# \*\*\*Natural Gas Vehicles Case Neg

# Oil Frontline

#### 1. State oil revenues don’t fund terrorism and turn, collapsing economy gives terrorists a sympathetic base

Taylor and Doren 07 (Jerry Taylor, Senior fellow at CATO Institute and environmental policy researcher, and Peter Van Doren, Senior fellow at CATO Institue, 8/7/2007, “Don’t Increase Federal Gasoline Taxes—Abolish Them”, CATO Institute, .<http://www.cato.org/pubs/pas/pa-598.pdf>)

Oil Profits for Terrorists Money spent on gasoline flows to oil producers, and many of those producer states use those revenues to directly or indirectly fund Islamic extremists. Private individuals who 10 The record strongly indicates that oilproducing states, regardless of their feelings toward the industrialized West, are rational economic actors.profit from the oil trade likewise contribute to Islamic extremists. Those extremists pose foreign policy and national security problems. This suggests that reduction in oil revenues would reduce Islamic extremist activities. Before we go on, it’s worth noting that only 15.5 percent of the oil in the world market is produced from nation-states accused of funding terrorism. 71 Hence, the vast majority of the dollars we spend on gasoline do not end up on this purported economic conveyer belt to terrorist bank accounts. Regardless, terrorism is a relatively low-cost endeavor, and oil revenues are unnecessary for terrorist activity. The fact that a few hundred thousand dollars paid for the 9/11 attacks suggests that the limiting factor for terrorism is expertise and manpower, not money. What is the relationship between oil prices and Islamic terrorist incidents? We estimated two regressions using annual data from 1983 to 2005: the first between fatalities resulting from Islamic terrorist attacks and Saudi oil prices and the second between the number of Islamic terrorist incidents and Saudi oil prices. In neither regression was the estimated coefficient on oil prices at all close to being significantly different from zero. 72 That probably explains why there is no correlation between Persian Gulf oil revenues and terrorist activity. Inflation-adjusted oil prices and profits during the 1990s were low. But the 1990s also witnessed the worldwide spread of Wahhabi fundamentalism, the build-up of Hezbollah, and al Qaeda’s coming of age. Note too that al Qaeda terrorists in the 1990s relied on help from state sponsors such as Sudan, Afghanistan, and Pakistan—nations that aren’t exactly known for their oil wealth or robust economies. What terrorists need most is a recruiting pool from which to draw. If the United States were to tax gasoline to such an extent that global oil demand, prices, and profits for oil producers declined, the oil states would have smaller economies and less to distribute to their underemployed youth. To the extent that deteriorating economic conditions breed social discontent and political resentment, taxing gasoline to reduce revenues flowing to Islamic terrorists might well increase the recruitment pool for Islamic terrorists and make matters worse. Reducing oil revenue to noxious regimes might be a risk worth taking if billions were finding their way from such regimes into al Qaeda coffers, but that seems unlikely. Everything we know suggests that al Qaeda terrorist cells are “pay as you go” operations that primarily engage in garden-variety crime to fund their activities, and Islamic charities are the primary sources for organizational revenue. 73 Given that the governments of Saudi Arabia, Kuwait, and others in the region are slated for extinction should bin Laden have his way, those governments have no interest in facilitating the transfer of oil revenues to some post office box in Pakistan. Producer states do indeed use oil revenues to fund ideological extremism, and Saudi financing of madrassas and Iranian financing of Hezbollah are good examples. But given the importance of those undertakings to the Saudi and Iranian governments, it’s unlikely that they would cease and desist simply because profits were down. They certainly weren’t deterred by meager oil profits in the 1990s. 74 The futility of reducing oil consumption as a means of reducing terrorism is illustrated by an examination of revenues earned from oil sales. A recent paper from the publishers of the Lundberg Letter notes that oil exports from states accused of funding terrorism earned those governments $290 billion in 2006. Even if that sum were cut by 90 percent, it would still leave $29 billion at their disposal—more than enough to fund terrorism given the minimal financial needs of terrorists. “Even a price of $10 per barrel crude (an unlikely scenario even under massive subsidy programs for plug-in hybrid vehicles and biofuels market share mandates) would likely not cut off the purported cash flow to terror groups.”

**2. Their Levy and Slackman 8 card doesn’t actually claim that oil prices will rise again in the future, it just considers the possibility that the price of oil might be able to shoot back up someday. This means that there is no reason why any of the 1AC impacts would happen if oil prices never rose again**

**3. Their Podesta et al 11 card doesn’t give any reasons why the development of natural gas fueling infrastructure would eliminate oil usage, the actual card only talks about various infrastructure investments needed to increase efficiency and reduce emissions, nowhere does it mention natural gas**

#### 4. Anti-Americanism is a myth

(Max Paul Friedman, PhD, expert on US foreign relations, Woodrow Wilson Postdoctoral Fellow, winner of Herbert Hoover Prize in U.S. History,“Anti-Americanism and U.S. Foreign Relations”, 8/18/08, Wiley Online Library, <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full>)

A specter is haunting America—the specter of anti-Americanism. More than three thousand newspaper articles have referred to anti-Americanism since September 2001.[1](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn1) Their headlines read “Why the World Loves to Hate America,”“Anti-Americanism Is One ‘Ism’ that Thrives,”“An Irrational Hatred,” and “A Guide to Hating Uncle Sam,” along with the plaintive “Why Do They Hate Us?” Walter Russell Mead answered that question with two simple phrases: “American success [and] American power.” President George W. Bush memorably replied, “They hate us, because we're free.”[2](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn2)¶ Book publishers seem to favor titles that range in tone from Cassandra to Chicken Little: America against the World; America on Notice;Hating America: A History; Hating America: The New World Sport.[3](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn3) A recent roundtable in the American Historical Review, with sophisticated analyses from Jessica Gienow-Hecht on Europe, Greg Grandin on Latin America, and others, showed that there is no consensus even on the meaning of the word. Is it an ideology, a cultural prejudice, a form of resistance, a threat?[4](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn4)¶ What is anti-Americanism, and what bearing does it have on U.S. foreign relations? Well, the mere uttering of a discouraging word should not in itself be enough to establish the speaker as anti-American. Otherwise, one would have to condemn as anti-American such diverse figures as Sinclair Lewis (the United States is “a force seeking to dominate the earth”), Henry James (“no literature, no novels, no museums, no pictures, no political society”), Stendhal (“no opera!”), Talleyrand (“if I must stay here a year, I shall die”), Aldous Huxley (Americans “exist . . . on the lower animal levels”), and Anthony Eden (“they want to run the world”).[5](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn5)¶ The first generation of scholarly literature on anti-Americanism was characterized by unstated assumptions of American exceptionalism. Sociologists such as Paul Hollander and political scientists such as Stephen Haseler attribute anti-Americanism to psychological problems, a kind of neurosis rooted in “envy”[6](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn6) of America's great wealth and power. Hollander calls it “an irrational dynamic . . . that springs from the need of human beings to explain and reduce responsibility for the misfortunes in their lives.”[7](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn7) More recently, Andrei Markovits has dubbed anti-Americanism “a European lingua franca,” one closely tied to anti-Semitism.[8](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn8) Russell Berman argues that because “the United States sets a higher moral standard . . . anti-Americanism is the expression of a desire to avoid the moral order.”[9](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn9)America as scapegoat, criticism of America as misguided or malevolent: this, even when scholars acknowledge the imperfection of American society or the legitimacy of occasional complaint, is the conventional understanding of anti-Americanism.¶ So what is the meaning of this fuzzy concept? Is it mass resistance to U.S. policies? Is it a prejudice structurally comparable to racism or anti-Semitism? Is it an ideology comparable to other “isms” such as communism or fascism? When is a critique anti-American? My first answer is: less often than we think. Alarmist reports to the contrary, in surveys taken throughout the post-World War II period, positive views of the United States outranked negative views in nearly every year until 2003. When lower rankings (still positive but by smaller margins) occurred, they closely correlated with controversial U.S. policies such as the Vietnam War or the hawkish first administration of Ronald Reagan.[10](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn10) Anti-Americanism in its most serious form as a prejudice with negative implications for the United States exists when there is a combination of blanket rejection of American society, hostility to American values (as understood by the speaker), and dislike of Americans. It brings a normative rejection of any U.S. policy because it is American, regardless of what the policy is. This can be found in certain cases, for example among some party-line Communists during the Cold War and some radical Islamists today. But it is not very common in most of the world, and never has been.¶ My goal is to call into question this oversimplified and overused term itself, to expose the assumptions behind it, and demonstrate its function in the making of U.S. policy. Specifically, anti-Americanism is a concept that was reified and spread throughout government, academia, and the media during the Cold War, when it was widely understood as an explanation for the source of opposition to U.S. policies abroad, and to be caused by irrational thinking by foreigners. In other words, anti-Americanism was thought to have causal power, and, because it was irrational, it was illegitimate. Therefore foreign opposition was not worth taking seriously. This was not so much a deliberate strategy as a latent thinking pattern that brought serious consequences, as I will show below.¶ To see why the binary categories of anti- and pro-American lead to logical fallacies, consider an example. Take the experience of West Germany during the 1960s in the era of the Vietnam War. On one side of the spectrum, you have the Christian Democratic establishment, old-style Germans who became reluctant Atlanticists: they wanted to be in NATO (although they did not want to pay as much for American troops as Americans would have liked), they chose Washington over Paris, and they supported the Vietnam War because, in the saying from those days, “Berlin is defended on the Mekong Delta.” To criticize the Vietnam War, they said, was anti-American, and that was against West Germany's own interests in the Cold War.[11](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn11)¶ On the other side, you have the Ausserparlamentarische Opposition, the student movement. Fiercely anti-war, these young Germans also admired aspects of American culture so much they adopted them as their own. They had grown up influenced by the Allies’ reeducation programs, and their culture was shaped by Hollywood and the Armed Forces Radio Network. They wore blue jeans and listened to rock & roll. They explicitly made connections to the American civil rights movement and the anti-war movement in the United States, adopting their tactics. They said, let's have “Ein Sit-In” or let's do “Ein Teach-In.” They sang “We Shall Overcome” and Bob Dylan songs in English. They abandoned the German romantic nationalism of Herder and Fichte for the social critique of David Riesman and the moral activism of Henry David Thoreau. They dismissed their parents’ generation as hopelessly tainted by nazism, and called for more democracy and more freedom in their own society.[12](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn12)¶ So who were the anti-Americans? The students who were the most Americanized generation in German history and wanted the United States to live up to its self-proclaimed values? Or the old German Right who were horrified at what they saw as the creeping Americanization of Germany's youth, the questioning of authority in universities and the family, the promiscuous sex, the so-called jungle rhythms of popular music? To be sure, some radical students called the United States “fascist” and chanted “USA–SA–SS,” but many more loved Americanization and hated the Vietnam War. The right wing hated Americanization, and supported the Vietnam War. So who was anti-American?¶ Pro- or anti-, with us or against us: this approach is clearly too schematic. Of course, anti-Americanism in the narrow sense of enduring prejudice does exist. Many people in this room have encountered it—I see our friends at the State Department table, some of you have put up with this for years—and like Justice Potter Stewart on pornography, we may be tempted to say that we know it when we see it. Yet the word does not mean merely a national prejudice like any others. We speak of anti-Americanism, but not of anti-Italianism or anti-Gallicism or anti-Brazilianism, because arguably more than any other country, “America” is not only a physical place but a place of the imagination. There are prejudices against every nation, and historical grievances against many, usually from their neighbors. But unusually, “America” as a concept has symbolic meaning in many parts of the world.¶ Even before the founding of the United States, “America” was a contested place in the European imagination, representing to some an earthly space for the mythical paradise in the west. Paradise is always to the west. The Elysian Fields, Eden, Atlantis, California, Boulder. . . . But to others, it was a dystopia. The Enlightenment philosophers Cornelius de Pauw and the Comte de Buffon believed no civilization could flourish in America's degenerate climate, that plants and animals would grow stunted, and human beings could not develop there. In the first recorded act of public diplomacy, anticipating the U.S. Information Agency (USIA) by a century and a half, Thomas Jefferson hired a team of hunters and sent a large crate to Paris containing the skin and bones of an elk, a moose, and a caribou to show that there were indeed very large animals in America.[13](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn13) This is the first instance of a recurring pattern in which U.S. officials who wish to alter foreign opinion spend large sums on public information campaigns overseas that seem to have no impact whatsoever.¶ The nineteenth century saw the development of enduring tropes about America: the land of Mammon, obsessed by commerce and wealth, and later Moloch, ruled by the machine. In Latin America, the appropriation of the term “America” itself by the northern half of the hemisphere was contested, with José Martí writing defiantly of “Nuestra América,”“our America,” and José Enrique Rodó drawing on Shakespeare's Tempest to compare South America to a spiritual Ariel, guardian of Mediterranean culture, against the soulless, materialistic Caliban of the North.[14](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn14) Discourse about “America” since the nineteenth century has often been linked to a conflict over a certain vision of modernity, which the new country seemed to embody: critiques of America in foreign lands were often stalking horses for internal political disputes about capitalism, technology, urbanization, racial mixing, the presence of women in the public sphere, and the like. Worst of all, for both Right and Left, the worldwide appeal of tasteless American culture seemed to threaten to impose this system on their own societies: America's present as the foreigner's future; anti-Americanism can be a position in a debate about one's own world and how it will change.[15](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn15)¶ This is still true today: thus we see disputes over social policy and market regulation abroad cast in terms of “the American model” or “American conditions”: amerikanische Verhältnisse, condizione americane, le modèle anglo-saxon, el modelo norteamericano. These debates are not actually about the United States. They are about the relationship of the government to the market. “American conditions” refer to low taxes, weak labor rights, privatization, and so on, the way “Rhenish capitalism” or “Scandinavian socialism” can be shorthand for other models.¶ So there is less anti-Americanism than we think, and often criticism of America is not about America at all. Some scholars such as Peter Katzenstein, Robert Keohane, Alan McPherson, and Andrew and Kristin Ross have done their best to bring the discussion down to earth through empirical research and critical thinking.[16](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn16) They have shown us how nationalist politicians in places such as Cuba, Iran, and Venezuela can use anti-Americanism to mobilize their constituencies, especially when the United States responds with increased vehemence. But political instrumentalization is not an ideology either. McPherson has demonstrated that, over a century of Latin American history, hostility to the United States has “almost always been, and often primarily was, not an a priori ideology but a response to U.S. policy. The more U.S. policy offended, the more widespread, deep, and visceral anti-U.S. sentiment became.”[17](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn17) Yet Hollander, Haseler, Berman, Jean-François Revel, and other so-called anti-anti-Americans, along with the current presidential administration and most of the media, argue that to speak ill of America is to be against first principles such as democracy, or freedom, or Western values.[18](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn18) This does apply to some nineteenth- and early twentieth-century European right-wing writing, and some contemporary, especially pro-Caliphate Islamist, discourse, a fairly marginal position too often conflated with far larger swaths of opinion. Studies of anti-Americanism that see a great deal of it everywhere and blame it on neurosis or anti-democratic tendencies are prisoners of their own unstated assumptions. They tend to be rooted in American exceptionalism, to subscribe to a universalist, diffusionist view in which to oppose its emulation is to engage in a perverse opposition to teleological progress. In the form articulated by Hollander, whose books are at the center of the still rather modest scholarly landscape, the “Americanism” he wishes to make immune from critique is politically obedient and culturally conservative. Scholars who begin from that place easily misread the phenomenon in which opposition to the United States abroad is based on geopolitical conflict or the apparent U.S. violation of its own stated ideals, through wars perceived as unjust, racial discrimination, and support for dictatorships.¶ So the pro- and anti- schema does not get us very far. We can see the same dilemma when it comes to individuals. As an example, consider these words from a well-known French writer: Vietnam is a “monstrous” war launched by an “imperial” power. America “was Puritan, but its cities abound in sex shops.” In the United States, “everything is reckoned in dollars and cents.”[19](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn19)¶ This would be dismissed as classic French whining and exaggeration, if this had come from the pen of a Sartre, a de Beauvoir, a Baudrillard, or a Duhamel, one of the reliable “anti-Americans.” But the author was none other than Raymond Aron, committed Atlanticist and America's favorite Frenchman since Lafayette. Meanwhile, the “anti-American” Jean-Paul Sartre infamously exclaimed after the execution of the Rosenbergs that “America has rabies,” but his critiques of the United States were inspired by American writers such as Upton Sinclair and Michael Harrington; he wrote that “the greatest literary development in France . . . was the discovery of Faulkner, Dos Passos, Hemingway, . . . Steinbeck.”[20](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn20) A jazz fan, he named his magazine Les Temps Modernes after Charlie Chaplin's Hollywood filmModern Times. He did not think to praise American society for fostering such creativity, but is the label “anti-American” suggesting an enduring prejudice and blanket hostility, the best way to understand Sartre's views? Is that why he condemned the Soviet invasion of Hungary?[21](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn21) Some U.S. officials, at least, were not sure what to make of him: when J. Edgar Hoover learned in 1964 that Sartre was critical of the United States, he reportedly fired off an order: “Find out who this Sartre is.”[22](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn22)¶ So Aron, the pro-American, makes classically anti-American comments, and Sartre, the anti-American, embraces central aspects of American culture. A conservative scholar might respond that of course we know who the anti-American is: Sartre, because he opposed U.S. policy in public, and actions speak louder than words. But that would be to strip anti-Americanism of all deeper meaning, reducing it merely to a synonym for opposition to U.S. policy. If that is true, we do not need any of the psychological explanations, or the conflict with modernity, to understand why people take anti-American positions. Because American exceptionalists want to discredit their opponents, they need to have anti-Americanism be an “ism,” both a deeply rooted and irrational condition, and one with explanatory power: it is not equal to opposition to U.S. policies—it is the cause of opposition to U.S. policies, in their argument.¶ Instead, recent research shows that anti-American sentiments have neither a necessary nor a sufficient connection to stances against any given U.S. policy. Rather than anti-Americanism causing negative responses to U.S. actions, we see U.S. actions sometimes generating increased negative views of the United States. In 2002, 64 percent of people surveyed in forty-four countries held a favorable view of the United States. Over the next three years, in tandem with the Iraq War, favorable ratings declined, precipitously in Muslim countries—although they came back up in Pakistan after the earthquake and Indonesia after the tsunami, responding to well-received U.S. relief efforts.[23](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7709.2008.00708.x/full#fn23) The same trend can be seen in the late 1960s and early 1970s over Vietnam, and in the early 1980s over Reagan's policies in Central America and on nuclear rearmament. Ideologies and deep-seated prejudices do not rise and fall dramatically from month to month and year to year. Therefore, I argue, using anti-Americanism to explain the cause of opposition to U.S. policies does not just put the cart before the horse, it says the cart is the horse—it reverses causality.¶

#### 5. Venezuela can’t go nuclear

([Doug Bandow](http://www.cato.org/people/doug-bandow), Senior Fellow at the Cato Institute, Juan Carlos Hidalgo, Project Coordinator for Latin America at the Cato Institute's Center for Global Liberty and Prosperity, 1/12/11, “Defusing Venezuela's Nuclear Threat?”

*CATO Institute,* <http://www.cato.org/publications/commentary/defusing-venezuelas-nuclear-threat>)

Venezuela's close relationship with Iran and plans to build nuclear facilities with Russian help are raising fears in Washington of another nuclear crisis. The incoming Republican House majority may place increased pressure on the Obama administration to confront Caracas.¶ Washington need not panic. A "Chávez bomb" is but a distant possibility and much will happen in Venezuela in the meantime. The U.S. should work with other interested states to discourage Caracas from pursuing nuclear weapons.¶ Venezuela suffers from severe energy shortages — primarily due to the Chávez government's mismanagement — and there's reason to doubt Chávez's claim that his nuclear program is for purely peaceful purposes. For one — Chávez's arms purchases far outstrip his nation's security needs. Over the last decade Caracas has purchased fighters, attack helicopters, antiaircraft missiles, and 100,000 assault rifles. Yet Venezuela has been at peace since 1823 and faces no external threats.¶ Yet even if Venezuela chooses to pursue nuclear weapons, it's far from certain that Caracas will succeed. The difficult process requires time, money, technology, and science. Developing nuclear weapons is even harder in the face of international opposition. Moreover, creating weapons of deliverable size poses another significant challenge.¶ Despite Chávez's pretensions of global leadership, his corruption-ridden and inept regime may be the biggest obstacle to a Venezuelan nuclear bomb. Worst is his gross economic mismanagement despite the government's receipt of billions in oil revenues.¶ The country's infrastructure is crumbling. Last April an offshore drilling rig rented by PDVSA, Venezuela's state-owned oil company, sank. The deal involved a questionable rental contract with former PDVSA executives and the accident was never properly investigated. Earlier this year power blackouts caused by a series of explosions at electrical plants and inadequate maintenance at the Guri hydro-electrical dam forced the government to impose electricity rationing.¶ Venezuela's transportation infrastructure is literally falling apart. The government agency that manages the country's food supply let 120,000 tons of imported food rot in port while its own supermarkets suffered shortages of basic staples. Chávez's anti-business policies discourage private investment.¶ Although Caracas is a major oil supplier, it cannot easily afford an expensive nuclear program. With the days of skyrocketing oil prices over, at least in the foreseeable future, the government faces serious financial difficulties.¶ For example, Chávez's regime owes Colombian businesses approximately $500 million for past exports. PDVSA has delayed payments to its contractors. After Chávez's allies lost the legislative elections in October, his government launched an expropriation spree but only 9 percent of the confiscated industries have been paid for.¶ Moreover, Chávez is not certain to retain power in the face of a contracting economy, staggering crime rate, unbridled corruption and an increasingly united opposition. Even if he wins reelection in 2012, Chávez likely will find it more difficult to achieve his international ambitions.¶ Obviously, it would be foolish to dismiss the possibility of Venezuela becoming a nuclear power, but it is equally mistaken to speak of "an over-the-horizon Cuban Missile Crisis," in the words of the Heritage Foundation's Peter Brookes. Venezuela is nowhere close to or certain of becoming a threat to the U.S. Thus, the Obama administration should develop a long-term strategy to head off any "Chávez bomb.”

#### 6. The declining US economy and China’s rise assure that US retrenchment and multipolarity are inevitable – the US will benefit from a shift to offshore balancing now.

Layne 12 (Christopher Professor and Robert M. Gates Chair in National Security at Texas A&M University’s Bush School of Government and Public Service, 1/27, “The (Almost) Triumph of Offshore Balancing”, The National Interest, http://nationalinterest.org/commentary/almost-triumph-offshore-balancing-6405) MF

The DSG is a response to two drivers. First, the United States is in economic decline and will face a serious fiscal crisis by the end of this decade. As President Obama said, the DSG reflects the need to “put our fiscal house in order here at home and renew our long-term economic strength.” The best indicators of U.S. decline are its GDP relative to potential competitors and its share of world manufacturing output. China’s manufacturing output has now edged past that of the United States and accounts for just over 18 or 19 percent of world manufacturing output. With respect to GDP, virtually all leading economic forecasters agree that, measured by market-exchange rates, China’s aggregate GDP will exceed that of the United States by the end of the current decade. Measured by purchasing-power parity, some leading economists believe China already is the world’s number-one economy. Clearly, China is on the verge of overtaking the United States economically. At the end of this decade, when the ratio of U.S. government debt to GDP is likely to exceed the danger zone of 100 percent, the United States will face a severe fiscal crisis. In a June 2011 report, the Congressional Budget Office warned that unless Washington drastically slashes expenditures—including on entitlements and defense—and raises taxes, it is headed for a fiscal train wreck. Moreover, concerns about future inflation and America’s ability to repay its debts could imperil the U.S. dollar’s reserve-currency status. That currency status allows the United States to avoid difficult “guns-or-butter” trade-offs and live well beyond its means while enjoying entitlements at home and geopolitical preponderance abroad. But that works only so long as foreigners are willing to lend the United States money. Speculation is now commonplace about the dollar’s long-term hold on reserve-currency status. It would have been unheard of just a few years ago. The second driver behind the new Pentagon strategy is the shift in global wealth and power from the Euro-Atlantic world to Asia. As new great powers such as China and, eventually, India emerge, important regional powers such as Russia, Japan, Turkey, Korea, South Africa and Brazil will assume more prominent roles in international politics. Thus, the post-Cold War “unipolar moment,” when the United States commanded the global stage as the “sole remaining superpower,” will be **replaced** by a multipolar international system. The Economist recently projected that China’s defense spending will equal that of the United States by 2025. By the middle or end of the next decade, China will be positioned to shape a new international order based on the rules and norms that it prefers—and, perhaps, to provide the international economy with a new reserve currency. Two terms not found in the DSG are “decline” and “imperial overstretch” (the latter coined by the historian Paul Kennedy to describe the consequences when a great power’s economic resources can’t support its external ambitions). But, although President Obama and Defense Secretary Leon Panetta may not admit it, the DSG is the first move in what figures to be a dramatic strategic retrenchment by the United States over the next two decades. This retrenchment will push to the fore a new U.S. grand strategy—offshore balancing. In a 1997 article in International Security, I argued that offshore balancing would displace America’s primacy strategy because it would prove difficult to sustain U.S. primacy in the face of emerging new powers and the erosion of U.S. economic dominance. Even in 1997, it was foreseeable that as U.S. advantages eroded, there would be strong pressures for the United States to bring its commitments into line with its shrinking economic base. This would require scaling back the U.S. military presence abroad; setting clear strategic priorities; devolving the primary responsibility for maintaining security in Europe and East Asia to regional actors; and significantly reducing the size of the U.S. military. Subsequent to that article, offshore balancing has been embraced by other leading American thinkers, including John Mearsheimer, Stephen Walt, Barry Posen, Christopher Preble and Robert Pape. To be sure, the proponents of offshore balancing have differing ideas about its specifics. But they all agree that offshore balancing is based on a common set of core strategic principles. ● Fiscal and economic constraints require that the United States set strategic priorities. Accordingly, the country should withdraw or downsize its forces in Europe and the Middle East and concentrate is military power in East Asia. ● America’s comparative strategic advantages rest on naval and air power, not on sending land armies to fight ground wars in Eurasia. Thus the United States should opt for the strategic precepts of Alfred Thayer Mahan (the primacy of air and sea power) over those of Sir Halford Mackinder (the primacy of land power). Offshore balancing is a strategy of burden shifting, not burden sharing. It is based on getting other states to do more for their security so the United States can do less. ● By reducing its geopolitical and military footprint on the ground in the Middle East, the United States can reduce the incidence of Islamic fundamentalist terrorism directed against it. Islamic terrorism is a push back against U.S. dominance and policies in the region and against on-the-ground forces in the region. The one vital U.S. interest there—safeguarding the free flow of Persian Gult oil—can be ensured largely by naval and air power. ● The United States must avoid future large-scale nation-building exercises like those in Iraq and Afghanistan and refrain from fighting wars for the purpose of attaining regime change. Several of these points are incorporated in the new DSG. For example, the new strategy document declares that the United States “will of necessity rebalance toward the Asia-Pacific region.” The document also states the United States will “rebalance [its] military investment in Europe” and that the American military posture on the Continent must “evolve.” (The Pentagon’s recent decision to cut U.S. ground forces in Europe from four brigades to two is an example of this “evolution.”) Finally, implicitly rejecting the post-9/11 American focus on counterinsurgency, the strategy document says that with the end of the Iraq war and the winding down of the conflict in Afghanistan, “U.S. forces will no longer be sized to conduct large-scale, prolonged stability operations.” The DSG reflects the reality that offshore balancing has jumped from the cloistered walls of academe to the real world of Washington policy making. In recent years the U.S. Navy, the Joint Staff and the National Intelligence Council all have shown interest in offshore balancing as an alternative to primacy. Indeed, in his February 2011 West Point speech, then defense secretary Robert Gates made two key points that expressed a clear strategic preference for Mahan over Mackinder. First, he said that “the most plausible, high-end scenarios for the U.S. military are primarily naval and air engagements—whether in Asia, the Persian Gulf, or elsewhere.” Second—with an eye on the brewing debate about intervention in Libya—he declared that “any future defense secretary who advises the president to again send a big American land army into Asia or into the Middle East or Africa should ‘have his head examined,’ as General MacArthur so delicately put it.” In plain English, no more Eurasian land wars. The subsequent Libyan intervention bore the hallmarks of offshore balancing: The United States refused to commit ground forces and shifted the burden of military heavy lifting to the Europeans. Still, within the DSG document there is an uneasy tension between the recognition that economic constraints increasingly will impinge on the U.S. strategic posture and the assertion that America’s global interests and military role must remain undiminished. This reflects a deeper intellectual dissonance within the foreign-policy establishment, which is reluctant to accept the reality of American decline. In August 2010, Secretary of State Hillary Clinton proclaimed a “New American Moment;” reaffirmed the U.S. responsibility to lead the world; and laid out an ambitious U.S. global agenda. More recently, Mitt Romney, a leading contender for the Republican presidential nomination, declared that the twenty-first century “must be an American century” and that “America is not destined to be one of several equally balanced global powers.” These views are echoed by foreign-policy scholars who refuse to acknowledge the reality of decline or embrace a theory of “painless decline” whereby Pax Americana’s norms and institutions will survive any American retrenchment. But, American “exceptionalism” notwithstanding, the United States is not exempt from the historical pattern of great-power decline. The country needs to adjust to the world of 2025 when China will be the number-one economy and spending more on defense than any other nation. Effective strategic retrenchment is about more than just cutting the defense budget; it also means redefining America’s interests and external ambitions. Hegemonic decline is never painless. As the twenty-first century’s second decade begins, history and multipolarity are **staging a comeback**. The central strategic preoccupation of the United States during the next two decades will be its own decline and China’s rise.

The report, titled "The Future of Natural Gas," acknowledges that U.S. energy and climate policy is in flux. For the most part, the MIT researchers accept the idea that the advancement of onshore gas drilling technology has set the stage for a gas boom in the United States. As such, the MIT researchers analyze increasing gas consumption under a number of different scenarios. A cushion, but not a complete answer¶ Gas is an option for cutting power plant emissions and addressing global warming in the short term. But the researchers warned that the gas cushion shouldn't distract policymakers from addressing the need for nuclear power and carbon capture and sequestration (CCS) technology for coal-fired generation.¶ "Though gas frequently is touted as a 'bridge' to the future, continuing effort is needed to prepare for that future, lest the gift of greater domestic gas resources turn out to be a bridge with no landing point on the far bank," the report says. "Barriers to the expansion of nuclear power or coal and/or gas generation with CCS must be resolved over the next few decades so they are capable of expanding to replace natural gas in generation."¶ This emissions policy does relatively little to alter natural gas markets, the report finds. Gas production and demand grows slightly more slowly, cutting gas use and supply by a few trillion cubic feet in 2040 compared with a scenario that doesn't include a climate policy. Gas use and production begins to fall after 2040, driven by higher gas prices due in part to a rising price on carbon dioxide emissions.¶ "While gas is less carbon intensive than coal or oil, at the reduction level required by 2050, its [carbon] emissions are beginning to represent an emissions problem," the report explains. "However, even under the pressure of the assumed emissions policy, total gas use is projected to increase from 2005 to 2050 even for the low estimate of domestic gas resources."¶ The scenario goes like this, according to MIT: Nuclear power, renewable energy and carbon capture and sequestration are relatively expensive next to gas. Conventional coal is no longer a major source of power generation in the United States. "Natural gas is the substantial winner in the electric sector: The substitution effect, mainly gas generation for coal generation, outweighs the demand reduction effect."¶ MIT projects that under a carbon policy regime, oil and today's biofuels are replaced by advanced biofuels. A 30% hike in electricity prices by 2030¶ Both the economy and energy demand take a big hit under a carbon price regime. Electricity prices are increasing regardless of whether the U.S. government puts a price on carbon, said the MIT researchers, projecting a 30 percent increase in power prices by 2030 and 45 percent by 2050.

**7. Their Zubrin 12 evidence assumes a government mandate for all vehicles to be flex-fuel capable in order to access solvency on their oil and warming advantages. This is not what their plan does- it only sets up fueling pumps. With only 8 million FFV’s on the road now, the plan would have no impact on the oil market.**

## Warming

#### Peak oil is a myth- alarmists’ model ignores nonconventional oils, which grow more attractive as tech develops and long-term profits considered

([Leonardo Maugeri](http://www.sciencemag.org/search?author1=Leonardo+Maugeri&sortspec=date&submit=Submit)[,](http://www.sciencemag.org/content/304/5674/1114.full#aff-1) expert on oil, gas, and energy, Senior Fellow at Harvard University, John Kennedy School, Belfer Center for Science and International Affairs, Ph. D. in international economics,“Oil: Never Cry Wolf--Why the Petroleum Age Is Far from over”

Science Magazine, 5/21/04, <http://www.sciencemag.org/content/304/5674/1114.full>

After World War I, the United States was shaken by predictions of the exhaustion of domestic oil. Even the head of the U.S. Geological Survey (USGS)—among many others—delivered a verdict of gloom in 1919: The country would run out of oil within 9 years! ([1](http://www.sciencemag.org/content/304/5674/1114.full#ref-1)) Facing mounting hysteria, President Coolidge set up the Federal Oil Conservation Board in 1924, to draft legislation to preserve national resources. After the conversion of Great Britain's naval fleet from coal to oil in 1914, the UK also feared that it would be vulnerable to oil shortages and moved to secure its grip on the Persian Gulf. These cycles of hysteria followed by new bonanzas have continued to the present. Thus, it is not surprising that a new wave of “oil doomsters” predicting imminent petroleum scarcity has gained momentum ([2](http://www.sciencemag.org/content/304/5674/1114.full#ref-2)–[4](http://www.sciencemag.org/content/304/5674/1114.full#ref-4)).¶ The worst effect of this recurring oil panic is that it has driven Western political circles toward oil imperialism and attempts to assert direct or indirect control over oil-producing regions. Yet the world is not running out of oil, and catastrophic views fail to take into account the complex reality that will allow reliance on abundant supplies for years to come.¶ ¶ View larger version:¶ [In this page](http://www.sciencemag.org/content/304/5674/1114/F1.expansion.html)¶ ¶ [In a new window](http://www.sciencemag.org/content/304/5674/1114/F1.expansion.html)¶ The Hubbert curve (United States).¶ Bbl, billion (109) barrels.¶ The current model of oil doomsters is derived from K. M. Hubbert ([5](http://www.sciencemag.org/content/304/5674/1114.full#ref-5)). The model is conceptually simple, but based on several assumptions. The first is that the geological structure of our planet is well known and thoroughly explored, so that discovery of unknown oil fields is highly improbable. Second, to resolve problems connected with erratic distribution and production from thousands of oil fields and uncertainty of future discoveries, production is assumed to follow the “Central Limit Theorem” from statistics. This theorem states that the sum of a large number of erratic variables tends to follow a normal distribution and assumes a bell-shaped curve (see [figure](http://www.sciencemag.org/content/304/5674/1114.full#F1) above).¶ Starting from zero, production grows over time until it peaks when half of the recoverable resources have been extracted (“midpoint depletion”). Then, production irreversibly declines at the same rate at which it grew. The area under the curve shows the cumulative production of an oil field or the “ultimate recoverable resources” (URR) it holds and their life-span.¶ Accordingly, to forecast Earth's URR, one needs to process worldwide production and discovery trends and geological data. In 1956, Hubbert accurately predicted the peak oil production point of the U.S. lower 48 states.¶ The Hubbert curves do not delineate the complex and dynamic nature of oil production and reserves in the world, because they are the product of a static model that puts an unjustifiable faith in geology and does not consider technology and cost/price functions. The model's success in predicting U.S. peak production merely reflected the peculiar nature of this area, which is the most intensively explored and exploited in the world. Elsewhere, the pattern of production is not rendered by a bell curve but is marked by large discontinuities (see [figure](http://www.sciencemag.org/content/304/5674/1114.full#F2), below).¶ ¶ View larger version:¶ [In this page](http://www.sciencemag.org/content/304/5674/1114/F2.expansion.html)¶ ¶ [In a new window](http://www.sciencemag.org/content/304/5674/1114/F2.expansion.html)¶ Historical behavior of oil production in Egypt ([16](http://www.sciencemag.org/content/304/5674/1114.full#ref-16)).¶ Using different versions of the Hubbert model, several geologists have made predictions in the last 20 years of an imminent crisis in oil availability that subsequently had to be revised. The most eminent among them is C. Campbell, who predicted that 1989 was the year of “peak” production ([6](http://www.sciencemag.org/content/304/5674/1114.full#ref-6)). The estimates have been increasing steadily (see [table](http://www.sciencemag.org/content/304/5674/1114.full#T1), below).¶ View this table:¶ [In this window](http://www.sciencemag.org/content/304/5674/1114/T1.expansion.html)¶ ¶ [In a new window](http://www.sciencemag.org/content/304/5674/1114/T1.expansion.html)¶ Before looking at the real-world situation in more depth, it is necessary to clear up some points, beginning with the distinction between “resource” and “reserve.” The former indicates the overall stock of a mineral in physical terms, without any associated economic value and/or estimation of its likelihood of being extracted. In other words, there may be large quantities that can never be used because of the high cost or the impossibility of recovery, as in the case of the gold dispersed in the oceans. The concept of “reserves”—like that of “recoverable resources”—involves an economic assessment of the possibility of producing a part of the overall resources. In the oil sector, there are additional definitions—the most important being that of “proven reserves,” which include only those that can be economically produced and marketed at the present time according to existing technologies and demand. Nearly all of the estimates of the world's oil URR, including those by oil doomsters, do not take into account the so-called “nonconventional oils”—such as Canadian tar-sands and Venezuelan and Russian heavy oils—even though the availability of these resources is huge and the costs of extraction falling.¶ Although hydrocarbon resources are irrefutably finite, no one knows just how finite. Oil is trapped in porous subsurface rocks, which makes it difficult to estimate how much oil there is and how much can be effectively extracted. Some areas are still relatively unexplored or have been poorly analyzed. Moreover, knowledge of in-ground oil resources increases dramatically as an oil reservoir is exploited.¶ For example, the Kern River field was discovered in California in 1899. Calculations in 1942 suggested that 54 million barrels remained. However, in 1942 “…after [43] years of depletion, ‘remaining’ reserves were 54 million barrels. But in the next [44] years, it produced not 54 but 736 million barrels, and it had another 970 million barrels ‘remaining’ in 1986. The field had not changed, but knowledge had….” ([7](http://www.sciencemag.org/content/304/5674/1114.full#ref-7)). This is but one of hundreds of cases reported in oil-related literature that underscore the inherently dynamic nature of oil reserves. As Klett and Schmoker have recently demonstrated, from 1981 to 1996 the estimated volume of oil in 186 well-known giant fields in the world [>0.5 billion (109) barrels (Bbl) of oil, discovered before 1981] increased from 617 to 777 Bbl without new discoveries ([8](http://www.sciencemag.org/content/304/5674/1114.full#ref-8)). Indeed, many studies have proved the phenomenon of “reserve growth”—i.e., that “additions to proven recoverable volumes are usually greater than subtractions” ([8](http://www.sciencemag.org/content/304/5674/1114.full#ref-8)). This occurs because of four fundamental elements: technology, price, political decisions, and better knowledge of existing fields—the last of these being possible only through effective and intensive drilling.¶ We anticipate that this trend will continue. Consider, for example, the most recently discovered oil frontier in the world, Kazakhstan, and its major finding—the gigantic Kashagan field. Geological estimates about the general area around Kashagan (the Kazakh North Caspian Sea Shelf) have existed for decades, but they only indicated the possibility of hydrocarbon deposits. After the first advanced geological appraisal was conducted by international oil companies in the second half of the 1990s, the area was deemed to hold between 2 and 4 Bbl. In 2002, after completion of only two exploration and two appraisal wells in the Kashagan field, estimates were officially raised to 7 to 9 Bbl of producible reserves. In February 2004, after four more exploration wells in the area, they were raised again to 13 Bbl. This is only the beginning, because this area spans over 5500 sq km, and six exploration wells are a modest indicator of future potential. Moreover, there are many other oil fields yet to be explored in this area (including Kairan, Aktote, and Kalamkas), that have a geological structure similar to that of Kashagan.¶ Thanks to new exploration, drilling, and recovery technology, the worldwide finding and development cost per barrel of oil equivalent (boe) has dramatically declined over the last 20 years, from an average of about $21 in 1979–81 to under $6 in 1997–99 (in 2001 dollars) ([9](http://www.sciencemag.org/content/304/5674/1114.full#ref-9)). At the same time, the recovery rate from world oil fields has increased from about 22% in 1980 to 35% today. All these factors partly explain why the life-index of world reserves (gauged as the ratio between proven oil reserves and current production) has constantly improved, passing from 20 years in 1948 to 35 years in 1972 and reaching about 40 years in 2003. Today, all major sources estimate that proven world oil reserves exceed 1 trillion (1012) barrels, while yearly consumption is about 28 billion barrels ([10](http://www.sciencemag.org/content/304/5674/1114.full#ref-10)–[13](http://www.sciencemag.org/content/304/5674/1114.full#ref-13)). Overall, the world retains more than 3 trillion barrels of recoverable oil resources ([14](http://www.sciencemag.org/content/304/5674/1114.full#ref-14)).¶ Critics could note that new oil discoveries are only replacing one-fourth of what the world consumes every year (following a declining trend that began in the mid-1960s), and that increases in reserves largely derive from upward revisions of existing stock. However, the real issue is that neither major producing countries nor publicly traded oil companies are keen to invest money in substantial exploration campaigns. The countries richest in oil have minimized their oil investments during the last 20 years, mainly for fear of creating a permanent excess capacity such as that which provoked the crisis in 1986 (when oil prices plummeted to below $10/bbl). In fact, countries such as Saudi Arabia or Iraq (which together hold about 35% of the world's proven reserves of oil) produce petroleum only from a few old fields, although they have discovered but not developed more than 50 new fields each. Moreover, in countries closed to foreign investments, the technologies and techniques used are, in most cases, obsolete.¶ Nevertheless, international public oil companies have faced two sets of limits to their expansion in the last 20 years. The first is inaccessibility to foreign investment in the largest and cheapest reserves—those in the Persian Gulf. Second are the demands of financial markets, which for years have insisted that companies provide unrealistic, short-term financial returns that are inconsistent with the long-term nature of oil investments. This has compelled private operators to reject opportunities that would normally be deemed economically worthwhile. This financial pressure partly explains recent proven reserve downgrading by some oil companies, starting with the amazing cuts announced by the “supergiant” Shell Group ([15](http://www.sciencemag.org/content/304/5674/1114.full#ref-15)). Indeed, this Anglo-Dutch oil company has not lost its resources. This picture has nothing to do with physical scarcity of oil.¶ The Age of Coal began when declining supplies of wood in Great Britain caused its price to climb. Two centuries later, oil took the place of coal as “the king of energy sources” because of its convenience and its high flexibility in many applications, but coal was neither exhausted nor scarce. Oil substitution is simply a matter of cost and public needs, not of scarcity. To “cry wolf” over the availability of oil has the sole effect of perpetuating a misguided obsession with oil security and control that is already rooted in Western public opinion—an obsession that historically has invariably led to bad political decisions.¶

#### Conversion to biofuels infeasible- dependent on agricultural supplies and could not sustain US energy demands

(Brent D. Yacobucci, Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division and Randy Schnepf, Specialist in Agricultural Policy, Resources, Science, and Industry Division, “Selected Issues Related to an Expansion of theRenewable Fuel Standard (RFS)”, CRS Report for Congress, 12/3/2007, <http://assets.opencrs.com/rpts/RL34265_20071203.pdf>)

Further, as long as ethanol remains dependent¶ on the U.S. agricultural supplies, any threats to these supplies (such as drought), or¶ increases in crop prices, would negatively affect the supply and/or cost of biofuels.¶ In fact, that happened when high corn prices caused by strong export demand in 1995¶ contributed to an 18% decline in ethanol production between 1995 and 1996.¶ Further, expanding corn-based ethanol production to levels needed to¶ significantly promote U.S. energy security is likely to be infeasible. If the entire 2007¶ U.S. corn crop of 13.2 billion bushels were used as ethanol feedstock, the resultant¶ 35 billion gallons of ethanol (23.6 billion gasoline-equivalent gallons (GEG)) would¶ represent about 16.7% of estimated national gasoline use of approximately 141¶ billion gallons.¶ 25¶ In 2007, an estimated 86 million acres of corn were harvested¶ (largest since 1944). Nearly 137 million acres would be needed to produce enough¶ corn (20.5 billion bushels) and resulting ethanol (56.4 billion gallons or 37.8 billion¶ GEG) to substitute for roughly 20% of petroleum imports.¶ 26¶ Thus, barring a drastic¶ realignment of U.S. field crop production patterns, corn-based ethanol’s potential as¶ a petroleum import substitute appears to be limited by crop area constraints, among¶ other factors.¶ 27¶

#### Ethanol’s environmental benefits exaggerated

(Steven Rattner, former counselor to the secretary of the Treasury and lead auto adviser, investor and investment banker, contributing writer to Op-Ed, 6/24/11, “The Great Corn Con”, NY Times, <http://www.nytimes.com/2011/06/25/opinion/25Rattner.html>)

Here is perhaps the most incredible part: Because of the subsidy, ethanol became cheaper than gasoline, and so we sent 397 million gallons of ethanol overseas last year. America is simultaneously importing costly foreign oil and subsidizing the export of its equivalent.¶ That’s not all. Ethanol packs less punch than gasoline and uses considerable energy in its production process. All told, each gallon of gasoline that is displaced costs the Treasury $1.78 in subsidies and lost tax revenue.¶ Nor does ethanol live up to its environmental promises. The Congressional Budget Office found that reducing carbon dioxide emissions by using ethanol costs at least $750 per ton of carbon dioxide, wildly more than other methods. What is more, making corn ethanol consumes vast quantities of water and increases smog.¶ Then there’s energy efficiency. Studies reach widely varying conclusions on that issue. While some show a small saving in fossil fuels, others calculate that ethanol consumes more energy than it produces.¶ Corn growers and other farmers have long exercised outsize influence, thanks in part to the Senate’s structural tilt toward rural states. The ethanol giveaway represents a 21st-century add-on to a dizzying patchwork of programs for farmers. Under one, corn growers receive “direct payments” — $1.75 billion in 2010 — whether they grow corn or not. Washington also subsidizes crop insurance, at a cost of another $1.75 billion last year. That may have made sense when low corn prices made farming a marginal business, but no longer.¶ At long last, the enormity of the nation’s budget deficit has added momentum to the forces of reason. While only a symbolic move, the Senate recently voted 73 to 27 to end ethanol subsidies. That alone helped push corn prices down to $7 per bushel. Incredibly, the White House criticized the action — could key farm states have been on the minds of the president’s advisers?¶ Even farm advocates like former Agriculture Secretary Dan Glickman agree that the situation must be fixed. Reports filtering out of the budget talks currently under way suggest that agriculture subsidies sit prominently on the chopping block. The time is ripe

#### Environmental benefits of biofuels exaggerated- energy costs of production and distribution offset

(Brent D. Yacobucci, Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division and Randy Schnepf, Specialist in Agricultural Policy, Resources, Science, and Industry Division, “Selected Issues Related to an Expansion of theRenewable Fuel Standard (RFS)”, CRS Report for Congress, 12/3/2007, <http://assets.opencrs.com/rpts/RL34265_20071203.pdf>)

Biofuels are not primary energy sources. Energy stored in biological material¶ (through photosynthesis) must be converted into a more useful, portable fuel. This¶ conversion requires energy. The amount and types of energy used to produce¶ biofuels, and the feedstocks for biofuel production, are of key concern. Because of¶ the input energy requirements, the energy and environmental benefits of corn ethanol,¶ particularly, may be limited.¶ Energy Balance. A frequent argument for the use of ethanol as a motor fuel¶ is that it reduces U.S. reliance on oil imports, making the U.S. less vulnerable to a¶ fuel embargo of the sort that occurred in the 1970s. However, while corn ethanol use¶ displaces petroleum, its overall effect on total energy consumption is less clear. To¶ analyze the net energy consumption of ethanol, the entire fuel cycle must be¶ considered. The fuel cycle consists of all inputs and processes involved in the¶ development, delivery and final use of the fuel. For corn-based ethanol, these inputs¶ include the energy needed to produce fertilizers, operate farm equipment, transport¶ corn, convert corn to ethanol, and distribute the final product. Some studies find a¶ significant positive energy balance of 1.5 or greater — in other words, the energy¶ contained in a gallon of corn ethanol is 50% higher than the amount of energy needed¶ to produce and distribute it. However, other studies suggest that the amount of¶ energy needed to produce ethanol is roughly equal to the amount of energy obtained¶ from its combustion. A review of research studies on ethanol’s energy balance and¶ greenhouse gas emissions found that most studies give corn-based ethanol a slight¶ positive energy balance of about 1.2.¶ ¶ For example, EIA projects that motor gasoline consumption will increase 22% between¶ 2007 and 2011. EIA, Annual Energy Outlook. Table 11.¶ 20¶ CRS calculations based on energy usage rates of 49,733 Btu/gal of ethanol from Shapouri¶ (2004), roughly 60,000 Btu/gal from Farrell (2006). Hosein Shapouri and Andrew¶ McAloon, USDA, Office of the Chief Economist, The 2001 Net Energy Balance of CornEthanol, 2004, Washington; Farrell, op. cit. ¶ 21¶ U.S. Department of Energy (DOE), Energy Information Administration (EIA), Annual¶ Energy Outlook 2006 with Projections to 2030, Table 1-Total Energy Supply and¶ Disposition Summary, Washington; at [http://www.eia.doe.gov/oiaf/aeo/index.html]. ¶ If, instead, biomass was used to produce biofuels, the energy balance could be¶ improved. It is expected that most biofuel feedstocks other than corn will require far¶ less nitrogen fertilizer (produced from natural gas). Further, if biomass were used to¶ provide process energy at the biofuel refinery, then the energy balance could be even¶ greater. Some estimates are that cellulosic ethanol could have an energy balance of¶ 8.0 or more.¶ 18¶ Similarly high energy balances have been calculated for sugarcane¶ ethanol and biodiesel.¶ An expanded RFS would certainly displace petroleum consumption, but the¶ overall effect on fossil fuel consumption is questionable, especially if there is a large¶ reliance on corn-based ethanol. The mandate in the Senate bill to require an¶ increasing amount of “advanced biofuels” would likely result in reduced fossil fuel¶ consumption relative to gasoline. As the share of advanced biofuels grows, this¶ effect would increase. However, by 2022, advanced biofuels will likely represent¶ less than 10% of gasoline energy demand, so the total amount of fossil energy¶ displaced would be less than the expected growth in fossil energy consumption from¶ passenger transportation over the same time period.¶ 19¶ Natural Gas Demand. As ethanol production increases, the energy needed¶ to process the corn into ethanol, which is derived primarily from natural gas in the¶ United States, can be expected to increase. For example, if the entire 4.9 billion¶ gallons of ethanol produced in 2006 used natural gas as a processing fuel, it would¶ have required an estimated 240 to 290 billion cubic feet (cu. ft.) of natural gas.¶ 20¶ If¶ the entire 2006 corn crop of 10.5 billion bushels were converted into ethanol, the¶ energy requirements would be equivalent to approximately 1.4 to 1.7 trillion cu. ft.¶ of natural gas. This would have represented about 6% to 8% of total U.S. natural gas¶ consumption, which was an estimated 22.2 trillion cu. ft. in 2005.¶ 21¶ The United¶ States has been a net importer of natural gas since the early 1980s. A significant¶ increase in its use as a processing fuel in the production of ethanol — and a feedstock¶ for fertilizer production — would likely increase prices and imports of natural gas.¶ The Senate RFS proposal would likely promote an increase in corn ethanol to¶ 15 billion gallons by 2015, requiring an increase in natural gas and/or fertilizer¶ consumption. After 2015, the bill would promote a growing demand for fuels less¶ dependent on natural gas.CRS-11¶ 22¶ A key question in evaluating the energy security benefits or costs of an expanded RFS is¶ “what is the definition of energy security.” For many policymakers, “energy security” and¶ “energy independence” (i.e., producing all energy within our borders) are synonymous. For¶ others, “energy security” means guaranteeing that we have reliable supplies of energy¶ regardless of their origin. For this section, the former definition is used.¶ 23¶ By volume, ethanol accounted for approximately 3.6% of gasoline consumption in the¶ United States in 2006, but a gallon of ethanol yields only 67% of the energy of a gallon of¶ gasoline.¶ 24¶ DOE, EIA, Annual Energy Outlook 2004 with Projections to 2025, Washington.¶ 25¶ Based on USDA’s Jan. 12, 2007, World Agricultural Supply and Demand Estimates¶ (WASDE) Report, and using comparable conversion rates.¶ 26¶ This represents roughly half of gasoline’s share of imported petroleum. However,¶ petroleum imports are primarily unrefined crude oil, which is then refined into a variety of¶ products. CRS calculations assume corn yields of 150 bushels per acre and an ethanol yield¶ of 2.75 gal/bu. ¶ 27¶ Two recent articles by economists at Iowa State University examine the potential for¶ obtaining a 10 million acre expansion in corn planting: Bruce Babcock and D. A. Hennessy,¶ “Getting More Corn Acres From the Corn Belt”; and Chad E. Hart, “Feeding the Ethanol¶ Boom: Where Will the Corn Come From?” Iowa Ag Review, Vol. 12, No. 4, Fall 2006.¶ Energy Security.¶ 22¶ Despite the fact that ethanol displaces gasoline, the¶ benefits to energy security from ethanol are not certain. As stated above, while¶ roughly 20% of the U.S. corn crop is used for ethanol, ethanol only accounts for¶ approximately 2% of gasoline consumption on an energy equivalent basis.¶ 23¶ The¶ import share of U.S. petroleum consumption was estimated at 54% in 2004, and is¶ expected to grow to 70% by 2025.¶ 24¶ Further, as long as ethanol remains dependent¶ on the U.S. agricultural supplies, any threats to these supplies (such as drought), or¶ increases in crop prices, would negatively affect the supply and/or cost of biofuels.¶ In fact, that happened when high corn prices caused by strong export demand in 1995¶ contributed to an 18% decline in ethanol production between 1995 and 1996.¶ Further, expanding corn-based ethanol production to levels needed to¶ significantly promote U.S. energy security is likely to be infeasible. If the entire 2007¶ U.S. corn crop of 13.2 billion bushels were used as ethanol feedstock, the resultant¶ 35 billion gallons of ethanol (23.6 billion gasoline-equivalent gallons (GEG)) would¶ represent about 16.7% of estimated national gasoline use of approximately 141¶ billion gallons.¶ 25¶ In 2007, an estimated 86 million acres of corn were harvested¶ (largest since 1944). Nearly 137 million acres would be needed to produce enough¶ corn (20.5 billion bushels) and resulting ethanol (56.4 billion gallons or 37.8 billion¶ GEG) to substitute for roughly 20% of petroleum imports.¶ 26¶ Thus, barring a drastic¶ realignment of U.S. field crop production patterns, corn-based ethanol’s potential as¶ a petroleum import substitute appears to be limited by crop area constraints, among¶ other factors.¶ 27¶ If an expanded RFS requires a significant amount of advanced biofuels, then the¶ specific definition of “advanced biofuel” could affect the overall energy security¶ picture for biofuels. For example, if ethanol from sugarcane is allowed under an¶ expanded RFS (as under the Senate bill), this could provide an incentive to increase¶ imports of sugarcane ethanol, especially from Brazil. If not, then the expanded RFSCRS-12¶ 28¶ EPA, Greenhouse Gas Impacts of Expanded Renewable and Alternative Fuels Use. April¶ 2007; Farrell, et al.¶ 29¶ Mark A. Delucchi, Draft Report: Life cycle Analyses of Biofuels. 2006.¶ 30¶ While a 50% life-cycle reduction is still significant, it is far less than the 90% reduction¶ suggested by fuel-cycle analyses.¶ might provide an incentive for imports of biodiesel and other renewable diesel¶ substitutes from tropical countries.¶ Energy Prices. The effects of an expanded RFS on energy prices are¶ uncertain. If wholesale biofuels prices remain higher than gasoline prices (when all¶ economic incentives are taken into account), then mandating higher and higher levels¶ of biofuels would likely lead to higher gasoline pump prices. However, if petroleum¶ prices — and thus, gasoline prices — remain high, the use of some biofuels might¶ help to mitigate high gasoline prices. ¶ Current costs are so high for some biofuels, especially cellulosic biofuels and¶ biodiesel from algae, that significant technological advances (or even greater¶ increases in petroleum prices) are necessary to lower their production costs to make¶ them competitive with gasoline. Without such cost reductions, mandating large¶ amounts of these fuels would likely raise fuel prices. If a price were placed on¶ greenhouse gas emissions — a policy not proposed in the Senate energy bill — then¶ the economics could shift in favor of these fuels despite their high production costs,¶ as they have lower fuel-cycle and life-cycle greenhouse gas emissions (see below).¶ Biofuels proponents argue that a key benefit of biofuel use is a decrease in¶ greenhouse gas (GHG) emissions. However, some question the overall GHG benefit¶ of biofuels, especially corn-based ethanol. There is a wide range of fuel-cycle¶ estimates for greenhouse gas reductions from corn-based ethanol. However, most¶ studies have found that corn-based ethanol reduces fuel-cycle GHG emissions by¶ 10%-20% per mile relative to gasoline.¶ 28¶ These estimates vary depending on several¶ factors including the cultivation practice (e.g., minimum-tillage versus normal¶ tillage) used to grow the corn and the fuel used to process the corn into ethanol (e.g.,¶ natural gas versus coal). These same studies find that biofuels produced from sugar¶ cane or cellulosic biomass could reduce fuel-cycle GHG emissions by as much as¶ 90% per mile relative to gasoline.¶ However, fuel-cycle analyses generally do not take changes in land use into¶ account. For example, if a previously uncultivated piece of land is tilled to plant¶ biofuel crops, some of the carbon stored in the field could be released. In that case,¶ the overall GHG benefit of biofuels could be compromised. One study estimates that¶ taking land use into account (a life-cycle analysis, as opposed to a fuel-cycle¶ analysis), the GHG reduction from corn ethanol is less than 3% per mile relative to¶ gasoline,¶ 29¶ while cellulosic biofuels have a life-cycle reduction of 50%.¶ 30¶ The Senate bill requires that to qualify under the expanded RFS, biofuels¶ produced at facilities commencing operations after the date of enactment must haveCRS-13¶ 31¶ For example, see John M. Urbanchuk (Director, LECG LLC), Contribution of the Ethanol¶ Industry to the Economy of the United States, white paper prepared for National Corn¶ Growers Assoc., February 21, 2006.¶ 32¶ National Corn Growers Association, How Much Ethanol Can Come From Corn?,¶ November 9, 2006, Washington D.C. ¶ 33¶ For a discussion, see the National Corn Growers Association’s online “Food versus Fuel¶ Debate,” at [http://www.ncga.com/news/OurView/pdf/2006/FoodANDFuel.pdf].¶ 34¶ ERS, USDA, Briefing Room “Food CPI, Prices, and Expenditures,” at [http://www.¶ a 20% life-cycle emissions reduction. However, it is expected that this provision¶ may not be relevant to a large share of conventional ethanol since much of the¶ capacity to meet the 15 billion gallon cap is currently existing or will come from¶ expansions of existing plants. If enactment of the Senate bill is delayed (or if plants¶ currently under construction are grandfathered under the bill) the GHG reductions¶ from conventional ethanol may be insignificant. However, the more “advanced¶ biofuel” required under the bill, the greater the likely benefit in terms of GHG¶ reductions.

#### Ethanol deviates corn from food supply

(Steven Rattner, former counselor to the secretary of the Treasury and lead auto adviser, investor and investment banker, contributing writer to Op-Ed, 6/24/11, “The Great Corn Con”, NY Times, <http://www.nytimes.com/2011/06/25/opinion/25Rattner.html>)

FEELING the need for an example of government policy run amok? Look no further than the box of cornflakes on your kitchen shelf. In its myriad corn-related interventions, Washington has managed simultaneously to help drive up food prices and add tens of billions of dollars to the deficit, while arguably increasing energy use and harming the environment.¶ Even in a crowd of rising food and commodity costs, corn stands out, its price having doubled in less than a year to a record $7.87 per bushel in early June. Booming global demand has overtaken stagnant supply.¶ But rather than ameliorate the problem, the government has exacerbated it, reducing food supply to a hungry world. Thanks to Washington, 4 of every 10 ears of corn grown in America — the source of 40 percent of the world’s production — are shunted into ethanol, a gasoline substitute that imperceptibly nicks our energy problem. Larded onto that are $11 billion a year of government subsidies to the corn complex.¶ Corn is hardly some minor agricultural product for breakfast cereal. It’s America’s largest crop, dwarfing wheat and soybeans. A small portion of production goes for human consumption; about 40 percent feeds cows, pigs, turkeys and chickens. Diverting 40 percent to ethanol has disagreeable consequences for food. In just a year, the price of bacon has soared by 24 percent.¶ To some, the contours of the ethanol story may be familiar. Almost since Iowa — our biggest corn-producing state — grabbed the lead position in the presidential sweepstakes four decades ago, support for the biofuel has been nearly a prerequisite for politicians seeking the presidency.¶

### Solvency

#### Only 8 million FFVs now- more E85 pumps for select few would have negligible effect on warming and oil

(Brent D. Yacobucci, Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division and Randy Schnepf, Specialist in Agricultural Policy, Resources, Science, and Industry Division, “Renewable Fuel Standard (RFS):

Overview and Issues”, Congressional Research Service, 10/14/10, <http://assets.opencrs.com/rpts/R40155_20101014.pdf>)

There is also interest in expanding the use of E85 (85% ethanol, 15% gasoline). Current E85 ¶ consumption represents only about 1% of ethanol consumption in the United States. A key reason ¶ for the relatively low consumption of E85 is that relatively few vehicles operate on E85. ¶ According to the U.S. Department of Transportation, there were about 8 million E85-capable ¶ vehicles on U.S. roads,¶ 65¶ as compared to approximately 254 million gasoline- and diesel-fueled ¶ vehicles.¶ 66¶ Most E85-capable vehicles are “flexible fuel vehicles” or FFVs. An FFV can operate ¶ on any mixture of gasoline and between 0% and 85% ethanol. However, ethanol has a lower pergallon energy content than gasoline. Therefore, FFVs tend to have lower fuel economy when ¶ operating on E85. For the use of E85 to be economical, the pump price for E85 must be low ¶ enough to make up for the decreased fuel economy relative to gasoline. Generally, to have ¶ equivalent per-mile costs, E85 must cost 20% to 30% less per gallon at the pump than gasoline. ¶ Owners of a large majority of the FFVs on U.S. roads choose to fuel them exclusively with ¶ gasoline, largely due to higher per-mile fuel cost and lower availability of E85. ¶ E85 capacity is expanding rapidly, with the number of E85 stations nearly tripling between ¶ January 2006 and January 2008. As of early 2010, there were an estimated 2,200 retail E85 ¶ stations in the United States (1.3% out of 168,000 stations nationwide).¶ 67¶ Further expansion will ¶ require significant investments, especially at the retail level. Installation of a new E85 pump and ¶ underground tank can cost as much as $100,000 to $200,000.¶ 68¶ However, if existing equipment ¶ can be used with little modification, the cost could be less than $10,000.

#### E85 must cost significantly less than gasoline to become an economically feasible alternative because of reduced fuel economy

(Brent D. Yacobucci, Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division and Randy Schnepf, Specialist in Agricultural Policy, Resources, Science, and Industry Division, “Renewable Fuel Standard (RFS):

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#### They have to win that flex fuel vehicles become the main mode of transportation in order to access any of their advantages. Reduced fuel economy and volatile, uncertain alternative energy market will discourage shift (U.S. DOE).

#### Only 8 million FFVs on road now- not large enough percentage of market to kill oil prices, OPEC- and plan doesn’t increase number of vehicles

(EIA, FAQ: How many alternative fuel and hybrid vehicles are there in the U.S.?”, <http://www.eia.gov/tools/faqs/faq.cfm?id=93&t=4>)

EIA estimates that in 2010 there were about 9 million alternative fuel vehicles in the U.S. This included about 0.93 million in use by private and government vehicle fleets and an additional 8.06 million ethanol flex fuel vehicles owned by private individuals. EIA estimates that there are about 1.91 million hybrid gas or diesel electric vehicles owned by fleet operators and private individuals.

#### No market conversion- ethanol price fluctuation more dramatic than gasoline

(U.S. DOE, March 2010, Clean Cities U.S. Department of Energy, “Flexible Fuel Vehicles: Providing a Renewable

Fuel Choice”, <http://www.afdc.energy.gov/pdfs/47505.pdf>)

Fuel, however, may be a cost factor. ¶ E85’s reduced energy content compared ¶ to gasoline, as explained in the previous ¶ section, can increase fuel costs. This cost ¶ differential is highly variable because it ¶ is based on ethanol and gasoline price ¶ differences. Like gasoline, ethanol prices ¶ fluctuate and are set based on market supply and demand. This variability means ¶ that a driver may or may not experience ¶ a difference in overall fuel costs, depending on local pump prices. To compare the ¶ price of fueling with E85 versus gasoline, ¶ use the AFDC’s Flexible Fuel Vehicle ¶ Cost Calculator

#### No market conversion- reduction fuel economy less appealing

(U.S. DOE, March 2010, Clean Cities U.S. Department of Energy, “Flexible Fuel Vehicles: Providing a Renewable

Fuel Choice”, <http://www.afdc.energy.gov/pdfs/47505.pdf>)

One difference between E85 ¶ and gasoline, however, is fuel economy. ¶ Ethanol contains less energy per gallon, which translates into a reduction in ¶ fuel economy compared to gasoline. No ¶ matter what type of fuel is used, however, ¶ fuel mileage is affected by driving habits, ¶ weather, and other factors.

### Inherency

#### Efforts being taken- pumps tripled between 2006 and 2008

(Brent D. Yacobucci, Specialist in Energy and Environmental Policy, Resources, Science, and Industry Division and Randy Schnepf, Specialist in Agricultural Policy, Resources, Science, and Industry Division, “Renewable Fuel Standard (RFS):

Overview and Issues”, Congressional Research Service, 10/14/10, <http://assets.opencrs.com/rpts/R40155_20101014.pdf>)

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#### Obama installing pumps now

([Darrell Mowery, USDA Indiana Public Information Coordinator](http://blogs.usda.gov/author/bfrank/), May 27, 2011, USDA Blog, <http://blogs.usda.gov/2011/05/27/usda-administrator-visits-gm-fort-wayne-assembly-plant-discuss-flex-fuel-pump-funding/>)

Earlier this week, Judith Canales, Administrator for Rural Business and Cooperative Programs for USDA Rural Development, stopped by the GM assembly plant in Fort Wayne, Indiana, to discuss Flex-Fuel opportunities available to American business owners. Canales’ visit was part of a three-state tour in the Midwest, where she and other representatives of USDA [Rural Development](http://www.rurdev.usda.gov/in/)promoted the installation of flexible fuel pumps and a [program](http://www.rurdev.usda.gov/BCP_ReapResEei.html) that retail fuel outlets may qualify for to help pay for these pumps.¶ The USDA chose to include Fort Wayne Assembly on its list of stops because the plant makes pickup trucks that have Flex-Fuel engines as options.¶ The USDA recently clarified rules governing a popular Farm Bill program saying that in addition to other energy saving and producing systems, the definition in the Rural Energy for America Program (REAP) includes flexible fuel pumps, sometimes referred to as “blender pumps.” This clarification is intended to provide fuel station owners with incentives to install flexible fuel pumps that will offer Americans more renewable energy options. The Obama administration has set a goal of installing 10,000 flexible fuel pumps nationwide within 5 years.

#### Obama establishing flex fuel pumps now

([Vicki Schurman, USDA Public Information Coordinator](http://blogs.usda.gov/author/bfrank/), May 13, 2011, USDA Blog, <http://blogs.usda.gov/2011/05/13/usda-helping-to-increasing-the-number-of-flex-fuel-pumps-in-nebraska/#more-32773>)

USDA [Rural Development Nebraska](http://www.rurdev.usda.gov/ne/) State Director Maxine Moul joined the Nebraska Ethanol Board, Nebraska Corn Board and Nebraska Energy Office on May 6, 2011 in York, Nebraska at the Aurora Cooperative for a media conference to discuss the need for flexible fuel pumps. Also, the importance of the use of ethanol blended gasoline in Flex Fuel Vehicles (FFV) was discussed with gasoline retailers. The Obama Administration has set a goal of establishing 10,000 more flexible fuel pumps in the next five years along with a national security goal [(RFS 2)](http://www.epa.gov/otaq/fuels/renewablefuels/index.htm) of using 36 billion gallons of biofuel per year by 2022. Local residents and fuel retailers pulled FFV cars up at the Coop’s flex fuel pumps to fill their tanks with the ethanol blended fuels gas.¶ Nearly all retail gasoline stations dispense an E-10 blend. There is a growing trend in the United States towards fuels with higher ethanol content. Flexible fuel pumps (ethanol blender pumps) are more specifically designed to make available ethanol-gasoline blends, up to E-85. In addition, they may also dispense mid-level blends.¶ According to the Nebraska Ethanol Board, flexible fuel pumps allow customers more fuel choices. These choices lead to faster turnover of ethanol fuel versus a current unleaded, E-10, premium pump set up. According to the Nebraska Corn Board, ethanol sales have increased 45-55 percent in the last year in stations that have installed flex fuel pumps in Nebraska. Retailers have the flexibility to determine which ethanol blends they offer at the pump. Retailers that choose to become the blender of record can take advantage of VEETC, the Volumetric Ethanol Excise Tax Credit, and other tax credits.¶ Currently, there are nearly 100,000 Flex Fuel Vehicles in Nebraska with the number continuing to rise annually. These vehicles have the capability to use ethanol fuel blends from a Nebraska made fuel. American vehicle manufacturers GM, Ford, and Chrysler have committed to producing 50 percent of all 2012 Model year vehicles as Flex Fuel Vehicles.¶ Nebraska is the third largest producer of corn in the United States and the second largest producer of ethanol. USDA Rural Development, the Nebraska Ethanol Board, the Nebraska Corn Board and the Nebraska Department of Energy are currently working together to promote ethanol in Nebraska, to educate consumers about Flex Fuel Vehicles, and to provide resources to fuel retailers, regarding the installation of flexible fuel infrastructure.

# Natural Gas DA

**It would be super awesome if you can get them to say that the plan would increase natural gas production during the crossx of the 1ac**

# 1NC

#### Natural Gas cars are both bad for the environment and cause waterwars through Fracking

Gorrie 12 (Peter Gorrie, the Star's former environment reporter, The Toronto Star, “Natural gas fears raised,” January 28, 2012, <http://www.lexisnexis.com.proxy-remote.galib.uga.edu/lnacui2api/results/docview/docview.do?docLinkInd=true&risb=21_T15212211923&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T15212211927&cisb=22_T15212211926&treeMax=true&treeWidth=0&csi=8286&docNo=3>) T. Lee

So, I'm writing today about natural gas cars but I'm afraid I'm going to disappoint our correspondent.¶ The Green Car Journal was wrong to honour any car powered by natural gas, and I hope the things don't proliferate, although that's the unhappy trend. After years as a prototype, the GX (which is what Honda has branded the Civic Natural Gas car) went on limited sale to American consumers in 2006 and the new model will be available in most states, although not yet in Canada.¶ The technology does offer benefits. According to the EPA, at the tailpipe it cuts carbon-dioxide emissions - they contribute to climate change - by 25 per cent compared with gasoline, and reduces various toxic pollutants and dangerous particles by between 50 and 95 per cent.¶ The problem is that you can't count only what spews from the tailpipe. Fuel sources, and their impacts, must be part of the equation, and on that score natural gas is rapidly moving from green to black.¶ That's because, increasingly, it's found as shale gas.¶ Shale gas is embedded in porous rock. The retrieval process is called hydraulic fracturing, or fracking. In essence, it means drilling a well, then forcing down water and chemical "fracking fluids," some of them toxic, to crack open the surrounding rock and free the gas for collection.¶ Fracking shatters the underground structure through which water, and sometimes oil, flows. The consequences are unpredictable, and potentially calamitous if gas or toxic chemicals should enter the water supply.¶ The process also consumes vast amounts of water; nearly a billion litres for one northern B.C. well.¶ It also lets methane, an extremely potent greenhouse gas, escape into the atmosphere. Fracking is banned in France and Bulgaria, on hold in Quebec and under review in Nova Scotia, but expanding elsewhere.¶ The Council of Canadians estimates there are 175,000 fracked wells in Canada, mainly in Alberta.¶ A Calgary company is buying drilling rights in southwestern Ontario and near Blue Mountain.¶ U.S. President Barack Obama this week promised that his administration "will take every possible action" to develop shale gas.¶ The American Energy Information Administration says production increased an average 48 per cent each year between 2006 and 2010 and estimates that by 2035, fracked sources will comprise nearly half of steadily rising natural gas production, compared to only 16 per cent in 2009.¶ If natural gas replaces gasoline, it will simply boost demand for fracking. Canada and the U.S. might become self-sufficient in transportation fuel, but at too high a cost to health and the environment.¶ So, no natural gas vehicle can be the Green Car of this or any other year.

#### Water shortages will trigger nuclear war and extinction.

NASCA 6 [“Water shortages – only a matter of time,” National Association for Scientific and Cultural Appreciation, <http://www.nasca.org.uk/Strange_relics_/water/water.html>]

Water is one of the prime essentials for life as we know it. The plain fact is - no water, no life! This becomes all the more worrying when we realise that the worlds supply of drinkable water will soon diminish quite rapidly. In fact a recent report commissioned by the United Nations has emphasised that by the year 2025 at least 66% of the worlds population will be without an adequate water supply. As a disaster in the making water shortage ranks in the top category. Without water we are finished, and it is thus imperative that we protect the mechanism through which we derive our supply of this life giving fluid. Unfortunately the exact opposite is the case. We are doing incalculable damage to the planets capacity to generate water and this will have far ranging consequences for the not too distant future. The United Nations has warned that burning of fossil fuels is the prime cause of water shortage. While there may be other reasons such as increased solar activity it is clear that this is a situation over which we can exert a great deal of control. If not then the future will be very bleak indeed! Already the warning signs are there. The last year has seen devastating heatwaves in many parts of the world including the USA where the state of Texas experienced its worst drought on record. Elsewhere in the United States forest fires raged out of control, while other regions of the globe experienced drought conditions that were even more severe. Parts of Iran, Afgahnistan, China and other neighbouring countries experienced their worst droughts on record. These conditions also extended throughout many parts of Africa and it is clear that if circumstances remain unchanged we are facing a disaster of epic proportions. Moreover it will be one for which there is no easy answer. The spectre of a world water shortage evokes a truly frightening scenario. In fact the United Nations warns that disputes over water will become the prime source of conflict in the not too distant future. Where these shortages become ever more acute it could forseeably lead to the brink of nuclear conflict. On a lesser scale water, and the price of it, will acquire an importance somewhat like the current value placed on oil. The difference of course is that while oil is not vital for life, water most certainly is! It seems clear then that in future years countries rich in water will enjoy an importance that perhaps they do not have today. In these circumstances power shifts are inevitable, and this will undoubtedly create its own strife and tension. In the long term the implications do not look encouraging. It is a two edged sword. First the shortage of water, and then the increased stresses this will impose upon an already stressed world of politics. It means that answers need to be found immediately. Answers that will both ameliorate the damage to the environment, and also find new sources of water for future consumption. If not, and the problem is left unresolved there will eventually come the day when we shall find ourselves with a nightmare situation for which there will be no obvious answer.

#### Fracking releases methane which destroys the environment

Schreiber 11 (Erika Schreiber, Studying environmental chemistry at Cornell University, Common Sense, “Hazards Associated with Fluids used in Hydraulic Fracturing,” August 2011, <http://commonsense2.com/2011/08/cleanwater/hazards-associated-with-fluids-used-in-hydraulic-fracturing/>) T. Lee

While the largest contamination concerns are generally in relation to our water resources, a recent Cornell study has also brought to light increased greenhouse gas emission concerns. While all fossil fuels are sources of greenhouse gases, natural gas extraction through hydraulic fracturing may be the worst culprit. Methane emissions are at least 30% more for this method than conventional oil or gas drilling, as it escapes from the return fluids and during the drilling following the fracturing (Howarth et al. 2011). Methane’s chemical structure (CH4) gives it the ability to absorb terrestrial infrared radiation and prevent it from exiting to space, and it is even more potent than carbon dioxide in this regard. Because methane is a far more powerful greenhouse gas than CO2, the carbon footprint of this method is at least 20% greater than the mining of coal (Howarth et al. 2011), which has recently been taking the most heat for being such a dirty energy source. Rising greenhouse gas concentrations in our atmosphere are the main contributor to climate change, potentially the largest human and environmental health risk our society has ever seen. Because of this phenomenon we are subjected to an increased spread of disease, more destructive severe weather, and unfavorable changes to precipitation patterns that many livelihoods and resources depend on.

#### Literature downplaying the consequences of fracking is biased and incorrect

Farouk 12 (founder and executive director of The South African Civil Society Information Service, African News, “South Africa; Drumbeat for Fracking Drowns Out Reason and Rationality,” July 12, 2012, <http://www.lexisnexis.com.proxy-remote.galib.uga.edu/lnacui2api/results/docview/docview.do?docLinkInd=true&risb=21_T15217689847&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T15217689851&cisb=22_T15217689850&treeMax=true&treeWidth=0&csi=8320&docNo=2>) T. Lee

Remember how the media lined up behind George Bush when he led the drumbeat for the invasion of Iraq based on bogus evidence and inexplicable logic?¶ Well, it seems that our Minister of Energy has a willing accomplice in some sectors of our media too, who this time, are discrediting the science on climate change to build a case for fracking in the Karoo.¶ Recently we've been treated to business columnist Stephen Mulholland's deliriously optimistic "The Good News about Fracking", which appeared in Business Times on 8 July 2012. Notwithstanding his careless remarks aimed at casting doubt on the science of climate change, Mulholland reached a new low in journalism when he referred to delegates attending the recent Rio+20 Summit on sustainable development as "50 000 climate-crazy free loaders". That's one massive character assassination. But I guess if you're writing for the business press with mighty corporations backing you, it is possible to get away with passing off unsubstantiated hogwash for reasoned analysis.¶ Of course the energy industry has also taken full advantage of its access to the media. Shell's general manager of Upstream Operations, Jan Willem Eggink, produced an op-ed that appeared in South African newspapers in October last year in which he argued, it is a "major misconception" that hydraulic fracturing poses a risk to fresh water aquifers.¶ This op-ed appeared after the Advertising Standards Authority of South Africa "ruled that several of Shell's advertised claims - including one that said fracking had never led to groundwater contamination - were misleading or unsubstantiated and should be withdrawn. (Shell's response was that) the advertisements were an accurate reflection of its opinion," reports Source Watch, a non-profit investigative reporting organisation that monitors who shapes public debate.¶ Meanwhile the success of the American gas industry is routinely quoted by energy companies and our government to make the case for fracking in South Africa. But that picture of success is fraught with problems, as Oscar-nominated Josh Fox's 2010 documentary, Gasland, showed us with footage of Mike Markham setting his tap water on fire.¶ The gas industry mounted a definitive campaign against Fox after his documentary was released. Eggink's 2011 op-ed in South African newspapers also made a special effort to respond to the scene in the movie where Markham sets his water alight, of course, completely downplaying the connection between fracking and his methane filled explosive water.¶ But as Fox points out in his follow up to Gasland, The Sky is Pink, the natural gas industry will stop at nothing to grow their profits. Sixty years after the American tobacco industry employed PR firm Hill & Knowlton to cast doubt on scientific research that highlighted the link between tobacco smoking and lung cancer, the American Natural Gas Association has hired the exact same firm to purge the connection between shale gas fracking and the contamination of water from the public's mind.¶ Their modus operandi contends Naomi Oreskes, author of the book, Merchants of Doubt, is to create a debate in the public discourse, thereby fostering doubt. This debate of course leads to uncertainty and confusion, which creates the space for corporations to come in and do exactly as they please, while the public and the media engage in endless debate fuelled by PR-driven journalism.¶

# Impacts

### Fracking Bad

#### Natural Gas is bad for warming, the economy, and water safety

Lucas 12 (Caroline Lucas, a British Green Party politician, the leader of the Green Party of England and Wales, and the first and only Green Member of Parliament in the UK, The Times, “Is shale gas extraction good for Britain?;

THE FIGHT,” July 5, 2012, <http://www.lexisnexis.com.proxy-remote.galib.uga.edu/lnacui2api/results/docview/docview.do?docLinkInd=true&risb=21_T15217689847&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T15217689851&cisb=22_T15217689850&treeMax=true&treeWidth=0&csi=10939&docNo=4>) T. Lee

¶ No, don't believe the hype. This is a desperate campaign by the dinosaur fossil-fuel industry to keep us hooked on gas, harming the climate and our energy future. Breathless rhetoric from fracking firm Cuadrilla about the size of UK shale gas reserves has led some to advocate shale as the answer to our energy woes. But growing evidence suggests that not only is shale unlikely to be a game-changer for the UK, it could have a negative impact on climate change, the renewables industry and our local environment.¶ ¶ First, the idea that shale can help us to meet emissions targets is wishful thinking. With carbon capture and storage still a pipe dream at the commercial scale, burning just 20 per cent of the gas that Cuadrilla claims to have found could account for up to 15 per cent of the UK's total emissions' budget to 2050. A Cornell University study warns that shale could do even more to aggravate climate change than coal, thanks to leaked methane. Moreover, despite lobbyists' assertions that shale will be cheap, analysis from Deutsche Bank and Poyry consulting suggests that the impact on energy bills would actually be low.¶ ¶ Second, US studies are fuelling fears here that waste water from drilling could contaminate local water sources. And, at a time of drought, green-lighting an industrial process that requires vast quantities of water is surely misguided. Meanwhile, Cuadrilla's own study found itself more than likely to blame for small tremors near its drilling operation in Lancashire. In our densely populated country, these environmental factors are of real concern.¶ ¶ That the Government has handed out licences for fracking is alarming. It's clear that the UK may need some gas as a transition fuel as we move towards a low-carbon economy, but the risks and uncertainties associated with locking ourselves into shale gas exploitation means that fracking cannot be part of the solution.

### Warming

#### Fracking releases methane which destroys the environment

Schreiber 11 (Erika Schreiber, Studying environmental chemistry at Cornell University, Common Sense, “Hazards Associated with Fluids used in Hydraulic Fracturing,” August 2011, <http://commonsense2.com/2011/08/cleanwater/hazards-associated-with-fluids-used-in-hydraulic-fracturing/>) T. Lee

While the largest contamination concerns are generally in relation to our water resources, a recent Cornell study has also brought to light increased greenhouse gas emission concerns. While all fossil fuels are sources of greenhouse gases, natural gas extraction through hydraulic fracturing may be the worst culprit. Methane emissions are at least 30% more for this method than conventional oil or gas drilling, as it escapes from the return fluids and during the drilling following the fracturing (Howarth et al. 2011). Methane’s chemical structure (CH4) gives it the ability to absorb terrestrial infrared radiation and prevent it from exiting to space, and it is even more potent than carbon dioxide in this regard. Because methane is a far more powerful greenhouse gas than CO2, the carbon footprint of this method is at least 20% greater than the mining of coal (Howarth et al. 2011), which has recently been taking the most heat for being such a dirty energy source. Rising greenhouse gas concentrations in our atmosphere are the main contributor to climate change, potentially the largest human and environmental health risk our society has ever seen. Because of this phenomenon we are subjected to an increased spread of disease, more destructive severe weather, and unfavorable changes to precipitation patterns that many livelihoods and resources depend on.

#### Fracking contributes significantly to global warming

Bawden 12 (Tom Bawden, energy and resources correspondent for The Independent and Evening Standard, The Independent, “Major investors turn the screw on companies over 'fracking'; Oil and gas explorers come under pressure to clamp down on controversial extraction process,” June 15, 2012, <http://www.lexisnexis.com.proxy-remote.galib.uga.edu/lnacui2api/results/docview/docview.do?docLinkInd=true&risb=21_T15212769927&format=GNBFI&sort=BOOLEAN&startDocNo=1&resultsUrlKey=29_T15212769931&cisb=22_T15212769930&treeMax=true&treeWidth=0&csi=8200&docNo=1>) T. Lee

Fracking - or hydraulic fracturing - is a controversial practice that involves blasting a mixture of sand, chemicals and water into shale rocks to release the hydrocarbons they contain.¶ The process releases into the atmosphere large quantities of methane, a greenhouse gas that is about 20 times more potent than carbon dioxide, which makes it a key contributor to global warming.¶

#### Natural Gas is worse for the environment than gas, coal or oil

Shackford 11 (Stacey Shackford, Communications Specialist, College of Agriculture and Life Sciences at Cornell University, Cornell, “Natural gas from fracking could be 'dirtier' than coal, Cornell professors find,” April 11, 2011, <http://www.news.cornell.edu/stories/April11/GasDrillingDirtier.html>) T. Lee

Extracting natural gas from the Marcellus Shale could do more to aggravate global warming than mining coal, according to a Cornell study published in the May issue of Climatic Change Letters (105:5).¶ While natural gas has been touted as a clean-burning fuel that produces less carbon dioxide than coal, ecologist Robert Howarth warns that we should be more concerned about methane leaking into the atmosphere during hydraulic fracturing.¶ Natural gas is mostly methane, which is a much more potent greenhouse gas, especially in the short term, with 105 times more warming impact, pound for pound, than carbon dioxide (CO2), Howarth said, adding that even small leaks make a big difference. He estimated that as much as 8 percent of the methane in shale gas leaks into the air during the lifetime of a hydraulic shale gas well -- up to twice what escapes from conventional gas production.¶ "The take-home message of our study is that if you do an integration of 20 years following the development of the gas, shale gas is worse than conventional gas and is, in fact, worse than coal and worse than oil," Howarth said. "We are not advocating for more coal or oil, but rather to move to a truly green, renewable future as quickly as possible. We need to look at the true environmental consequences of shale gas."¶ Howarth, the David R. Atkinson Professor of Ecology and Environmental Biology, Tony Ingraffea, the Dwight C. Baum Professor of Engineering, and Renee Santoro, a research technician in ecology and evolutionary biology, analyzed data from published sources, industry reports and even Powerpoint presentations from the Environmental Protection Agency (EPA).¶ They compared estimated emissions for shale gas, conventional gas, coal (surface-mined and deep-mined) and diesel oil, taking into account direct emissions of CO2 during combustion, indirect emissions of CO2 necessary to develop and use the energy source and methane emissions, which were converted to equivalent value of CO2 for global warming potential.¶ The study is the first peer-reviewed paper on methane emissions from shale gas, and one of the few exploring the greenhouse gas footprints of conventional gas drilling. Most studies have used EPA emission estimates from 1996, which were updated in November 2010 when it was determined that greenhouse gas emissions of various fuels are higher than previously believed.

#### Conservatively estimated, Fracking lays waste to the environment

Howarth et al. 10 (Robert W. Howarth Renee Santoro Anthony Ingraffea, the David R. Atkinson Professor of Ecology and Environmental Biology, the Dwight C. Baum Professor of Engineering, a research technician in ecology and evolutionary biology, Cornell University, “Methane and the greenhouse-gas footprint of natural gas from shale formations,” 12 November 2010, <http://www.sustainablefuture.cornell.edu/news/attachments/Howarth-EtAl-2011.pdf>) T. Lee

Considering the 20-year horizon, the GHG footprint for shale gas is at least 20%¶ greater than and perhaps more than twice as great as that for coal when expressed per¶ quantity of energy available during combustion (Fig. 1a; see Electronic Supplemental¶ Materials for derivation of the estimates for diesel oil and coal). Over the 100-year¶ frame, the GHG footprint is comparable to that for coal: the low-end shale-gas¶ emissions are 18% lower than deep-mined coal, and the high-end shale-gas emissions¶ are 15% greater than surface-mined coal emissions (Fig. 1b). For the 20 year horizon,¶ the GHG footprint of shale gas is at least 50% greater than for oil, and perhaps 2.5-¶ times greater. At the 100-year time scale, the footprint for shale gas is similar to or¶ 35% greater than for oil.¶ We know of no other estimates for the GHG footprint of shale gas in the peerreviewed¶ literature. However, we can compare our estimates for conventional gas¶ with three previous peer-reviewed studies on the GHG emissions of conventional¶ natural gas and coal: Hayhoe et al. (2002), Lelieveld et al. (2005), and Jamarillo et al.¶ (2007). All concluded that GHG emissions for conventional gas are less than for¶ coal, when considering the contribution of methane over 100 years. In contrast, our¶ analysis indicates that conventional gas has little or no advantage over coal even¶ over the 100-year time period (Fig. 1b). Our estimates for conventional-gas methane¶ emissions are in the range of those in Hayhoe et al. (2002) but are higher than those¶ in Lelieveld et al. (2005) and Jamarillo et al. (2007) who used 1996 EPA emission¶ factors now known to be too low (EPA 2010). To evaluate the effect of methane, all¶ three of these studies also used global warming potentials now believed to be too low¶ (Shindell et al. 2009). Still, Hayhoe et al. (2002) concluded that under many of the¶ scenarios evaluated, a switch from coal to conventional natural gas could aggravate¶ global warming on time scales of up to several decades. Even with the lower global¶ warming potential value, Lelieveld et al. (2005) concluded that natural gas has a¶ greater GHG footprint than oil if methane emissions exceeded 3.1% and worse than¶ coal if the emissions exceeded 5.6% on the 20-year time scale. They used a methane¶ global warming potential value for methane from IPCC (1995) that is only 57% of¶ the new value from Shindell et al. (2009), suggesting that in fact methane emissions¶ of only 2% to 3% make the GHG footprint of conventional gas worse than oil and¶ coal. Our estimates for fugitive shale-gas emissions are 3.6 to 7.9%.¶ Our analysis does not consider the efficiency of final use. If fuels are used to¶ generate electricity, natural gas gains some advantage over coal because of greater¶ efficiencies of generation (see Electronic Supplemental Materials). However, this¶ does not greatly affect our overall conclusion: the GHG footprint of shale gas approaches¶ or exceeds coal even when used to generate electricity (Table in Electronic¶ Supplemental Materials). Further, shale-gas is promoted for other uses, including as¶ a heating and transportation fuel, where there is little evidence that efficiencies are¶ superior to diesel oil.

### Water Wars

#### Fracking lowers water levels

EPA 11 (US Environmental Protection Agency, “Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources,” November 2011, <http://www.epa.gov/hfstudy/HF_Study__Plan_110211_FINAL_508.pdf>) T. Lee

Large volume water withdrawals for hydraulic fracturing are different from withdrawals for other purposes in that much of the water used for the fracturing process may not be recovered after injection. The impact from large volume water withdrawals varies not only with geographic area, but also with the quantity, quality, and sources of the water used. The removal of large volumes of water could stress drinking water supplies, especially in drier regions where aquifer or surface water recharge is limited. This could lead to lowering of water tables or dewatering of drinking water aquifers, decreased stream flows, and reduced volumes of water in surface water reservoirs. These activities could impact the availability of water for drinking in areas where hydraulic fracturing is occurring. The lowering of water levels in aquifers can necessitate the lowering of pumps or the deepening or replacement of wells, as has been reported near Shreveport, Louisiana, in the area of the Haynesville Shale (Louisiana Office of Conservation, 2011).¶ As the intensity of hydraulic fracturing activities increases within individual watersheds and geologic basins, it is important to understand the net impacts on water resources and identify opportunities to optimize water management strategies.

### Water Poisoning

#### Water poisoning from fracking is a very serious health risk

Schreiber 11 (Erika Schreiber, Studying environmental chemistry at Cornell University, Common Sense, “Hazards Associated with Fluids used in Hydraulic Fracturing,” August 2011, <http://commonsense2.com/2011/08/cleanwater/hazards-associated-with-fluids-used-in-hydraulic-fracturing/>) T. Lee

The information that was acquired indicated that the most widely used chemical in the analyzed time period was methanol, which is contained in 342 different fracking products (Waxman et al. 2011). Other highly used chemicals were isopropyl alcohol, 2-butoxyethanol, and ethylene glycol, used in 274, 126, and 119 products, respectively (Waxman et al. 2011). Products used contained definitively 29 different chemicals that are known or possible human carcinogens, within 652 different products, which are regulated under the Safe Drinking Water Act for their human health risks or listed as hazardous air pollutants under the Clean Air Act (Waxman et al. 2011). These chemicals are listed in Waxman et al.’s Table 3, shown on the next page, and more details on some are discussed later.¶ Diesel, the third chemical component listed in this table, is most significant because of its containment of benzene, toluene, xylene, and ethylbenzene (EPA 2004). These, known as BTEX compounds, are particularly notable components within the products as they are not only used within diesel (Waxman et al. 2011). Benzene is a known carcinogen, and chronic exposure to any of the other three could damage the central nervous system, liver, and kidneys (EPA 2010). Each of these compounds is regulated under the Safe Drinking Water Act (Waxman et al. 2011). However, in 2005, Congress passed a modification of the Safe Drinking Water Act so that it now excludes “the underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities,” (Waxman et al. 2011). Therefore, unless diesel is included, the EPA cannot regulate the underground chemical injection associated with this method of gas extraction. It is important to note that while diesel is a significant issue, there are 13 total carcinogens listed, all of which are reason for concern. During the 2005 to 2009 period, 10.2 million gallons of fluid containing at least one of these carcinogens were injected into the ground (Waxman et al. 2011). Other chemicals that are known or expected to have an adverse affect on human health, those regulated under the Safe Drinking Water Act, were found to have been injected within 67 different products for a total of 11.7 million gallons during the five-year period (Waxman etal. 2011). The BTEX compounds were most prevalent of these, found in 60 of the 67 products (Waxman et al. 2011). Twenty-four different hazardous air pollutants, such as methanol, are found in 595 different fracking products (Waxman et al. 2011). These are regulated under the Clean Air Act as they are known or expected to cause cancer, other serious health effects, or adverse environmental effects.¶ Methanol is of particular concern because of its extreme prevalence compared with other components of the fluid. This chemical is highly toxic to humans; 10 mL of the substance can cause permanent blindness, and 30 mL is potentially fatal (Vale 2007). It can enter the body through ingestion, inhalation, or via skin contact, however there are antidotes that can prevent permanent damage if administered effectively (Vale 2007). Fortunately, methanol is readily biodegradable, and is therefore unlikely to persist in the environment; its half-life in groundwater is only one to seven days (Pirnie 1999), so there is a good chance that human ingestion could be avoided.¶ Hydrogen fluoride, though less prevalent in this process, is much more dangerous than methanol. If enough is absorbed by the body, through any route, it could be fatal, or otherwise cause severe health effects, as it is a highly corrosive and systematic poison (CDC 2011). It converts to hydrofluoric acid upon contact with moisture (namely, once in the body), and severe health effects may be delayed due to the chemical’s deep tissue penetration, making treatment more difficult (CDC 2011). Similarly, lead is only found in one fracking product, but is still a well-documented health risk. While particularly harmful in the neurological development of children, it can also result in adult reproductive issues, high blood pressure, and nerve disorders (EPA 2011). The substance is rapidly absorbed into the bloodstream after being inhaled or ingested, and is believed to have adverse effects on the kidneys as well as the cardiovascular, immune, and central nervous systems (Bergeson 2008). One company alone, in five years, used 780 gallons of a fracking product that contained lead (Waxman et al. 2011).¶ It is important to note that there are also many chemicals used that are not currently regulated. Some of these are already found in public water systems or are expected to be found in the future (Waxman et al. 2011). The Candidate Contaminant List, created by the EPA to address this problem, contains nine chemicals used in hydraulic fracturing that have not yet been fully investigated (Waxman et al. 2011). Ethylene glycol, the second most prevalent chemical in the above chart, is one of the chemicals included on this list. Once ingested, it can negatively affect the central nervous system, the heart, and the kidneys, and is potentially fatal if untreated (NIOSH 2008). It has been found that this chemical will break down in air after about 10 days, but in water and soil it can take up to a few weeks (CDC 2010).¶ 2-butoxyethanol, the fourth most common component in fracking products, is another product that is not present on the provided chart, not currently regulated under the Safe Drinking Water Act or Clean Air Act, nor regulated by OSHA as a carcinogen (Waxman et al. 2011). Used as a foaming agent or surfactant in the industry, this chemical is easily absorbed and distributed by the human body, and exposure can occur from inhalation, ingestion, or dermal contact (Waxman et al. 2011). Such exposure can lead to hemolysis, as well as damage to the spleen, the liver, and bone marrow (EPA 2010). Texas has seen by far the largest amount of this chemical used in fracking products, with over 12 million gallons of fluid containing it injected between 2005 and 2009 (Waxman et al. 2011). The CDC states that it usually decomposes within a few days and is not a major environmental contaminant (1999); however, the EPA recently found drinking water wells contaminated with 2-butoxyethanol in Wyoming, a state that is not even in the top ten where this chemical is used (2010).¶ Isopropyl alcohol, the second most prevalent chemical used in hydraulic fracturing fluid, is also not currently regulated by the EPA. OSHA has set exposure limits in workplaces, but these do not extend to materials left behind or leaked (1996). While not nearly as toxic as methanol or ethylene glycol, poisoning can still occur due to ingestion, inhalation, or absorption. It acts as a central nervous system depressant and is also highly flammable: when mixed with air it can explode through the process of deflagration (Oxford 2006). This is particularly alarming, as the gas is heavier than air, and therefore does not disperse quickly into the atmosphere, creating a higher risk of combustion (Oxford 2006).¶ Generally, the major concern with these injections is the potential to leach into drinking water. The migration of the fluids can be difficult to predict once they are injected, and well failures could lead to the release of the fluids at shallower depths, closer to drinking water supplies (Lustgarten 2009). Also, while some of the fluids are removed once fracturing is completed, a substantial amount stays underground (Veil 2010). The fluid that is removed is generally disposed of as wastewater. Before disposal it is stored in tanks or pits; however, local water supplies have already been subjected to spills due to tears in storage liners (Pless 2010). After storage it can be recycled for later use in fracturing jobs, injected into underground storage wells, discharged to nearby surface water, or transported to wastewater treatment facilities (Waxman et al. 2011). The EPA has found that at least nine chemicals have been injected into or close to underground sources of drinking water, at levels from four to 13,000 times the acceptable concentration in drinking water (2004). According to the same study, up to 40% of the fluids injected remain in the formation and are not removed, creating the potential for continual contamination for years to come.

### Oceans

#### Fracking leads to loss of aquatic life

Schreiber 11 (Erika Schreiber, Studying environmental chemistry at Cornell University, Common Sense, “Hazards Associated with Fluids used in Hydraulic Fracturing,” August 2011, <http://commonsense2.com/2011/08/cleanwater/hazards-associated-with-fluids-used-in-hydraulic-fracturing/>) T. Lee

The negative effects of all of these chemicals are not exclusive to humans. For example, benzene, as a Polycyclic Aromatic Hydrocarbon (PAH), tends to accumulate in marine and freshwater sediments where benthic organisms are continually exposed to it, especially in areas of high human activity (Button 2010). Another characteristic of PAHs is high stability, causing the hydrocarbons to accumulate in fish, and cumulatively become very toxic (Button 2010). Other PAHs in diesel, along with benzene, have been found to represent acute toxicity risks, leading to mortality, increased susceptibility to disease, and endocrine disruption (Button 2010). Another chemical used in fracking, formaldehyde, has been found to lead to mass algae mortality, and can be absorbed by fish via skin and gills, resulting in significant morphological changes (Button 2010). Methanol causes damage to the livers and gills of fish, and many more chemicals result in similar effects (Button 2010).

#### Ocean destruction will ensure planetary extinction

Craig 03 – Associate Professor at Indiana University School of Law [Robin Kundis, “Taking Steps Toward Marine Wilderness Protection”, McGeorge Law Review, Winter, 34 McGeorge L. Rev. 155, LN]

Biodiversity and ecosystem function arguments for conserving marine ecosystems also exist, just as they do for terrestrial ecosystems, but these arguments have thus far rarely been raised in political debates. For example, besides significant tourism values - the most economically valuable ecosystem service coral reefs provide, worldwide - coral reefs protect against storms and dampen other environmental fluctuations, services worth more than ten times the reefs' value for food production. 856 Waste treatment is another significant, non-extractive ecosystem function that intact coral reef ecosystems provide. 857 More generally, "ocean ecosystems play a major role in the global geochemical cycling of all the elements that represent the basic building blocks of living organisms, carbon, nitrogen, oxygen, phosphorus, and sulfur, as well as other less abundant but necessary elements." 858 In a very real and direct sense, therefore, human degradation of marine ecosystems impairs the planet's ability to support life*.* Maintaining biodiversity is often critical to maintaining the functions of marine ecosystems. Current evidence shows that, in general, an ecosystem's ability to keep functioning in the face of disturbance is strongly dependent on its biodiversity, "indicating that more diverse ecosystems are more stable." 859 Coral reef ecosystems are particularly dependent on their biodiversity. [\*265] Most ecologists agree that the complexity of interactions and degree of interrelatedness among component species is higher on coral reefs than in any other marine environment. This implies that the ecosystem functioning that produces the most highly valued components is also complex and that many otherwise insignificant species have strong effects on sustaining the rest of the reef system. 860 Thus, maintaining and restoring the biodiversity of marine ecosystems is critical to maintaining and restoring the ecosystem services that they provide. Non-use biodiversity values for marine ecosystems have been calculated in the wake of marine disasters, like the Exxon Valdez oil spill in Alaska. 861 Similar calculations could derive preservation values for marine wilderness. However, economic value, or economic value equivalents, should not be "the sole or even primary justification for conservation of ocean ecosystems. Ethical arguments also have considerable force and merit." 862 At the forefront of such arguments should be a recognition of how little we know about the sea - and about the actual effect of human activities on marine ecosystems. The United States has traditionally failed to protect marine ecosystems because it was difficult to detect anthropogenic harm to the oceans, but we now know that such harm is occurring - even though we are not completely sure about causation or about how to fix every problem. Ecosystems like the NWHI coral reef ecosystem should inspire lawmakers and policymakers to admit that most of the time we really do not know what we are doing to the sea and hence should be preserving marine wilderness whenever we can - especially when the United States has within its territory relatively pristine marine ecosystems that may be unique in the world. We may not know much about the sea, but we do know this much: if we kill the ocean we kill ourselves, and we will take most of the biospherewith us. The Black Sea is almost dead, 863 its once-complex and productive ecosystem almost entirely replaced by a monoculture of comb jellies, "starving out fish and dolphins, emptying fishermen's nets, and converting the web of life into brainless, wraith-like blobs of jelly." 864 More importantly, the Black Sea is not necessarily unique.

## Flex Fuel Mandate CP

#### Flex fuel mandate solves- their solvency authors advocate this

Zubrin 12 [Robert. Senior Fellow at the Foundation for Defense of Democracies. “Ten Questions with Robert Zubrin” The Daily Kos, <http://www.dailykos.com/storyonly/2008/4/6/12235/79208>]

Yes, well the problem is fundamentally simple. The oil cartel has a vertical monopoly on the world's fuel supply, and that is why they can raise prices without constraint. To defeat them, what is necessary is to create fuel choice. As I explain in the book "Energy Victory," the US congress can deal the fatal blow to OPEC with a stroke of the pen, simply by passing a law requiring that all new cars sold in the USA be flex fueled -- that is able to run on any combination of alcohol or gasoline. These cars are current technology. In fact this year Detroit will be selling 24 models that have this option, and they only cost about $100 more than the same model without flex fuel capability. But they only currently comprise about 3% of the auto sales, because in most places there is no upside to owning one, as there are no alcohol fuel pumps to be found. and the reason, of course, why there are no alcohol pumps out there is that service station owners have no reason to set up such pumps while there are so few cars that can use them. But within 3 years of enactment of a flex fuel mandate we would have 50 million cars on the road in the USA capable of running on alcohol fuels, and under those conditions you would see E85 (85% ethano/15% gasoline) and M85 (85% methanol/15% gasoline) pumps popping up everywhere.¶ And here is the key thing: These alcohol fuel pumps would be appearing not only all across the USA, but all over the world. Because if we made it the law that to sell a car into USA it had to be flex fuel, that would make flex fuel the INTERNATIONAL standard. The Japanese, Koreans, and Europeans are not about to walk away from the American automobile market. So they would simply switch their entire production lines over to flex fuel. What that would mean is that any car being marketed in any serious way anywhere in the world would be flex fuel, and we would see hundreds of millions of them all over the globe in just a few years. This would create an open-source fuel market, that would force gasoline to compete at the pump everywhere against ethanol and methanol produced from any number of sources all over the world. This would break the vertical monopoly of the oil cartel, eliminating forever their power to raise prices without constraint. The price of oil would be forced back down to about $50/bbl, because that is where alcohol fuels become competitive, and then pushed down further as the huge non-monopoly controlled market mobilized capital into R&D to drive cost-reducing process improvements.¶

#### FFVs only cost $100 more- the only barrier now is fuel availability, which mandate solves

Zubrin 12[Robert. Senior Fellow at the Foundation for Defense of Democracies. “Ten Questions with Robert Zubrin” The Daily Kos, <http://www.dailykos.com/storyonly/2008/4/6/12235/79208>]

Yes, well the problem is fundamentally simple. The oil cartel has a vertical monopoly on the world's fuel supply, and that is why they can raise prices without constraint. To defeat them, what is necessary is to create fuel choice. As I explain in the book "Energy Victory," the US congress can deal the fatal blow to OPEC with a stroke of the pen, simply by passing a law requiring that all new cars sold in the USA be flex fueled -- that is able to run on any combination of alcohol or gasoline. These cars are current technology. In fact this year Detroit will be selling 24 models that have this option, and they only cost about $100 more than the same model without flex fuel capability. But they only currently comprise about 3% of the auto sales, because in most places there is no upside to owning one, as there are no alcohol fuel pumps to be found. and the reason, of course, why there are no alcohol pumps out there is that service station owners have no reason to set up such pumps while there are so few cars that can use them. But within 3 years of enactment of a flex fuel mandate we would have 50 million cars on the road in the USA capable of running on alcohol fuels, and under those conditions you would see E85 (85% ethano/15% gasoline) and M85 (85% methanol/15% gasoline) pumps popping up everywhere.¶ And here is the key thing: These alcohol fuel pumps would be appearing not only all across the USA, but all over the world. Because if we made it the law that to sell a car into USA it had to be flex fuel, that would make flex fuel the INTERNATIONAL standard. The Japanese, Koreans, and Europeans are not about to walk away from the American automobile market. So they would simply switch their entire production lines over to flex fuel. What that would mean is that any car being marketed in any serious way anywhere in the world would be flex fuel, and we would see hundreds of millions of them all over the globe in just a few years. This would create an open-source fuel market, that would force gasoline to compete at the pump everywhere against ethanol and methanol produced from any number of sources all over the world. This would break the vertical monopoly of the oil cartel, eliminating forever their power to raise prices without constraint. The price of oil would be forced back down to about $50/bbl, because that is where alcohol fuels become competitive, and then pushed down further as the huge non-monopoly controlled market mobilized capital into R&D to drive cost-reducing process improvements.¶

#### Spending NB

# AT

### AT Not enough Drilling

#### The plan will increase Natural Gas drilling

Aff Author Tanzy and Houk 11 (Kathleen Tanzy, Steve Houk, Director of Strategic Industry Communications, Director of Marketing and Promotion Washington, “Fueling stations key for US shift to natural gas-powered wehicles, Chesapeake Energy CEO tells Platts Energy Week,” July 18, 2011, <http://www.platts.com/PressReleases/2011/071811>) T. Lee

McClendon hopes that Chesapeake’s increased gas production, along with its investment in LNG and CNG fueling stations, will trigger a “tipping point” that will give automakers the confidence they need to bolster their production advanced, gas-powered vehicles. He said he expects truck stops, convenience stores and other gas drillers to make additional investments in LNG and CNG infrastructure because the cost of the domestically produced fuel will be half that of gasoline and diesel refined from imported oil.