever, with fourteen distinct disasters alone costing at least $53 billion to our economy.47 In the first six months of 2012 in the U.S., there were more than 40,000 hot temperature records, horrendous wildfires, major droughts, oppressive heat waves, major flooding, and a powerful derecho wind storm.48 The IPCC Fourth Assessment Report identified impacts from growing weather hazards upon public health to include: more frequent and more intense heat waves; more people suffering death, disease and injury from floods, storms, fires, and droughts; increased cardio-respiratory morbidity and mortality associated with ground-level ozone pollution; changes in the range of some infectious disease carriers spreading, for example, malaria and the West Nile virus; and increased malnutrition and consequent disorders.49 As noted above, $120 billion per year of the NRC’s Hidden Energy report’s damage assessment were based on health damages,50 including an additional 10,000-20,000 deaths per year.51 And by 2050, cumulative heat-related deaths from unabated climate change are predicted to be an additional 33,000 in the forty largest U.S. cities, with more than 150,000 additional deaths by 2100.52 Weather extremes also threaten our national security, whose policy is premised on stability. In 2007 the CNA Corporation’s report National Security and the Threat of Climate Change described climate change as a “threat multiplier for instability” and warned that p]rojected climate change poses a serious threat to America's national security. The predicted effects of climate change over the coming decades include extreme weather events, drought, flooding, sea level rise, retreating glaciers, habitat shifts, and the increased spread of life-threatening diseases. These conditions have the potential to disrupt our way of life and to force changes in the way we keep ourselves safe and secure.53 The following year, in the first-ever U.S. government analysis of climate change security threats, the National Intelligence Council issued an assessment warning, in part, that climate change could threaten U.S. security by leading to political instability, mass movements of refugees, terrorism, and conflicts over water and other resources.54 2. When Frozen Water Melts In 2007 the IPCC predicted that sea levels would rise by 8 to 24 inches above current levels by 2100; since then, however, numerous scientists and studies have suggested that the 2007 prediction is already out-of-date and that sea levels will likely rise up to 1.4 meters (55 inches) given upwardly trending CO2 emissions.55 The 2009 ACESA Report found that rising sea levels are already causing inundation of low-lying lands, corrosion of wetlands and beaches, exacerbation of storm surges and flooding, and increases in the salinity of coastal estuaries and aquifers…. Further, about one billion people live in areas within 75 feet elevation of today's sea level, including many US cities on the East Coast and Gulf of Mexico, almost all of Bangladesh, and areas occupied by more than 250 million people in China.56 This year NASA’s Chief Scientist testified to Congress that two-thirds of sea level rise from the last three decades is derived from the Greenland and Antarctic ice sheets and the melting Arctic region, then warned: [t]he West Antarctic ice sheet (WAIS), an area about the size of the states of Texas and Oklahoma combined….contains the equivalent of 3.3 m of sea level, and all that ice rests on a soft-bed that lies below sea level. In this configuration, as warm seawater melts the floating ice shelves, causing them to retreat and the glaciers that feed them to speed up, there is no mechanism to stop the retreat and associated discharge, if warming continues. Thus the WAIS exhibits great potential for substantial and relatively rapid contributions to sea level rise. … In Greenland, the situation is not as dramatic, since the bed that underlies most of the ice is not below sea level, and the potential for unabated retreat is limited to a few outlet glaciers. In Greenland, however, summer air temperatures are warmer and closer to ice’s melting point, and we have observed widespread accumulation of meltwater in melt ponds on the ice sheet surface..57 In the West Antarctic ice sheet region, glacier retreat appears to be widespread, as the air has “warmed by nearly 6°F since 1950.”58 As for Greenland’s Ice Sheet, it also is at greater risk than the IPCC had thought. Recent studies with more complete modeling suggest that the warming threshold leading to an essentially ice-free state is not the previous estimate of an additional 3.1°C, but only 1.6°C. Thus, the 2°C target may be insufficient to prevent loss of much of the Ice Sheet and resultant significant sea level rise.59 The ACESA Report also identified the Arctic as “one of the hotspots of global warming”60 because “[o]ver the past 50 years average temperatures in the Arctic have increased as much as 7 °F, five times the global average.”61 Moreover, in “2007, a record 386,000 square miles of Arctic sea ice melted away, an area larger than Texas and Arizona combined and as big a decline in one year as had occurred over the previous decade”.62 “Arctic sea ice is melting faster than climate models [had] predict[ed], and is about thirty years ahead” of the 2007 IPCC predictions, thus heading toward the Arctic Ocean being ice-free in the late summer beginning sometime between 2020 and 2037.63 How is the Arctic’s plight linked to non-Arctic impacts? “The Arctic region arguably has the greatest concentration of potential tipping elements in the Earth system, including Arctic sea ice, the Greenland ice sheet, North Atlantic deep-water formation regions, boreal forests, permafrost and marine methane hydrates.”64 Additionally: Warming of the Arctic region is proceeding at three times the global average….Loss of Arctic sea ice has been tentatively linked to extreme cold winters in Europe… Near complete loss of the summer sea ice, as forecast for the middle of this century, if not before, will probably have knock-on effects for the northern mid-latitudes, shifting jet streams and storm tracks.65 Since 1980, sea levels have been rising three to four times faster than the global average between Cape Hatteras, N.C. and Boston.66 “[P]ast and future global warming more than doubles the estimated odds of ‘century’ or worse floods occurring within the next 18 years” for most coastal U.S. locations.67 Although land-based glacier melts are not major contributors to sea level rise, they do impact peoples’ food and water supplies. 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#### Electricity-emissions reductions sufficiently solve global warming

Akorede 12 - .F., Ph.D degree in Electrical Power Engineering from Universiti Putra Malaysia

(H. Hizam,M.Z.A. Ab Kadir,I. Aris,S.D. BubaElectrical & Electronic Engineering Department, Faculty of Engineering, Universiti Putra Malaysia, “Mitigating the anthropogenic global warming in the electric power industry,” Renewable and Sustainable Energy Reviews, 16.5)//BB

5. Power industry's share of CO2 emissions To identify the most productive mitigation strategies, it is crucial to understand the current as well as the projected sources of GHGs, most especially CO2[30]. Looking at Fig. 5, it is glaringly evident that CO2 constitutes the largest share (76.7 percent) of the total global GHGs emissions recorded in 2004. In the same vein, energy supply sector which comprises of power generation and heat supply, accounted for nearly 26 percent of the overall anthropogenic GHG emissions in the same year, as depicted in Fig. 6. To narrow down to CO2 emissions, Fig. 7 identifies individual contribution of each sector to global CO2 emissions. As a group, energy supply, which is responsible for 41 percent of the total global CO2 is by far the largest producer of CO2 in 2008, followed by the transportation sector. In fact, it is glaringly visible in the figure that these two sectors alone constitute two-thirds of the total CO2 in the atmosphere in the year. According to the International Energy Agency, out of the 41 percent of the man-made CO2 emissions mentioned previously, the power sector is responsible for 37 percent. The sector creates about 23 billion tons of global CO2 emissions per year. Out of this, the United States produces the most CO2 from electricity generation, releasing 2.8 billion tons of CO2 each year, while China is close to overtaking it with her annual 2.7 billion tons emissions [31]. By this amount, China CO2 emissions in electric supply sector is about half of the country's total volume, even though plans are still underway to expand her coal-fired facilities in the next decade [8]. In the UK, 38 percent of GHG emissions produced is from energy supply sector [32]. Carbon dioxide emissions by source compiled in 2005 by Information Analysis Center, World Resources Institute (WRI) for the year 2000 is plotted and shown in Fig. 8. The emissions sources considered are CO2 emitted primarily in to the air from burning of solid fuels (SF) such as coal, liquid fuels (LF) such as petroleum products, gaseous fuels (GF), e.g. natural gas, gas flaring (GL), cement manufacturing (CM), and land-use change (LU). All together, it is evident from the plots that 73.3 percent of the total anthropogenic CO2 emissions in the atmosphere is from fossil fuels burning. Meanwhile, the International Energy Outlook (IEO2010) [33] has forecasted the world energy demand at 739 quadrillion Btu in 2035. This figure is equivalent to 49 percent increase of the energy consumed in 2007, estimated at 495 quadrillion Btu. To adequately cope with the projected demand, the said document similarly projected a growth in the generation of 95.12 MWh in the same period. Fig. 9 illustrates the energy mix of the projected generation from 2007 to 2035. From the figure, it is seen that the world net coal-fired generation nearly doubles over the projection period, from 7.9 trillion kWh in 2007 to 15.0 trillion kWh in 2035. It is apparent in the reference case that coal continues to fuel the largest share of worldwide electric power production by a wide margin of 43 percent of the total generation. With this scenario, all things being equal, more GHGs are expected to be emitted into the atmosphere, leading to more globalwarming. Due to this fact, the power generation sector, which is projected to grow at an annual rate of 2 percent, is seen to have the greatest potential to reduce CO2 emissions in the coming decades [30]. To accomplish this goal, the CO2 emissions per kWh of electrical energy produced can be reduced by using newer and novel power production technologies. Current retrofit technology is theoretically available, but will likely be substantially more expensive per unit of power generated, than would be the case for new plants with CO2 capture [30]. To mitigate globalwarming arising from the power industry, various areas and approaches are suggested and discussed in details in the following section of this paper. 6. Mitigating globalwarming in power sector Since the highest amount of CO2 is generated in the power sector, curbing the CO2 produced in this sector would go a long way in mitigating global warming. To address this issue, it is suggested in [4] to decarbonise the power sector by at least 60 percent by 2050 since coal emits about 1.7 times as much carbon per kWh of energy produced as natural gas and 1.25 times as much as oil. However, the task to accomplish this is not an easy one, as elaborated in the later part of this paper. Other measures proposed for addressing globalwarming in the realm of power generation identified and discussed in this study include adoption of carbon capture and storage technology, improvement in energy efficiency, increasing the use of renewable energy, increasing the share of nuclear power generation, and decarbonisation of fossil fuels. Each of these possible mitigation techniques is discussed in turn in the following subsections.

#### Warming leads to extinction – even in the best cases, adaption can’t solve

Mazo 10– PhD in Paleoclimatology from UCLA

(Jeffrey Mazo, Managing Editor, Survival and Research Fellow for Environmental Security and Science Policy at the International Institute for Strategic Studies in London, 3-2010, “Climate Conflict: How global warming threatens security and what to do about it,” pg. 122)//BB

The best estimates for global warming to the end of the century range from 2.5-4.~C above pre-industrial levels, depending on the scenario. Even in the best-case scenario, the low end of the likely range is 1.goC, and in the worst 'business as usual' projections, which actual emissions have been matching, the range of likely warming runs from 3.1--7.1°C. Even keeping emissions at constant 2000 levels (which have already been exceeded), global temperature would still be expected to reach 1.2°C (O'9""1.5°C)above pre-industrial levels by the end of the century." Without early and severe reductions in emissions, the effects of climate change in the second half of the twenty-first century are likely to be catastrophic for the stability and security of countries in the developing world - not to mention the associated human tragedy. Climate change could even undermine the strength and stability of emerging and advanced economies, beyond the knock-on effects on security of widespread state failure and collapse in developing countries.' And although they have been condemned as melodramatic and alarmist, many informed observers believe that unmitigated climate change beyond the end of the century could pose an existential threat to civilisation." What is certain is that there is no precedent in human experience for such rapid change or such climatic conditions, and even in the best case adaptation to these extremes would mean profound social, cultural and political changes.

#### Even if some warming is inevitable, keeping it below 4 degrees avoids the worst impacts – warming is also anthropogenic

Kim 12 – PhD in Anthropology @ Harvard, former president of Dartmouth, Now President of the World Bank

(Jim Yong, “Turn Down the Heat,” p. ix)//BB

**The 4°C scenarios are devastating**: the inundation of coastal cities; **increasing risks for food produc- tion** potentially leading to **higher malnutrition rates**; many dry regions becoming dryer, wet regions wet- ter; **unprecedented heat wave**s 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 uncer- tainty and new risks that threaten our ability to anticipate and plan for future** adapt**ation 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 acidi- fying; 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’ **cur- rent** 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.

#### Independently, emissions cause ocean acidification – extinction

Romm 12– physicist and climate expert, Fellow of the American Association for the Advancement of Science, Senior Fellow at the Center for American Progress

(Joseph J., “Science: Ocean Acidifying so fast that it threatens humanity’s ability to feed itself”, 3/2/12; http://earthlawcenter.org/news/headline/science-ocean-acidifying-so-fast-it-threatens-humanitys-ability-to-feed-itself/)

The world’s oceans may be turning acidic faster today from human carbon emissions than they did during four major extinctions in the last 300 million years, when natural pulses of carbon sent global temperatures soaring, says a new study in Science. The study is the first of its kind to survey the geologic record for evidence of ocean acidification over this vast time period. “What we’re doing today really stands out,” said lead author Bärbel Hönisch, a paleoceanographer at Columbia University’s Lamont-Doherty Earth Observatory. “We know that life during past ocean acidification events was not wiped out—new species evolved to replace those that died off. But if industrial carbon emissions continue at the current pace, we may lose organisms we care about—coral reefs, oysters, salmon.” James Zachos, a paleoceanographer at University of California, Santa Cruz, with a core of sediment from some 56 million years ago, when the oceans underwent acidification that could be an analog to ocean changes today. That’s the news release from a major 21-author Science paper, “The Geological Record of Ocean Acidification” (subs. req’d). We knew from a 2010 Nature Geoscience study that the oceans are now acidifying 10 times faster today than 55 million years ago when a mass extinction of marine species occurred. But this study looked back over 300 million and found that “the unprecedented rapidity of CO2 release currently taking place” has put marine life at risk in a frighteningly unique way: … the current rate of (mainly fossil fuel) CO2 release stands out as capable of driving a combination and magnitude of ocean geochemical changes potentially unparalleled in at least the last ~300 My of Earth history, raising the possibility that we are entering an unknown territory of marine ecosystem change. That is to say, it’s not just that acidifying oceans spell marine biological meltdown “by end of century” as a 2010 Geological Society study put it. We are also warming the ocean and decreasing dissolved oxygen concentration. That is a recipe for mass extinction. A 2009 Nature Geoscience study found that ocean dead zones “devoid of fish and seafood” are poised to expand and “remain for thousands of years.“ And remember, we just learned from a 2012 new Nature Climate Change study that carbon dioxide is “driving fish crazy” and threatening their survival. Here’s more on the new study: The oceans act like a sponge to draw down excess carbon dioxide from the air; the gas reacts with seawater to form carbonic acid, which over time is neutralized by fossil carbonate shells on the seafloor. But if CO2 goes into the oceans too quickly, it can deplete the carbonate ions that corals, mollusks and some plankton need for reef and shell-building. That is what is happening now. In a review of hundreds of paleoceanographic studies, a team of researchers from five countries found evidence for only one period in the last 300 million years when the oceans changed even remotely as fast as today: the Paleocene-Eocene Thermal Maximum, or PETM, some 56 million years ago. In the early 1990s, scientists extracting sediments from the seafloor off Antarctica found a layer of mud from this period wedged between thick deposits of white plankton fossils. In a span of about 5,000 years, they estimated, a mysterious surge of carbon doubled atmospheric concentrations, pushed average global temperatures up by about 6 degrees C, and dramatically changed the ecological landscape. The result: carbonate plankton shells littering the seafloor dissolved, leaving the brown layer of mud. As many as half of all species of benthic foraminifers, a group of single-celled organisms that live at the ocean bottom, went extinct, suggesting that organisms higher in the food chain may have also disappeared, said study co-author Ellen Thomas, a paleoceanographer at Yale University who was on that pivotal Antarctic cruise. “It’s really unusual that you lose more than 5 to 10 percent of species over less than 20,000 years,” she said. “It’s usually on the order of a few percent over a million years.” During this time, scientists estimate, ocean pH—a measure of acidity–may have fallen as much as 0.45 units. (As pH falls, acidity rises.) In the last hundred years, atmospheric CO2 has risen about 30 percent, to 393 parts per million, and ocean pH has fallen by 0.1 unit, to 8.1–an acidification rate at least 10 times faster than 56 million years ago, says Hönisch. The Intergovernmental Panel on Climate Change predicts that pH may fall another 0.3 units by the end of the century,to 7.8, raising the possibility that we may soon see ocean changes similar to those observed during the PETM. More catastrophic events have shaken earth before, but perhaps not as quickly. The study finds two other times of potential ocean acidification: the extinctions triggered by massive volcanism at the end of the Permian and Triassic eras, about 252 million and 201 million years ago respectively. But the authors caution that the timing and chemical changes of these events is less certain. Because most ocean sediments older than 180 million years have been recycled back into the deep earth, scientists have fewer records to work with. During the end of the Permian, about 252 million years ago, massive volcanic eruptions in present-day Russia led to a rise in atmospheric carbon, and the extinction of 96 percent of marine life. Scientists have found evidence for ocean dead zones and the survival of organisms able to withstand carbonate-poor seawater and high blood-carbon levels, but so far they have been unable to reconstruct changes in ocean pH or carbonate. At the end of the Triassic, about 201 million years ago, a second burst of mass volcanism doubled atmospheric carbon. Coral reefs collapsed and many sea creatures vanished. Noting that tropical species fared the worst, some scientists question if global warming rather than ocean acidification was the main killer at this time. The effects of ocean acidification today are overshadowed for now by other problems, ranging from sewage pollution and hotter summer temperatures that threaten corals with disease and bleaching. However, scientists trying to isolate the effects of acidic water in the lab have shown that lower pH levels can harm a range of marine life, from reef and shell-building organisms to the tiny snails favored by salmon. In a recent study, scientists from Stony Brook University found that the larvae of bay scallops and hard clams grow best at pre-industrial pH levels, while their shells corrode at the levels projected for 2100. Off the U.S. Pacific Northwest, the death of oyster larvae has recently been linked to the upwelling of acidic water there. In parts of the ocean acidified by underwater volcanoes venting carbon dioxide, scientists have seen alarming signs of what the oceans could be like by 2100. In a 2011 study of coral reefs off Papua New Guinea, scientists writing in the journal Nature Climate Change found that when pH dropped to 7.8, reef diversity declined by as much as 40 percent. Other studies have found that clownfish larvae raised in the lab lose their ability to sniff out predators and find their way home when pH drops below 7.8. “It’s not a problem that can be quickly reversed,” said Christopher Langdon, a biological oceanographer at the University of Miami who co-authored the study on Papua New Guinea reefs. “Once a species goes extinct it’s gone forever. We’re playing a very dangerous game.”

#### Warming triggers rapid methane release

Song 11 – Pulitzer prize winning reporter for Inside Climate News (Lisa Mar 3, 2011, Accessed June 25, 2014. “Up to 40% of Gulf Oil Spill Was Potent Methane Gas, Research Shows” Inside Climate News http://insideclimatenews.org/author/lisa-song)

Another risk lies in the hydrates' contribution to climate change. Hydrates keep methane out of the atmosphere by sequestering them underground. But as the planet warms, more of that methane could be released into the air. Deep-sea hydrates like the ones in the Gulf don't pose much of a threat, said Leifer. The deep ocean warms so slowly that those hydrates will remain stable for at least thousands of years. Arctic hydrates, however, are "extremely worrisome" because they're buried under shallow waters. Under the Arctic Sea lies an expanse of permafrost that's half the size of the United States, and below the permafrost are layers of sediment containing methane hydrates. The hydrates release methane, which get trapped beneath the permafrost. Cracks in the permafrost then discharge the methane into the atmosphere. Such releases are already happening. Last summer, Leifer's research group measured small methane plumes coming out of Arctic waters. Over a distance of about 930 miles, "everywhere we went with the boat, there were little bubbles coming out," said Leifer. "This may be the normal state of affairs," he continued, but climate change is heating up the Arctic more quickly than other parts of the globe, and "[the situation] could be getting a lot worse." The Arctic has enough buried methane that a one percent release would quadruple global concentrations of atmospheric methane. That's the equivalent of increasing CO2 by a factor of ten, said Leifer. "It would be pretty close to the end of civilization as we know it, and this could happen. It doesn't mean it's going to happen … but we want people to be aware [of the possibility]." Leifer will return to the Arctic later in March to continue hydrate research.

### Solvency

#### The lack of a strong and effective federal mandate is a key barrier blocking offshore wind development

Schroeder, 10 --- J.D., University of California, Berkeley, School of Law (October 2010, Erica, California Law Review, “Turning Offshore Wind On,” Vol. 98, No, 5, Lexis, JMP)

III Current Regulatory Framework for Offshore Wind

Both state and federal governments share control over offshore wind project siting approval and permitting. Geography determines the jurisdiction of each: state governments control their respective Coastal Zones, from the baseline of their shores out three nautical miles, n92 and the federal government controls the Outer Continental Shelf beyond that. n93 Offshore wind turbines are typically located on the Outer Continental Shelf; n94 thus, the federal government sites and permits this component of an offshore wind project. n95 To get the electricity to consumers on land, however, offshore wind projects must necessarily include transmission lines from the turbines, through state waters and onto land. State governments control the siting and permitting of these [\*1643] transmission lines. n96 Both federal and state jurisdiction are described in more detail later, along with the CZMA. The CZMA provides the primary mechanisms for balancing state and federal interests in coastal waters. n97 It leaves states with substantial discretionary power and no federal mandate regarding offshore wind power development, despite its undertones of environmental protection.¶ A. Federal Jurisdiction¶ Federal jurisdiction begins more than three nautical miles from the shore, along the Outer Continental Shelf, and ends two hundred nautical miles out to sea. n98 Analyses of offshore wind capacity typically assume that wind farms will be built in federal waters, more than five miles from the coast. n99 Thus, federal jurisdiction covers the generation component of an offshore wind project, mainly the turbines. n100 This includes site approval and permitting for project construction. n101¶ Section 388 of the Energy Policy Act of 2005 grants the Department of the Interior (DOI) primary authority over offshore wind farm approval and permitting. n102 Section 388 specifies that the Minerals Management Service (MMS), a branch of DOI, controls the offshore wind facility permitting process; the Secretary of the Interior makes the final permitting decision. n103 This grant of authority extends MMS's existing authority under the Outer Continental Shelf Lands Act (OCSLA), which gives it management rights over the Outer Continental Shelf primarily for offshore fossil fuel extraction. n104 Because of MMS's experience with managing offshore oil and gas extraction, Congress deemed it the proper body for offshore wind permitting as well. n105 Opponents of the decision have been concerned with MMS's lack of experience with marine habitat regulation and protection. n106 Fortunately, MMS appears receptive to coordinating with other agencies with relevant experience, like the Army Corps of Engineers, National Marine Fisheries Service, Coast Guard, Department of Energy, and Environmental Protection Agency, as well [\*1644] as appropriate state actors. n107¶ Section 388 came in response to controversy over which federal agency had permitting authority during the early stages of the Cape Wind project, which is described in more detail in Part IV. While Section 388 does not resolve all of the issues relating to federal jurisdiction over offshore wind, n108 its designation of MMS as the primary permitting agency marks Congress's first step toward a unified review process for offshore alternative energy. n109 Nonetheless, the current federal regulatory environment for offshore wind remains confusing. In April 2009, President Obama took a first step toward remedying some of that confusion by announcing a coordinated program, headed by DOI, for federal offshore renewable energy permitting. The program will cover not only offshore wind power generation, but also other offshore renewable energy, such as electricity generated from ocean currents. n110 Despite this progress toward an improved federal regulatory program, barriers to offshore wind power still exist, largely due to the absence of a strong and effective federal mandate promoting offshore wind power development and the powers that states retain over project siting. n111¶ B. State Jurisdiction¶ Under the Submerged Lands Act, state jurisdiction generally covers ocean territory three miles or less from the coast, n112 an area known as the Coastal Zone. n113 As noted previously, any electricity generated in an offshore facility must be transmitted to land through the state controlled Coastal Zone. Therefore, state - and sometimes local - authorities ultimately have a role to play in any offshore wind project through the siting and permitting of transmission cables that are necessary to bring electricity from the turbines to land. Although state and localities may only exert direct control over the permitting of transmission cables, they will almost certainly consider the impact of the generation turbines on their aesthetic view environment. They know that denying transmission permits effectively stalls or destroys the construction of generation facilities. States will also likely consider such [\*1645] aesthetic and environmental considerations in the federal consistency review process, with which they may also block federal activities and permits. n114 Federal consistency review is a component of the CZMA, and will be described in more detail below.¶ Because most of the costs of offshore wind power development are local, there is a strong argument for state and local control over offshore wind project siting: because localities must deal with the downsides of offshore wind projects, they should control where those projects are placed. n115 On the other hand, there are broader, positive effects of offshore wind power development - such as energy security improvement and environmental benefits like climate change mitigation - that imply a need for stronger federal intervention to balance appropriately the costs and benefits of offshore wind. n116 The CZMA attempts to provide a formal structure for such balancing, but it ultimately leaves the states with too much power, and the federal government and offshore wind farm proponents with no formal federal encouragement or support.¶ C. The Coastal Zone Management Act: Attempting to Reconcile Local Interests with National Priorities¶ The overarching goal of the CZMA is "to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations." n117 The CZMA mentions the development of energy facilities in the Coastal Zone, but its language is vague, and generally requires only that states undertake "adequate consideration of the national interest" in siting energy facilities, and "give consideration" to any applicable national or interstate energy plan or program. n118 The CZMA also mentions energy with regard to funding for development: "The national objective of attaining a greater degree of energy self-sufficiency would be advanced by providing Federal financial assistance to meet state and local needs resulting from new or expanded energy activity in or affecting the coastal zone." n119 However, the CZMA does not mention offshore wind energy or renewable energy at all.¶ Although the CZMA acknowledges the "national interest in the effective management, beneficial use, protection, and development of the coastal zone," n120 it allows states substantial discretion over their coastal zone management through CZMPs, which the Secretary of Commerce oversees. n121 As noted previously, the Submerged Lands Act defines state coastal zones as [\*1646] three miles from the shoreline. n122 The CZMA mechanism of federal consistency review extends state power further, past their coastal zones, by allowing states to review and sometimes overrule federal actions and permits in federal waters. n123¶ Before the CZMA was promulgated, the coastal zone had long been subject to decentralized management. n124 The CZMA continues this tradition with its own approach to federalism, explicitly encouraging cooperation between local, state, and federal levels of government in their management of coastal resources. n125 Specifically, under the CZMA, each state makes its own CZMP. n126 The CZMA provides a variety of policy considerations for states to incorporate into their management programs. Prioritizing construction of certain facilities, specifically energy facilities, in states' coastal zones is one of several listed considerations. n127 Others include protecting natural resources; minimizing the loss of life and property to flooding and sea level rise; improving coastal water quality; allowing public recreational access to the coast; restoring urban waterfronts and preserving coastal features; coordinating and simplifying governmental management procedures for coastal resources; consulting and coordinating with federal agencies; giving timely and effective notice for public and local participation in governmental decision making; comprehensive planning for marine resource preservation; and studying sea level rise and land subsidence. n128 The Secretary of Commerce examines states' CZMPs, making sure they are in accordance with the CZMA's policy considerations and other mandates, and any other federal regulations. n129 In particular, the CZMA requires that states adequately consider the national interest in "siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program." n130 Once approved by the Secretary of Commerce, however, state CZMPs are subject to very little federal constraint under the CZMA, leaving states with nearly complete discretion within their coastal zones.¶ State control is expanded by federal consistency review, n131 a mechanism unique to the CZMA. Consistency review allows a state to review a federal agency activity or permit within or outside of the coastal zone for compatibility [\*1647] with the state's CZMP when the activity or permit affects the state's coastal zone. n132 Under this mechanism, the federal agency must submit a "consistency determination" (for an activity) or "consistency certification" (for a permit) to the state before moving forward with the project. n133 For federal permits, which would be more relevant to offshore renewable development than federal actions, the state then has the opportunity to concur with or object to the agency's certification. n134 "No license or permit shall be granted by the Federal agency until the state ... has concurred with the applicant's certification." n135 Thus, a coastal state's control extends beyond its own coastal zone into federal waters, as it has the ability to review - and potentially block - any project that affects their coastal zone. In the end, however, the Secretary of Commerce - by her own initiative or in response to an appeal - can overrule the state's protest by finding that a permit is consistent with the objectives of the CZMA or otherwise in the interest of national security. n136¶ Since the passage of the CZMA in 1972 until March 2010, states had filed 141 appeals with the Secretary protesting federal permits affecting their coastal zones. n137 States settled their issues with the federal government in 64 instances, or 45 percent of these cases. n138 The Secretary dismissed or overrode state appeals in 32 instances, or 23 percent of these cases. n139 Of the remaining 45 appeals that the Secretary considered for their substance, the Secretary overrode the state's objection in 14 cases, or 31 percent of the time, and accepted the state's objection in 30 cases, or 67 percent of the time. n140 Only 19 of the 45 appeals related to energy facilities, but all of these related to oil or natural gas projects; the Secretary overrode these appeals about half of the time. n141 Although states do not choose to use their federal consistency review power over federal permits frequently, as these numbers show, it is nonetheless a powerful tool that extends their power beyond their coastal zones.¶ Ultimately, the CZMA, with its focus on decentralized, state control over coastal-zone management, leaves the federal government and offshore wind proponents with minimal recourse in their struggle to develop offshore wind [\*1648] projects. The CZMA allows states near-complete control over their coastal zones through their CZMPs, with almost no role for the federal government in promoting offshore wind energy (or any kind of renewable energy). Because electricity transmission lines must necessarily run through states' coastal zones to reach consumers, states therefore have significant control over offshore wind projects. Through federal consistency review, their direct control can even extend into federal waters; though states have not often employed this process, the Secretary of Commerce has seemed willing to give them some deference when they do. Given a policy of such strong local control, and the absence of a firm federal mandate for offshore wind power development, local interests have been able to stall both federal and state permitting processes, often through litigation. Proponents of offshore wind have little federal support, and no guaranteed source of state support, on which to rely. Cape Wind presents a compelling and frustrating illustration of this problem.

#### Long-term incentives ensure that the supply chain follows on – fed support key

Galluci 11 - Staff Reporter at InsideClimate News Honduras Contributor at Fodor's, Co-Editor & Reporter at The News, Newsroom Intern at Associated Press, Newsroom Intern at Columbus Business

(Maria, “Never-Used Tax Credit Could Jumpstart US Offshore Wind Energy—if Renewed,” http://truth-out.org/news/item/4778:neverused-tax-credit-could-jumpstart-us-offshore-wind-energy%E2%80%94if-renewed)

Matt Kaplan, a North American wind analyst at [IHS Emerging Energy Research](http://www.emerging-energy.com/), said removing the tax credit's end date could help lure investors by guaranteeing the government's support even if projects gets held up by bureaucracy or politics.¶ "Having a long-term incentive for offshore wind would help ... investors to feel a bit more comfortable with knowing what they can expect out of these projects," he said.¶ But even if the bill passes Congress, attracting financing will remain a challenge for never-before-seen wind farms in America, said Amy Grace, a North American wind analyst with [Bloomberg New Energy Finance](http://bnef.com/). Most financiers prefer to invest only after the first generation of projects proves successful, she said. "Most banks want to be the first to invest in your second project."¶ Still, the subsidy gives the industry at least a shot, she said. "The tax credit won't guarantee investment in the industry. But not having the tax credit will guarantee no investment in the industry."¶ Why The Legislation May Have a Chance¶ Sen. Tom Carper (D-Del.) introduced the Senate bill with Sen. Olympia Snowe (R-Maine) in July, in part to support NRG Bluewater's planned Delaware wind park.¶ Carper, who chairs the Senate finance committee, said last month that he would meet with all six Senate members of the [Joint Select Committee on Deficit Reduction](http://www.deficitreduction.gov/public/) to discuss the bill. The panel is tasked with creating a plan to curb $1.5 trillion from the federal budget deficit by Thanksgiving. Clean energy supporters in Congress have appealed to committee members in recent months to secure or extend tax credits for cleantech manufacturing and R&D.¶ In the House, Reps. Bill Pascrell (D-N.J.) and Frank LoBiondo (R-N.J.) have proposed a companion bill that they say would help a 25-megawatt project by [Fishermen's Energy](http://www.fishermensenergy.com/) get built off New Jersey's coastline.¶ The 3,000-megawatt incentive would cost the U.S. Treasury roughly $1.5 billion, according to estimates provided to InsideClimate News by Jim Lanard, president of the [Offshore Wind Development Coalition](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC0QFjAA&url=http%3A%2F%2Foffshorewinddc.org%2F&ei=DHu6TvfQFsWJhQeSudC7Bw&usg=AFQjCNHxEffNpg1E04rk2UZAIAKlEJbHnw), a lobbying group. The current tax credit, which the federal stimulus approved in 2009 for offshore and land-based wind, geothermal, biomass and other clean energy projects, costs roughly $3 billion. ¶ Grybowski of Rhode Island's Deepwater said he's optimistic the investment tax credit will be approved by Congress, despite the ideological resistance from some Republicans to continue Obama's green energy subsidies in the wake of the collapse of solar firm Solyndra, which received a $535 million federal loan.¶ "We have lots of strong support on both sides of the aisle," he said.¶ One possible reason is that payments to the large-scale projects won't begin for five years. "We think it will take 10 years before those first 3,000 [megawatts] are used up," explained Lanard. He and other advocates of the bills hope this will sway a spending-averse Congress to okay the measure.¶ Another selling point is jobs. Mandelstam of NRG Bluewater said the first 200 megawatts of its Delaware project would create 500 construction and supply chain jobs over three years—a point he aims to drive home to lawmakers.¶ According to the [DOE's National Renewable Energy Laboratory](http://www.nrel.gov/) (NREL), the Obama administration's goal to deploy 10,000 megawatts of offshore wind capacity in the next decade and 54,000 megawatts by 2030, would create more than 43,000 permanent jobs and generate around $200 billion in new economy activity.¶ A large chunk of that growth would come from luring global turbine and equipment manufacturers to set up shop along the Atlantic Coast, developers say. Lanard noted that making one offshore wind turbine requires some 8,000 parts from hundreds of different companies.¶ Mandelstam, who also heads the offshore group of the [American Wind Energy Association](http://www.awea.org/), said he often plays "matchmaker" between European manufacturers and legislators and governors in coastal states, in an effort to entice them to open factories in the U.S. But manufacturers aren't likely to follow until turbines are out at sea, he said. "The supply chain will follow the projects."¶ Along with creating jobs, a domestic network of suppliers and skilled technicians could significantly cut the cost of building an offshore wind farm in the U.S., which right now "is higher than it would be for a comparable project in northern Europe, where there's a developed supply chain," Deepwater's Grybowski said.¶ Who Will Build the First Offshore Wind Farm?¶ Meanwhile, the race to build America's first floating wind farm is on. At this point Deepwater's proposed 30-megawatt Block Island demo installation off Rhode Island appears to be leading—in part because it doesn't need government financing.¶ The tax credit is "less critical for the Block Island wind farm because it is a smaller project," Grybowski said. The project, which includes an underwater network of transmission cables to carry electricity from wind turbines to the mainland, is [expected to cost around $250 million](http://www.businesswire.com/news/home/20110701006119/en/RI-Supreme-Court-Upholds-Block-Island-Wind). Permits could be wrapped up by 2013, and the turbines, which would produce enough power for 12,000 homes on the island, could go up that same year.¶ "We are confident that we will have a financing package in place to allow the project to proceed," Grybowski said. But for larger wind farms, he added, federal support is "critical."¶ For now it's still anyone's guess which utility-scale wind part will be up and running first—and by when.¶ If the tax credit is extended, the first payments for big projects would likely be dispensed in five years or later and divvied up among the leaders—Cape Wind, NRG Bluewater's Delaware wind park and Deepwater's trio of 1,000-megawatt projects.¶ Cape Wind and NRG Bluewater are the furthest along. NRG Bluewater says it expects to wrap up all the necessary permitting by 2014. It could sign a lease even sooner from the U.S. Bureau of Ocean Energy Management (BOEM), which is expected to start leasing blocks off the coasts of Delaware, New Jersey, Maryland and Virginia by the end of this year. (The developer is also seeking to build an additional 2,000 megawatts off Maryland, Massachusetts, New Jersey and New York.)¶ Theoretically, winds blowing off the Atlantic Coast's Outer Continental Shelf could provide more than [1,000 gigawatts](http://www.doi.gov/news/pressreleases/upload/02-07-10-wea-fact-sheet.pdf) of electricity, enough to power 800 million average homes. But it's not just the Atlantic states that are vying for offshore renewable energy.¶ Ohio wants to build a 20-megawatt demo on Lake Erie. Off the coast of Galveston, Tex., developer Coastal Point Energy is proposing a 12-megawatt project. It suffered a setback this summer after utility Austin Energy turned down the developer's proposal for a power purchase agreement. Eventually, Coastal Point hopes to build 300 megawatts at the site and 2,100 more megawatts throughout the area.¶ The key for the entire U.S. offshore wind industry will be consistent government support, say the developers. "Stability in tax and regulatory policies will go a long way toward helping this industry develop in the United States," Grybowski said.

#### The plan maintains NEPA reviews to prevent environmentally destructive over development

Schroeder, 10 --- J.D., University of California, Berkeley, School of Law (October 2010, Erica, California Law Review, “Turning Offshore Wind On,” Vol. 98, No, 5, Lexis, JMP)

V The Coastal Zone Management Act: A Potential Solution

C. Suggested Revisions to the CZMA ¶ Despite its ineffectiveness to date, the CZMA has great potential to serve as a framework for offshore wind power development. With some simple but clear revisions that could enhance federal influence, mimicking Denmark's stronger centralized control of energy development, the CZMA could be used to mandate offshore wind power-friendly CZMPs where applicable. At the same time, the Act will continue to uphold the federalism values ingrained in the management of coastal resources in the United States. These revisions should be:¶ To include an explicit mandate for offshore wind power development where appropriate and feasible on all U.S. coasts;¶ To require revisions to CZMPs in accordance with this new mandate; and¶ [\*1661] ¶ To increase funding and other incentives for offshore wind power development.¶ Revising the CZMA is not a new idea for Congress. For example, during the Cape Wind federal jurisdiction saga, Cong. William D. Delahunt (D-MA) proposed a set of revisions to the CZMA n257 in response to the Cape Wind federal jurisdiction confusion. n258 Although these did not pass, n259 and focused on agency jurisdiction over offshore wind rather than the promotion of offshore wind, the proposal at least demonstrates some willingness in Congress to take on the idea of revising the CZMA. Indeed, the CZMA has been amended in the past, for example to encourage aquaculture. n260¶ In a promising sign of state willingness to cooperate in coastal management, Massachusetts and fifteen other states participated in MMS's initial Programmatic Environmental Impact Statement (PEIS) process, which was MMS's effort to determine how to address offshore wind permitting. n261 Several commenters in the process, including representatives of state agencies, urged MMS to coordinate with state authorities in finding suitable locations for offshore wind facilities. n262 More recently, Massachusetts's Ocean Management Plan explicitly suggests coordination with MMS for offshore renewable energy siting. n263¶ 1. Mandate Offshore Wind Power Development¶ Although the United States has evolved a fundamentally different approach to coastal management from Denmark, revisions to the CZMA should shift our national approach toward increased, centralized influence and coordination that has worked so effectively in that country. Currently the CZMA recognizes the potential importance of offshore energy development and requires the consideration of the development of energy facilities that "are of greater than local significance" in state plans. n264 These vague standards are not sufficient, however, as evidenced by the failure of offshore wind power development in the United States, and in Cape Wind in particular. The CZMA should be revised to include an explicit mandate to states to permit, and possibly even to promote, offshore wind energy and other renewable energy development in appropriate locations. The term "development" should broadly encompass generation facilities as well as transmission lines and other works required to allow facilities to operate effectively. While it is important for states to continue to respond to local concerns and negative impacts, the federal [\*1662] government needs a stronger voice in favor of the national interest in offshore wind power development.¶ This new mandate would not have a detrimental effect on the federal government's broad goal of environmental protection. It would not give offshore wind power developers a right to develop anywhere off the coast, but it would push development in locations that are appropriate environmentally. Along with studies relating to optimal coastal development conditions, for example, wind pattern studies, MMS's PEIS could serve as a useful starting point in defining what "appropriate locations" should entail. The PEIS examines "the potential environmental consequences of implementing the [Alternative Energy and Alternate Use Program on the OCS] and will be used to establish initial measures to mitigate environmental consequences." n265 Individual projects would almost certainly still require individual EISs under NEPA, which would further ensure environmentally appropriate offshore renewable development. In fact, NEPA would effectively serve as a backstop to the development that a revised CZMA would encourage, as it would discourage or prohibit environmentally harmful overdevelopment.¶

#### Pre-emption of state barriers solves empirics prove

Thaler 12 – Visiting Professor of Energy Policy, Law & Ethics, University of Maine School of Law and School of Economics

(Jeff, “FIDDLING AS THE WORLD FLOODS AND BURNS: HOW CLIMATE CHANGE URGENTLY REQUIRES A PARADIGM SHIFT IN THE PERMITTING OF RENEWABLE ENERGY PROJECTS,” Environmental Law, 42, Lexis)//BB

However, statutes expediting agency review of offshore wind projects ¶ solve only part of the problem—after all, litigation delayed and plagued the ¶ Cape Wind project even after it received its multiple regulatory approvals.266 ¶ Thus, as in Maine, there should be both expedited and limited judicial ¶ reviews of agency decisions on offshore wind projects.267¶ ¶ Any effort toward national-scale coordinated and streamlined review of ¶ offshore wind projects must also consider the separate state and local ¶ regulatory obstacles before a project can begin construction. Again, there is ¶ federal precedent for limiting the delay or denial of deserving projects that ¶ are deemed critical to the country’s economic, energy, or environmental ¶ interests. For example, the role of state and local agencies in permitting, ¶ licensing, or regulating nuclear and hydroelectric power projects, cell ¶ towers, and vehicle emissions has been restricted by Congress with the ¶ support of the courts.268 Comparable legislation for siting and permitting ¶ offshore wind projects, including their associated transmission corridors, is ¶ in order. Just as state and local governments cannot regulate cell tower ¶ siting on the basis of impacts from the radio frequency emissions,269 those ¶ governments should also be prohibited from regulating on the basis of harm ¶ to wildlife if the proposed project follows federal guidelines and laws, such ¶ as the ESA, the MMPA, and the MBTA. ¶ The CZMA federal consistency requirement also provides many ¶ opportunities to delay approval of offshore wind energy projects. One set of ¶ proposals has been to streamline the CZMA process, as well as to ¶ legislatively include in the Act “an explicit mandate for offshore wind power ¶ development where appropriate and feasible on all U.S. coasts; [t]o require ¶ revisions to [states’] CZMPs in accordance with this new mandate; and [t]o ¶ increase funding and other incentives for offshore wind power [planning ¶ and] development.”270 One consequence would be requiring “changes to ¶ many states’ CZMPs to reflect the new national priority for offshore ¶ renewable energy sources, including offshore wind.”271 A second ¶ consequence would be that the “federal government would likely certify¶ offshore wind projects as consistent with states’ revised CZMPs because ¶ development of offshore renewable energy would be an explicit goal in the ¶ states’ CZMPs under the revised CZMA.”272