# Alternative Vehicle Fueling Core 1.0

# \*\*\*Natural Gas Vehicles

## 1AC CORE

### 1AC Inherency

#### Inherency:

#### ( ) Transportation infrastructure investment and spending in the status quo

Laing 7-6

[Keith. Staffer for the Hill. “Obama Signs Highway Bill” The Hill, 7/6/12 ln]

President Obama signed a $105 billion transportation bill on Friday, bringing to an end a three-year fight over road and transit spending.¶ The bill signing capped a day that began with an unemployment report showing the U.S. economy had added only 80,000 jobs in June, leaving the national unemployment rate unchanged at 8.2 percent. Obama has touted the highway bill as a jobs bill, and at the White House signing ceremony he was surrounded by construction workers and students. The ceremony began after the president concluded a two-day campaign trip through the swing states of Ohio and Pennsylvania.¶ “First of all, this bill will keep thousands of construction workers on the job rebuilding our nation’s infrastructure," Obama said in a quick speech delivered less than an hour after he landed at Andrews Air Force base in suburban Washington.¶ “Second, this bill will keep interest rates on federal student loans from doubling this year, which would have hit nearly seven and a half million students with an average of $1,000 more on their loan payments,” he continued. “These steps are going to make a real difference in the lives of millions of Americans.” Republicans had sharply criticized the president for the unemployment numbers on Friday.¶ “Millions and millions of families are struggling and suffering because the president's policies have not worked for them,” Republican presidential nominee Mitt Romney said at a press conference in New Hampshire, where he is on vacation with his family.¶ “This kick in the gut has got to end,” Romney added.¶ Obama argued at the transportation bill signing on Friday that lawmakers in Congress should send him more bills like the measure he was signing into law.¶ “My hope is this bipartisan spirit spills over into the next phase,” Obama said. “That we can start putting more construction workers back to work – not just those that were already on existing projects that were threatened to be laid off – but also getting some new projects done.¶ “My message to Congress is the same thing I’ve been saying for months now — let’s keep going,” Obama continued. “Let’s keep finding ways to work together to grow the economy and help put more folks back to work. There’s no excuse for inaction where there’s so many Americans trying to get back on their feet.”¶ The bill Obama signed provides road and transit funding for the next two years. It also extends a 3.4 percent interest rate on student loans for one year and a flood insurance program for five.

#### ( ) The alternative vehicle market is drying up – lack of refueling infrastructure is the *key reason*

Kemp 5-25

[John. Market Analyst for the Associated Press. “Will US Federal Fleet help Alternative Fuel Switch?” The Associated Press, 5/25/12 ln]

Federal law defines alternative fuel vehicles broadly to include both those running on alternative fuels such as compressed natural gas (CNG), liquefied natural gas (LNG), hydrogen and high blend ethanol (E85) as well as certain qualifying hybrid electric vehicles run on a combination of regular petroleum and electricity (42 USC 13211). In 2010, there were nearly 1 million vehicles running on alternative fuels in use across the United States, according to the Department of Energy's Alternative Fuels and Advanced Vehicles Data Center, up from less than 400,000 a decade earlier. In addition, more than 2 million hybrid electric vehicles had been sold over the same period. Alternative fuelled vehicles are still a tiny minority of vehicles on U.S. roads, but the number is increasingly rapidly. The problem is that few are actually filling up with alternatives to gasoline owing to the lack of outlets actually selling alternative fuels such as E85 or LNG. There were just 10,000 fuelling stations dispensing alternative fuels in 2011 (up from less than 7,000 in 2010). Of those, a little over 3,300 were supplying electricity (six times as many as in 2010 making this the fastest growing segment of the alternative fuel infrastructure). But less than 1,000 dispensed compressed natural gas, and just 45 dispensed LNG. Even E85 was available from fewer than 2,500 outlets. In contrast, there are almost 160,000 retail gasoline stations across the country, and many more private refuelling facilities owned by large fleet operators such as UPS, transit systems, and the federal government. Availability problems are compounded by the uneven distribution of alternative fuelling stations. There are lots in California, the nation's biggest vehicle market, and another concentration in the ethanol-producing states of the Midwest such as Illinois, Indiana and Minnesota, but not many in the rest of the country.

### 1AC Plan Text

#### Plan: The United States federal government should substantially increase its investment for natural gas vehicle fueling infrastructure. We’ll Clarify.

### 1AC Oil

#### Advantage [ ] is Oil – Scenario 1 is Prices:

#### ( ) Oil prices are low - prices have already fallen below $100 per barrel

Rozhnov 7-23

[Konstantin. Oil Reporter for the Wall Street Journal. “Oil Prices Plunge 4%” The Wall Street Journal, 7/23/12 ln]

Crude-oil futures skidded on worries over global demand for oil, as the euro-zone's sovereign debt crisis pushed down European stocks and the euro.¶ "Focus is back on Europe, and there's a bit of a nervousness in the market," said Ole Hansen head of commodity strategy at Saxo Bank.¶ The front-month September Brent contract on London's ICE futures exchange was down $3.40, or 3.4%, at $103.43 per barrel. Crude-oil futures trading on the New York Mercantile Exchange fell 4% to $88.21 per barrel.¶ The soaring cost of Spanish government borrowing costs and worries over Greece ended the $10-a-barrel rise in oil prices which lasted for seven trading days up to last Thursday, analysts said.¶ "This price rise wasn't the result of any change in fundamentals but to supply risks," Commerzbank said in a note. "Although these supply risks haven't gone away [...] they are likely to merely slow the price slide so long as there is no further escalation of the situation in Syria or of the Iran conflict."¶ Also, activity in the oil futures market is relatively light now due to the summer holiday season and it doesn't take much to move the market, said Saxo's Mr. Hansen.

#### ( ) These trends will continue over the medium-term – crumbling demand and global economic stagnation ensure a 7% drop in 2013

AFP 7-12

[The Agence France Presse. “IAE: Oil Prices May Fall 7%” The Agence France Presse, 7/12/12 ln]

Oil prices are unlikely to fall much further over the balance of this year but could come under pressure in 2013 as the global economy falters due to slower US and Chinese growth, the IEA said Thursday. The International Energy Agency, which advises developed countries on energy policy, said supply risks appeared to have put a floor under prices for this year even as global economic growth slows.¶ But for 2013, oil prices could fall in real terms by more than 7.0 percent, based on current models and futures contracts, it said, adding that such a downturn should marginally support demand.¶ Global economic growth this year will likely come in at 3.3 percent, down from the previous estimate of 3.5 percent as an "exceptionally challenging macroeconomic backdrop" forced the IEA to change its forecasts.¶ For 2013, the global economy should grow 3.8 percent, down from the previous 4.1-percent estimate based on figures in April from the International Monetary Fund, it added.¶ "Concerns are mounting on the sustainability of the eurozone, there has been a definite easing in China's economic impetus and the US outlook has weakened," the IEA said in its latest monthly report.¶ "Ongoing debt concerns across the developed world will likely see associated austerity measures curtailing government, business and consumer expenditure levels alike," it said.¶ The IMF is expected to issue new economic growth forecasts shortly.¶ Oil prices were slightly easier, with New York's main contract, light sweet crude for delivery in August, down 34 cents to $85.47 a barrel.¶ Brent North Sea crude for August shed 22 cents to $100.01, having fallen as low as $89 in late June after hitting highs in March of around $125. In terms of oil demand, the IEA left its 2012 growth forecast at around 800,000 barrels per day (bpd) to around 89.9 million bpd, with 2013 gaining a "relatively muted" 1.0 mbd to 90.9 mbd, led by Asia.¶ The increase next year, while marginally more than the expected 2012 gain, was much less than would have been expected based on trends before the 2008 global financial crisis brought the economy to its knees, it said.¶ The eurozone debt crisis has since undercut growth further.¶ The IEA said that total global oil supply in June was down 500,000 bpd to some 90.4 mpd, with OPEC production slipping 100,000 bpd to 31.8 mpd.¶ Among OPEC members, the IEA noted that Iranian output had slumped to near 22-year lows at 3.2 mbd in June, down 100,000 bpd from May as US and EU sanctions ramp up from July 1.

#### ( ) Oil price freefall will collapse financing for global Anti-Americanism in Iran and Venezuela – but future price increases cause revitalization

Levy & Slackman ‘8

[Cliff and Michael – Trade Desk at the New York Times. “3 Oil-Rich Countries Face a Reckoning” The New York Times, 10/21/8 ln]

As the price of oil roared to ever higher levels in recent years, the leaders of Venezuela, Iran and Russia muscled their way onto the world stage, using checkbook diplomacy and, on occasion, intimidation. Now, plummeting oil prices are raising questions about whether the countries can sustain their spending — and their bids to challenge United States hegemony. For all three nations, oil money was a means to an ideological end. President Hugo Chávez of Venezuela used it to jump-start a socialist-inspired revolution in his country and to back a cadre of like-minded leaders in Latin America who were intent on eroding once-dominant American influence. Iran extended its influence across the Middle East, promoted itself as the leader of the Islamic world and used its petrodollars to help defy the West’s efforts to block its nuclear program. Russia, which suffered a humiliating economic collapse in the 1990s after the fall of communism, recaptured some of its former standing in the world. It began rebuilding its military, wrested control of oil and gas pipelines and pushed back against Western encroachment in the former Soviet empire. But such ambitions are harder to finance when oil is at $74.25 a barrel, its closing price Monday in New York, than when it is at $147, its price as recently as three months ago. That is not to say that any of the countries is facing immediate economic disaster or will abandon long-held political goals. And the price of oil, still double what was considered high just a few years ago, could always shoot back up. Still, Russia, Iran and Venezuela have all based their spending on oil prices they thought were conservative but are now close to the market level. Significant further drops could tip the three countries into deficit spending or at least force them to choose among priorities. A worldwide recession, which many economists say is likely, would worsen matters, dampening energy demand and holding down prices. It is not clear whether the new pressures could create opportunities for the United States to ease tensions, or whether the three countries’ leaders will rely more on angry words even if they cannot afford provocative actions. Mr. Chávez has continued his overtures to Russia. He, Prime Minister Vladimir V. Putin of Russia and President Mahmoud Ahmadinejad of Iran may now see the United States, hobbled by financial crisis, as even more vulnerable. Daniel Yergin, chairman of Cambridge Energy Research Associates, a consulting firm in Cambridge, Mass., said oil states were facing something of a reckoning. Originally, he said, they saw the economic crisis as a problem mainly for the United States — but then oil prices went into free fall. “Now, the producers are experiencing a reverse oil shock,” Mr. Yergin said. “As revenue went up, government spending went up and expectations of a continuing windfall led to greater and greater ambitions. Now they are finding how integrated they are into this globalized world.”

#### ( ) The plan is the death knell for oil

Podesta et al 11

(John Podesta, President and CEO of the Center for American Progress, Carl Pope, Chairman of Sierra Club, Gene Carpinski, President of the League of Conservation Voters, March 2011, “Cleaner Cars, Less Foreign Oil,” http://www.americanprogress.org/issues/2011/03/pdf/oilsavingsagenda.pdf)

Millions of Americans are locked into using their cars because of limited transportation choices. Their communities lack affordable, convenient buses; subways; or other means of transit. Some communities lack safe biking and walking areas. Workers must spend hours in congested driving nightmares. People must drive a car to get a gallon of milk where housing is separated from services and amenities. Seniors face the loss of their freedom when they are no longer able to drive a car. Businesses are also constrained by limited choices, which have real economic costs. Shipping goods is more expensive because current railroad bottlenecks force them onto trucks, which increases oil dependence and pollution. More truck freight adds to highway congestion and road wear and tear. Too much of our freight moves on trucks because we have invested too little in our rail system. Infrastructure and planning improvements are necessary to provide genuine transportation alternatives for both passengers and freight. Fortunately, public transit is popular among those Americans who have reasonable access to it. Public transportation experienced a significant increase in use over the past 15 years. According to the American Public Transit Association: From 1995 through 2009, public transportation ridership increased by 31 percent—a growth rate higher than the 15 percent increase in U.S. population and higher than the 21 percent growth in the use of the nation’s highways over the same period. Buses, subways, streetcars, and other forms of transit dramatically reduce oil use. The American Public Transit Association determined that Riding public transportation is a significant way to cut passenger transportation energy use. … transit reduces annual fuel use by the equivalent of 4.2 billion gallons of gasoline. This is about 100 million barrels of oil saved annually. Outlays for new and improved transit networks can also help speed our economic recovery. There is $4 in economic return for every $1 of investment. Every $1 billion provided for transit creates 36,000 jobs. Fix roads, bridges, and trains, and unclog transportation bottlenecks While we must increase our investment in transportation infrastructure, we must avoid wasting it. Boondoggles and pork-barrel earmarks have added to our present congestion. We must not build highways we don’t need. We must ensure the ones we have are in good repair. New capacity should be added strategically to increase the overall flexibility of the transportation system rather than simply adding lanes and increasing gridlock. America’s ports, for example, represent major bottlenecks in getting feed stocks to factories and goods to consumers. Shipping freight by railroad is three times more oil efficient compared to using trucks. Yet our outdated rail system suffers from bottlenecks that make it less attractive for businesses. For instance, the News Hour found that “Chicago has been a freight rail hub for the past 150 years, but an outdated layout often makes it a bottleneck for the country’s shipping network.” And demand for rail shipment is projected to nearly double over the next 25 years. Yet the American Society of Civil Engineers projects a 20 percent shortfall in rail investment over this time. To address these problems, there should be a national transportation policy with a prominent oil-savings goal. Such a program would first invest in transportation programs that decrease dependence on oil. The president’s outline for transportation program provides a good starting point, including increasing our investment in transit by 128 percent over six years. In addition, Congress should create an “Infrastructure Bank” that would lend money for large-scale infrastructure projects, including funds for the repair and rehabilitation of highways, transit, and railroads. These funds would be paid back over time by tolls or local dedicated taxes. The federal government would spur investment in these modes by putting in the first dollars and attracting private partners. Every federal dollar loaned to a project will be matched by as many as six private dollars.

#### ( ) Green vehicles are key

Corless 10

(James, James Corless was a senior planner for the Metropolitan Transportation Commission and is now Campaign Director, Transportation for America, June 24, “Smart Technology Means More Options,” http://transportation.nationaljournal.com/2010/06/what-should-transportation-dep.php)

Developing a smarter and cleaner transportation system that reduces greenhouse gas emissions and our dependence on oil must be the overriding vision that guides the next federal transportation bill. Part of that vision must be realized through smarter approaches to managing traffic congestion, providing more options like public transportation, vanpools, intercity buses and high speed rail and offering incentives for states and local governments to develop more walkable and livable communities that encourage shorter commutes. But if we’re serious about reducing emissions and oil dependency, that vision can only be fully realized if we make a significant investment in infrastructure that will accelerate a transition to electric vehicles.

#### ( ) Venezuela is aggressively pursuing anti-Americanism – includes rogue nuclear development and terrorism – low oil prices are key to derailment

IBD ‘8

[The Investor’s Business Daily. “Chavez’s Nightmare” IBD, 10/1/8 ln]

Why do we say this? Because Chavez is using his abundant oil earnings for three purposes: to buy regional influence, to buy arms and now to introduce Russian nuclear proliferation to our hemisphere. All are serious threats that the next U.S. president will face if global oil prices remain high. Only lower oil prices will stop him. That's because oil prices, not ideas, fuel his capacity to act. The self-described communist has stolen and wasted a lot of the $800 billion in oil revenue that has flowed to Venezuela over the last decade, mainly from U.S. buyers. But he's managed to use much of it like a captured weapon to undercut what he calls the "empire." Chavez is also well on the way to making the hemisphere his playground. He has used oil cash to buy off leaders in Argentina; bankroll vassal states in Ecuador, Nicaragua and Bolivia; win new friends in Paraguay; meddle in elections in Peru, El Salvador and Mexico; and finance terrorists in Colombia. Now he's extended his influence in unexpected new places such as Costa Rica, Honduras, St. Vincent, the Grenadines and Dominica, all of which have made disturbing diplomatic moves in his direction. Fewer and fewer U.S. allies will be left standing against this Chavista tide of corrupt oil largesse. What's more, Chavez is the region's chief arms proliferator, forking out $4.4 billion for Russian advanced jet fighters, small arms, submarines and now missile systems, none of which he needs. The stakes rise further with his invitation to Russian influence, starting with "peaceful" nuclear energy development in a nation where gas sells for 18 cents a gallon. Like fellow petrotyrant Iran, development of nuclear weapons — in this case, 1,350 miles from Key West, Fla. — will be next on his to-do list. A third petrotyranny, Russia, still bitter over its loss of empire and blaming the U.S., assures Chavez it will gladly pay for this. As disturbing as this picture is, there's little doubt next year's list of Chavista "achievements" will be longer. The one thing that will cut it short is an end to high oil prices. Chavez said as much Tuesday in speaking to friends at a gathering of leftist leaders in Manaus, Brazil. Turmoil in U.S. financial markets will slow global growth and hit Latin America hard, he said, adding that a drop in oil revenue hit Venezuela like "a hurricane, or more than one hurricane, it's a hundred hurricanes." A downturn in the U.S. economy is one way to lower oil prices. But it's far preferable to defang Chavez by creating permanent substitutes for his petroleum products in U.S. markets.

#### ( ) Venezuelan anti-Americanism escalates into a second cold war – causes nuclear acquisition and global state failure

Abelgas ‘8

[Valerie. Columnist for the Philippine Post. “The Second Cold War” Ang Peryodiko, V6 No19 http://www.angperyodiko.ca/opinion\_columns/val\_abelgas/abelgas\_vol6no19.html, 10/2/8]

The dispatch by Moscow of the nuclear-powered missile cruiser Peter the Great and three other ships to Venezuela on Monday has made the resurgence of the Cold War between the United States and Russia imminent, if it has not actually began. As in the original Cold War, which began with the fall and split of Germany in World War II in 1945 and ended with the break-up of the Soviet Union and the reunification of Germany in 1990, Latin America is turning out to be an important battleground for the two superpowers. Russia has recently intensified its contacts with Venezuela -- an oil-rich nation that has been a pain in the neck for the US -- Cuba and other South American nations following the heightening of tensions between the two superpowers in the dispute over Georgia. The incident brings to mind the Cuban Missile Crisis in October 1962 when the world came closest to a nuclear war, and which ended when American President John F. Kennedy and United Nations Secretary General U Thant reached an agreement with Soviet Premier Nikita Kruschev to dismantle Soviet missiles in Cuba in exchange for a no-invasion agreement and the removal of US missiles in Turkey. The emerging new Cold War is starting in almost the same manner as the old one. In 1945, shortly after Germany surrendered to the Allies and was split into West and East Germany, Russia, fearing another invasion from Western Europe after Germany had tried to invade it three times in the last 150 years, formed a buffer zone from Western Europe by exerting its might over what later became known as the Iron Curtain – Bulgaria, Czechoslovakia, Hungary, Poland and Romania. These countries, along with the Soviet Union, formed the Warsaw Pact, the formation of which was in response to the formation of the United States-led North Atlantic Treaty Organization (NATO). With the Soviets ready to extend its sphere of influence to Greece and Turkey in 1947 – with the Greeks in the midst of a civil war and the Turks needing help to modernize its society -- then US Undersecretary of State Dean Acheson called on Congress to come to the assistance of the two countries, arguing that if these countries fall into the hands of the communists, the neighboring nations would also subsequently fall. This later became known as the Domino Theory. Thus, the Cold War intensified as the two major victors of the Second World War raced to claim the spoils of war. The Cold War was characterized by satellite wars, foremost of which were the Korean War and the Vietnam War. The score was tied in the Korean War, with Korea being divided into North and South Korea, but the communists prevailed in the Vietnam War, with Hanoi overpowering Saigon after the US abandoned its ally. The Cold War also saw the emergence of the Nuclear Arms Race, with both the Soviets and the Americans battling to have more and superior nuclear bombs; the Space Race, which was dominated by the Soviets early on until the Americans beat them to the moon; the close calls to disaster during the Bay of Pigs Invasion and the Cuban Missile Crisis; and the calming policy that came to be known as détente. The Cold War put the world constantly on the edge of fear and devastation for 45 years while the two superpowers expanded their spheres of influence to wide parts of the globe and threatened to annihilate each other. With the emergence of a rationale leader in the Soviet Union in the 1980s in the person of Mikhail Gorbachev, the Cold War began to thaw. Gorbachev declared, upon assuming the position of general secretary of the Communist Party of the Soviet Union, that beyond a certain point, which, according to him, had been reached and passed at that time, increases in military power were useless. Gorbachev launched his glasnost (openness) and perestroika (economic restructuring) policies that triggered the end of the Cold War, and eventually of the once powerful Soviet Union. I was lucky to witness the Soviet Union’s transformation at that time when the Novosti Press Agency invited fellow journalist Maritess Vitug and I in August of 1988 to visit the cities of Moscow and Leningrad (now St. Petersburg) in Russia, Tbilisi in the Georgian Republic, and Baku in the Azerbaijan Republic. A couple of years later, the arms race came to an end and Gorbachev abandoned the Brezhnev Doctrine, which declared that no satellite country in Eastern Europe would be allowed to defect. Within months, democratic movements emerged in these Iron Curtain countries and their authoritarian governments fell one by one, ironically like dominoes. The Cold War ended where it started, with the tearing down of the Berlin Wall in November 1989 and the reunification of the two Germanys. With Russia now trying to create another buffer zone around its southern borders, and the United States racing to exert influence over these former Soviet republics around the Caspian Sea, which incidentally hold a huge reserve of oil and natural gas and host major oil pipelines to the East and to Central Asia, it was inevitable that history would repeat itself. For years after the break-up of the once powerful Soviet Union, Russia was pictured by the West as a defeated country. Crippled by the sudden turn of events, the Russians were faced with domestic problems – rising crime rates, government corruption, separatism, economic depression, rising poverty and social discontent. But since the financial collapse of 1998, Russia’s economy has taken a major rebound, powered by its huge oil and gas reserves. It is the world’s eighth largest oil producer, the world’s top natural gas producer, has the world’s fifth largest foreign reserves at $600 million, and has the world’s fifth largest gold reserves. It supplies 30% of Europe’s oil needs and 40% of its gas. Its economy grows by an average of 6 to 7 percent annually since 1999, and its stock market index increased by 83 percent last year. In contrast, the US economy is experiencing the biggest turmoil since the Great Depression with its financial institutions in serious jeopardy, its stock market in chaos, its economy teetering on the precipice of a deep recession or worse, another depression, its body politic currently immersed in extremely divisive political campaign, and more importantly, its credibility and influence among the world’s nations in serious doubt. Unlike the first Cold War, the Second Cold War is not a race for political influence but is a battle for the world’s dwindling oil and gas reserves. It is not coincidental that it started in an area where vast oil and gas reserves sit – the Caspian Sea region. And it’s not merely symbolic that Russia has decided to intensify it by sending a part of its naval fleet to oil-rich Venezuela. The Second Cold War’s satellite wars will not be fought in Korea or Vietnam, but is now being fought in Iraq and soon in Iran, both oil-producing countries. Don’t expect insurrections and skirmishes in Cuba. They will occur in oil-producing countries, such as Venezuela, Georgia, Azerbaijan, Iran, and possibly the oil-rich region of Brunei, Indonesia, the Spratlys in the China Sea, and Mindanao. While the economy and the Iraq problem are the central issues in the US presidential campaign, there is a need to recognize that the Second Cold War has begun and should, therefore, be an important parameter in the choice of this great nation’s next leader. Should we elect a leader who will be firm and strong, but who will gently and calmly steer us through the troubled waters of the Second Cold War, or should we choose one who has for years ruled out conciliation with Russia, wanted Russia out of the stabilizing economic group G-8, and who has been itching for a direct confrontation with the long-time Cold War rival? Should it be Barack Obama or John McCain? The debates on this important foreign policy matter have not begun. But the Second Cold War is well way off the starting gate.

#### ( ) State failure explains every impact

Manwaring ‘4

[Max. Latin America Expert @ CSIS, PhD in Poli Sci from UChicago. Shadows of the Past and Images of the Future 2004, Pg 36-8]

State failure is an evolutionary process, not an outcome. This state of affairs is often brought on by poor, irresponsible, and insensitive governance, and leads to at least one other very fundamental reason why states fail. That is, state failure can be a process that is exacerbated by nonstate (insurgent) groups that, for whatever reason, want to take down or exercise illicit control over a given government. In Latin America, Colombia is, Peru has been, and both continue to be good examples of this. The narco-insurgent/terrorist [is a] threat to the authority of the central governments. Through murder, kidnapping, corruption, intimidation, destruction of infrastructure, and other means of coercion and persuasion, these violent, internal, nonstate actors compromise the exercise of state authority. The government and its institutions become progressively less and less capable of performing the tasks of governance, including exercising their fundamental personal security functions to protect citizens. As a result, the narco-insurgents become increasingly wealthy and powerful, and affected countries deteriorate further and further toward failed state status. Peru’s Sendero Luminoso calls violent and destructive activities that facilitate the processes of state failure armed propaganda. Drug cartels operating in that country and throughout the Andean Ridge of South America and elsewhere call these activities business incentives. Thus, in addition to helping to provide wider latitude to further their specific objectives, Sendero’s and other violent nonstate actors’ armed propaganda and business incentives are aimed at lessening a regime’s credibility and capability in terms of its ability and willingness to govern and develop its national territory and society. This debilitating and destabilizing activity generates the most dangerous long-term security challenge facing the global community today. More specifically, failing or failed states in Latin America, Africa, the Middle-East, and Asia are breeding grounds for instability, insurgency, and terrorism. A breakdown in institutional governance can breed or exacerbate humanitarian disasters and major refugee flows. Such states can host networks of all kinds, including criminal business enterprises and/or some form of ideological, religious, or populist crusade. They also spawn a variety of pernicious and lethal activities and outcomes, including torture and murder; poverty, starvation, and disease; the recruitment and use of child soldiers; trafficking in women and human organs for transplants; trafficking and proliferation of conventional weapons systems and weapons of mass destruction; genocide, ethnic cleansing, warlordism; and criminal anarchy and insurgency. At the same time, these networks and activities normally are unconfined and spill over into regional syndromes of destabilization and conflict. Additionally, failing and failed states simply do not go away. Ample evidence demonstrates that failing and failed states become dysfunctional states, rogue states, criminal states, narco-states, or new people’s democracies. Moreover, failing and failed states tend not to (1) buy U.S. and other exporting nations’ products, (2) be interested in developing democratic and free market institutions and human rights, or (3) cooperate on shared problems such as illegal drugs, illicit arms flows, debilitating refugee flows, and potentially dangerous environmental problems. In short, the longer they persist, the more they and their associated problems endanger global security, peace, and prosperity.

#### ( ) Venezuelan nuclear acquisition causes extinction

Zulauga ‘5

[Felipe. President of Visions of Latin America at the Univ of Pitt. “Venezuela…A Good Neighbor?” 2005, http://www.ucis.pitt.edu/clas/publications/Visions\_vol1\_issue1.pdf]

Although Chavez indicates that the development of nuclear power is to be for peaceful purposes only, his statement in May was not well received in the majority of Venezuela’s neighboring countries or in the United States. But why is Chavez’s idea regarded with suspicion by the international community? Why is his initiative viewed as a threat rather than a positive development? The most likely answer can be summed up by security and stability reasons, as Venezuela is seeking a more secure position in the global context. However, this ambition engenders concerns in the Latin American region and could potentially generate serious repercussions for the entire Latin American community Among these concerns is determining the true reason as to why President Chavez aspires to acquire nuclear energy. According to Douglas Mackinnon in an article from the Houston Chronicle, the real reason that Chavez wants to develop nuclear technology is for the purpose of developing nuclear weapons! It may be hard to determine the credibility of this statement, but considering Mackinnon’s source is a high ranking official for a Latin American government, it should not be taken lightly. It is upsetting and almost incomprehensible to conceive of the Venezuelan government developing nuclear weapons. This not only poses a threat to the stability and security of the Latin American region, but it also has the potential to cause a nuclear crisis at the global level. If nuclear technology is developed in Venezuela for the purpose of acquiring nuclear arms, the country will violate the Treaty of Tlatelcol, which prohibits nuclear weapons in Latin America. This treaty, signed by 23 Latin American states, has been the pillar in maintaining nuclear security for the entire region and sets an example for other regions to successfully achieve nuclear-free zones. However, if Venezuela officially decides to break the treaty by achieving nuclear power, it is probable that other countries with previous intentions to develop military nuclear capacity - such as Mexico, Chile, Brazil and Argentina – will follow suit.

#### ( ) US-Iran tensions are rapidly increasing – ensures terrorist attacks around the globe

Miller 7-19

[John. Intl Desk for CBS News. “Ex-Revolutionary Guard member: Iran ready with terror plans to hit U.S. if Israel attacks.” CBS News, 7/19/12 ln]

A former Iranian agent from that country's feared Revolutionary Guard corps - a man who's been on the inside - tells CBS News that a surrogate, stealth war, carried out in the shadows by both sides, has been going on for more than a year.¶ It began with the targeted killings of Iranian scientists working on that country's nuclear program.¶ Then a computer virus was covertly deployed against Iranian nuclear sites. The virus was designed to make the sites self-destruct. Iran publicly accused the U.S., Great Britain and Israel of being behind the plots.¶ And now, it appears Iran is striking back.¶ "They're looking at this saying, 'We've got to respond. Aggression has been taken against us,"' says former CIA analyst Phil Mudd. "So that's the first factor. The second factor is, in the background, they're hearing the drumbeats of war."¶ That drumbeat is the continued discussion over if or when Israel might launch airstrikes against more than a dozen underground suspected Iranian nuclear sites.¶ But Iran hasn't backed away.¶ Since the killing of the last Iranian scientist, Iran has been linked to a series of plots:¶ -- A bomb attached to the car driven by the wife of an Israeli diplomat in India¶ -- A plan to use local organized crime hit men in a sniper attack in the U.S., and Israeli targets in Azerbaijan and the nation of Georgia¶ -- A plot using a Mexican drug cartel to kill the Saudi ambassador in a crowded restaurant in Washington, D.C.¶ -- And just days ago, in Kenya a suspected plot to attack a synagogue in Nairobi and Israeli-owned hotels in the coastal city of Mombasa¶ The two suspected Iranian agents captured in Kenya on July 3 are believed to be members of Iran's elite Revolutionary Guard force.¶ Reza Kahlili was once a member of that force himself and for years, he says, a double agent who supplied information to the CIA.¶ He says these attacks are Iran's version of a warm-up, in the event of a full conflict with Israel.¶ "They're just sending signals that they are capable of, and the order is by Ayatollah Khamenei, the Iranian supreme leader that, should war break out, then all terror cells will become activated and attack major interests of America, Israel, European countries and even within America," warns Kahlili, author of "A Time to Betray."¶ But, given the number of alleged plots by Iran against Israeli targets, some analysts wonder why Iran would seem to keep provoking the very attack they say they want to avoid.¶ "The mindset of this organization that is the Iranian intelligence service and this government is not a Western mindset," Mudd observes. "We see stability as a goal. They see instability and revolution as a goal."¶ Kahlili says, in the event of an Israeli airstrike, Iran is prepared to up the ante, not by responding militarily, but with a global campaign of terror attacks.¶ "Should it become an all-out war, then they will definitely respond on the world stage by terrorist attacks within the U.S., in Europe, and against America's interests, against Israel's interests," Kahlili says.¶ Intelligence officers believe Iran has already done the pre-operation surveillance for a series of terrorist attacks.¶ There's plenty of evidence that Tehran has scoped out targets, taken photos and written plans for terrorist strikes in the Mideast, Europe, South America, and even the United States.

#### ( ) *Sustained* low oil prices devastate Iran’s ability to effectively attack American interests

Collie ‘8

[Tim. Middle East Correspondent and Finalist for the Pulitzer Prize. “Cheap Oil could Alter International Landscape” [www.newsmax.com/international/cheap\_crude\_oil/2008/10/17/141607 10/17/8](http://www.newsmax.com/international/cheap_crude_oil/2008/10/17/141607%2010/17/8) ]

In neighboring Iran, however, the falling oil price could prompt a retreat from international adventurism to more focus inside that country’s borders. Improbably, Iranians already pay high domestic prices because of inefficient markets, and dilapidated infrastructure. On Friday, Israeli President Shimon Peres said that, “We see only our troubles, but we must note that there is finally a drop in oil prices, and this is a severe blow to Iran.” “If the price of oil continues to drop, Iran will not be able maintain its military spending [levels],” Peres said. That would mean less money to supply its proxies, Hamas, which controls the Gaza Strip, and Hezbollah, which has essentially built a state-within-a-state inside Lebanon.

#### ( ) Also forces Iran to the negotiating table

Bock ‘8

[Alan. Senior Writer at WorldNetDaily. “An Upside to the Financial Crisis?” <http://www.antiwar.com/bock/?articleid=13676>, 10/27/8]

Iran has used petrodollars to spread its influence in Iraq and the rest of the Middle East, to subsidize Hezbollah and Hamas, to buy off domestic critics appalled at the government's mismanagement of the economy, and to establish commercial relations with European countries, thus dampening opposition to its nuclear plans. If oil prices stay low, it may have to cut back its foreign meddling and reach some kind of compromise on its nuclear ambitions. President Mahmoud Ahmadinejad, who has been steadily losing popularity anyway, could well be defeated in next June's elections. The consequences in the rest of the Middle East could be interesting. Already tentative negotiations are taking place between Israel and Syria, with the likely implicit deal being to let Syria run Lebanon in exchange for eliminating Syrian support for Hezbollah. If Iran has diminished capacity to subsidize such groups, and if the U.S. has the minimal intelligence needed to start meeting with Iran and figuring out how the various interests in the region can be reconciled, given diminished capacity for both the U.S. and Iran, is there a chance that peace – or at least a period of the absence of open conflict – might start to break out?

#### ( ) No alt causes – Iran’s economy would not be able to recover and oil is key

Kudlow ‘7

[Larry. Host of CNBC’s Kudlow & Company. “Investors Say: Give the Iraq Plan a Chance. I agree” 1/12/7,

And let’s not forget that plunging oil prices — from nearly $80 a barrel all the way down to $52 — will do severe damage to Iran’s already tenuous fiscal position. As the new U.S. security blanket protects Persian Gulf shipping lanes from any Iranian mischief, continued oil-price declines will bleed the weak Iranian economy. That, in turn, will undermine Iran’s ability to financially assist terrorist groups like Hezbollah and Hamas, or anti-American factions in Iraq. Think of it: Falling oil prices not only reflect lower war and political risk, but they are actually doing enormous damage to one of the Middle East’s top risk producers: Iran.

#### ( ) Iranian-sponsored terrorist attacks cause nuclear war

Speice ‘6

[Patrick. JD Candidate at William and Mary, 2003 BA from Wake Forest. “Note: Negligence and Nuclear Nonproliferation: Eliminating the Current Liability Barrier to Bilateral US-Russian Nonproliferation Assistance Programs” William and Mary Law Review, Feb 2006 ln]

The potential consequences of the unchecked spread of nuclear knowledge and material to terrorist groups that seek to cause mass destruction in the United States are truly horrifying. A terrorist attack with a nuclear weapon would be devastating in terms of immediate human and economic losses. 49 Moreover, there would be immense political pressure in the United States to discover the perpetrators and retaliate with nuclear weapons, massively increasing the number of casualties and potentially triggering a full-scale nuclear conflict. 50 In addition to the threat posed by terrorists, leakage of nuclear knowledge and material from Russia will reduce the barriers that states with nuclear ambitions face and may trigger widespread proliferation of nuclear weapons. 51 This proliferation will increase the risk of nuclear attacks against the United States [\*1440] or its allies by hostile states, 52 as well as increase the likelihood that regional conflicts will draw in the United States and escalate to the use of nuclear weapons. 53

#### Scenario 2 is Dependence:

#### ( ) It makes extinction inevitable – try or die for the aff

Freeman ‘4

[Robert. Energy Expert @ Heritage Foundation. “Will the End of Oil mean the End of America?” [www.commondreams.org](http://www.commondreams.org) Feb 2004]

America has its own hand in a coconut, one that may doom it just as surely as the monkey. That coconut is its dependence on cheap oil in a world where oil will soon come to an end. The choice we face (whether to let the food go or hold onto it) is whether to wean ourselves off of oil—to quickly evolve a new economy and a new basis for civilization—or to continue to secure stable supplies from the rest of the world by force. As with Pirsig’s monkey, the alternative consequences of each choice could not be more dramatic. Weaning ourselves off of cheap oil, while not easy, will help ensure the vitality of the American economy and the survival of its political system. Choosing the route of force will almost certainly destroy the economy and doom America’s short experiment in democracy. To date, we have chosen the second alternative: to secure oil by force. The evidence of its consequences are all around us. They include the titanic US budget and trade deficits funding a gargantuan, globally-deployed military and the Patriot Act and its starkly anti-democratic rescissions of civil liberties. **There is little time left to change this choice before its consequences become irreversible.** The world is quickly running out of oil. In the year 2000, global production stood at 76 Million Barrels per Day (MBD). By 2020, demand is forecast to reach 112 MBD, an increase of 47%. But additions to proven reserves have virtually stopped and it is clear that pumping at present rates is unsustainable. Estimates of the date of “peak global production” vary with some experts saying it already may have occurred as early as the year 2000. New Scientist magazine recently placed the year of peak production in 2004. Virtually all experts believe it will almost certainly occur before the end of this decade. And the rate of depletion is accelerating. Imagine a production curve that rises slowly over 145 years—the time since oil was discovered in Pennsylvania in 1859. Over this time, the entire world shifted to oil as the foundation of industrial civilization. It invested over one hundreds trillion dollars in a physical infrastructure and an economic system run entirely on oil. But oil production is now at its peak and the right hand side of the curve is a virtual drop off. Known reserves are being drawn down at 4 times the rate of new discoveries. The reason for the drop off is that not only have all the “big” discoveries already been made, the rate of consumption is increasing dramatically. Annual world energy use is up five times since 1945. Increases are now driven by massive developing countries—China, India, Brazil—growing and emulating first or at least second world consumption standards. Fixed supply. Stalled discoveries. Sharply increased consumption. This is the formula for global oil depletion within the next few decades. The situation is especially critical in the US. With barely 4% of the world’s population, the US consumes 26% of the world’s energy. But the US produced only 9 MBD in 2000 while consuming 19 MBD. It made up the difference by importing 10 MBD, or 53% of its needs. By 2020, the US Department of Energy forecasts domestic demand will grow to 25 MBD but production will be down to 7 MBD. The daily shortfall of 18 MBD or 72% of needs, will all need to be imported. Perhaps it goes without saying but it deserves repeating anyway: oil is the sine qua non of “industrial” civilization—the one thing without which such civilization cannot exist. All of the world’s 600 million automobiles depend on oil. So do virtually all other commodities and critical processes: airlines, chemicals, plastics, medicines, agriculture, heating, etc. Almost all of the increase in world food productivity over the past 50 years is attributable to increases in the use of oil-derived additives: pesticides; herbicides; fungicides; fertilizers; and machinery. When oil is gone, civilization will be stupendously different. The onset of rapid depletion will trigger convulsions on a global scale, including, likely, global pandemics and die-offs of significant portions of the world’s human population. The “have” countries will face the necessity kicking the “have-nots” out of the global lifeboat in order to assure their own survival. Even before such conditions are reached, inelastic supply interacting with inelastic demand will drive the price of oil and oil-derived commodities through the stratosphere, effecting by market forces alone massive shifts in the current distribution of global wealth. If the US economy is not to grind to a halt under these circumstances it must choose one of three alternate strategies: dramatically lower its living standards (something it is not willing to do); substantially increase the energy efficiency of its economy; or make up the shortfall by securing supplies from other countries. President Bush’s National Energy Policy published in March 2001 explicitly commits the US to the third choice: Grab the Oil. It is this choice that is now driving US military and national security policy. And, in fact, the past 60 years of US policy in the Middle East can only be understood as the effort to control access to the world’s largest supply of oil. Witness, for example, the deep US embrace of Saudi Arabia since World War II. One quarter of all US weapons sales between 1950 and 2000 went to Saudi Arabia despite its horrifically repressive, literally medieval tribal nature. The CIA’s overthrow of Mohamed Mosadegh in Iran in 1953 after he nationalized his country’s oil is another example. So, too, was the US strategic embrace of Israel during the 1967 Six Day War. The US was deeply mired in Vietnam but needed a “cop on the beat” to challenge Arab states—Egypt, Iraq, Syria, Yemen—that were “going Soviet.” It has stuck with that relationship ever since. More recent examples of national strategy in bondage to the compulsion for oil include US support for Saddam Hussein in the Iran/Iraq War; its support for Osama bin Laden in the Afghanistan War against the Soviet Union; and, of course, the most recent invasion of Iraq to seize its oilfields and forward position US forces for an invasion of neighboring Saudi Arabia when it is inevitably destroyed by internal civil war. And **under a Grab the Oil strategy, militarization of US society will only deepen**. The reason is that a very major portion of the world’s oil is, by accident of geology, in the hands of states hostile to the US. Fully 60% percent of the world’s proven reserves of oil are in the Persian Gulf. They lie beneath Muslim countries undergoing a religious revolution that wants to return the industrial world to a pre-modern order governed by a fundamentalist Islamic theocracy. Saudi Arabia alone controls 25% of all the world’s oil, more than that of North America, South America, Europe and Africa combined. Kuwait, Iran and Iraq, each control approximately 10% of the world’s oil. Another 15% of the world’s oil lies in the Caspian Sea region, also a dominantly Muslim region. It includes a group of post-Soviet, satellite and buffer states that lack any semblance of legal or market systems. They are extraordinarily corrupt, really just Gangster Thugocracies masquerading as countries. Think Afghanistan. Both Russia and China consider this region part of their “sphere of strategic influence” portending significant clashes for the US over coming decades. As long as the US chooses the Grab the Oil alternative, the implications for national policy are inescapable. The combination of all these facts—fixed supply, rapid depletion, lack of alternatives, severity of consequences, and hostility of current stockholding countries—drive the US to HAVE to adopt an aggressive and pre-emptive military posture and to carry out a nakedly colonial expropriation of resources from weaker countries around the world. This is why the US operates some 700 military bases around the world and spends over half a trillion dollars per year on military affairs, more than all the rest of the world—its “allies” included—combined. This is why the Defense Department’s latest Quadrennial Review stated, “The US must retain the capability to send well-armed and logistically supported forces to critical points around the globe, even in the face of enemy opposition.” This is why Pentagon brass say internally that current force levels are inadequate to the strategic challenges they face and that they will have to re-instate the draft after the 2004 elections. But the provocation occasioned by grabbing the oil, especially from nations ideologically hostile to the US, means that military attacks on the US and the recourse to military responses will only intensify until the US is embroiled in unending global conflict. This is the perverse genius of the Grab the Oil strategy: it comes with its own built-in escalation, its own justification for ever more militarization—without limit. It will blithely consume the entire US economy, the entire society, without being sated. It is, in homage to Orwell, Perpetual War for Perpetual Grease.

#### ( ) Price spikes are also inevitable – makes global economic collapse an unavoidable reality

Supply Chain ‘8

[The Supply Chain Digest. “Does US Need a “No Oil” Contingency Plan?” http://www.scdigest.com/assets/On\_Target/08-09-30-3.php?cid=1964, 9/30/8]

To say that there are some stress points in the world right now is an understatement. From the global financial crisis to accelerating Russian aggression, the “hot spots” in both a geographic and political/economic sense are many. With that backdrop, does the US need a national plan that lays out a blueprint for something almost unthinkable – a highly restricted flow of oil? Yes, says Edwin Black, an author who has just written a new book titled The Plan: How to Save America When the Oil Stops — or the Day Before. “Government has prepared for hurricanes, anthrax, terrorism and every other disaster, but not the one threatened daily — a protracted oil stoppage, whether caused by terrorism, intervention in the Persian Gulf or a natural disaster,” Black says. Is such a scenario worth planning for? It would seem so. The US currently imports about 60% of its total oil consumption. While friendly neighbors Canada and Mexico are the number 1 and 3 sources of those oil imports, much less secure and stable sources such as Saudi Arabia, Venezuela and Nigeria make up the rest of the top 5 (see chart below). In a global crisis, no one can be sure how much oil might move even from friendly countries. “First the trucks and shippers will curtail shipments. Shelves will become scant and in some cases bare,” Black cheerfully notes in the book's first pages. “Quickly, unemployment will become epidemic as people are laid off due to economic contraction or because many will simply be unable to get to work. That in turn will worsen the country’s economic convulsion. Mobile America will cease to exist as we knew it because transportation via automobiles, taxis, buses, planes and other vehicular traffic will become an ever more unaffordable luxury. When people cannot get from Point A to Point B, the nation’s economic vitality will quickly wither.” There are a variety of risks, ranging from those that would curtail the flow of oil modestly to ones where global trade in oil would be significantly stanched. Example scenarios that would impede the flow of oil could include war in the Middle East, further Russian aggression and energy extortion, terrorist actions against pipelines or ports, etc. Black says, for example, that should there be a military strike in the Strait of Hormuz near Iran, the US would have to tap its Strategic Petroleum Reserve immediately. “Like any snow emergency, water drought or natural disaster, a national oil supply emergency should be governed by a plan,” Black states. “A Plan? America does not have such a plan. No Plan A. No Plan B.”

#### ( ) Economic collapse causes extinction

Freidberg and Schoenfeld ‘8

[\*Professor of Politics and IR at Princeton’s Woodrow Wilson School, AND \*\*senior editor of Commentary and a visiting scholar at the Witherspoon Institute in Princeton (10/21/2008, Aaron and Gabriel, “The Dangers of a Diminished America”, Wall Street Journal, http://online.wsj.com/article/SB122455074012352571.html?mod=googlenews\_wsj]

With the global financial system in serious trouble, is America's geostrategic dominance likely to diminish? If so, what would that mean?¶ One immediate implication of the crisis that began on Wall Street and spread across the world is that the primary instruments of U.S. foreign policy will be crimped. The next president will face an entirely new and adverse fiscal position. Estimates of this year's federal budget deficit already show that it has jumped $237 billion from last year, to $407 billion. With families and businesses hurting, there will be calls for various and expensive domestic relief programs.¶ In the face of this onrushing river of red ink, both Barack Obama and John McCain have been reluctant to lay out what portions of their programmatic wish list they might defer or delete. Only Joe Biden has suggested a possible reduction -- foreign aid. This would be one of the few popular cuts, but in budgetary terms it is a mere grain of sand. Still, Sen. Biden's comment hints at where we may be headed: toward a major reduction in America's world role, and perhaps even a new era of financially-induced isolationism.¶ Pressures to cut defense spending, and to dodge the cost of waging two wars, already intense before this crisis, are likely to mount. Despite the success of the surge, the war in Iraq remains deeply unpopular. Precipitous withdrawal -- attractive to a sizable swath of the electorate before the financial implosion -- might well become even more popular with annual war bills running in the hundreds of billions.¶ Protectionist sentiments are sure to grow stronger as jobs disappear in the coming slowdown. Even before our current woes, calls to save jobs by restricting imports had begun to gather support among many Democrats and some Republicans. In a prolonged recession, gale-force winds of protectionism will blow.¶ Then there are the dolorous consequences of a potential collapse of the world's financial architecture. For decades now, Americans have enjoyed the advantages of being at the center of that system. The worldwide use of the dollar, and the stability of our economy, among other things, made it easier for us to run huge budget deficits, as we counted on foreigners to pick up the tab by buying dollar-denominated assets as a safe haven. Will this be possible in the future?¶ Meanwhile, traditional foreign-policy challenges are multiplying. The threat from al Qaeda and Islamic terrorist affiliates has not been extinguished. Iran and North Korea are continuing on their bellicose paths, while Pakistan and Afghanistan are progressing smartly down the road to chaos. Russia's new militancy and China's seemingly relentless rise also give cause for concern.¶ If America now tries to pull back from the world stage, it will leave a dangerous power vacuum. The stabilizing effects of our presence in Asia, our continuing commitment to Europe, and our position as defender of last resort for Middle East energy sources and supply lines could all be placed at risk.¶ In such a scenario there are shades of the 1930s, when global trade and finance ground nearly to a halt, the peaceful democracies failed to cooperate, and aggressive powers led by the remorseless fanatics who rose up on the crest of economic disaster exploited their divisions. Today we run the risk that **rogue states may choose to become ever more reckless with their nuclear toys**, just at our moment of maximum vulnerability.¶ The aftershocks of the financial crisis will almost certainly rock our principal strategic competitors even harder than they will rock us. The dramatic free fall of the Russian stock market has demonstrated the fragility of a state whose economic performance hinges on high oil prices, now driven down by the global slowdown. China is perhaps even more fragile, its economic growth depending heavily on foreign investment and access to foreign markets. Both will now be constricted, inflicting economic pain and perhaps even sparking unrest in a country where political legitimacy rests on progress in the long march to prosperity.¶ None of this is good news if the authoritarian leaders of these countries seek to divert attention from internal travails with external adventures.¶ As for our democratic friends, the present crisis comes when many European nations are struggling to deal with decades of anemic growth, sclerotic governance and an impending demographic crisis. Despite its past dynamism, Japan faces similar challenges. India is still in the early stages of its emergence as a world economic and geopolitical power.¶ What does this all mean? There is no substitute for America on the world stage. The choice we have before us is between the potentially disastrous effects of disengagement and the stiff price tag of continued American leadership.

#### ( ) Natural gas vehicles are best-suited to resolve oil dependence – price, abundant reserves, and trucking

Pickens ‘5

T. Boone Pickens, founder and chairman of BP Capital, February 05, 2012¶ “Rev up tapping of our own natural gas”¶ <http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits>

If you are going to transform American energy to address the national security and economic risks associated with our OPEC oil dependence, there is only one solution: move our natural gas reserves into transportation, with an emphasis on the [heavy-duty truck](http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits) and fleet-vehicle markets. Free-market advocates argue that's bad public policy. They fail to understand that OPEC is far from a free market. They'll tell you we shouldn't pick winners and losers in the transportation fuel segments. I say it's time to pick America over OPEC. Let's go with anything American. I'm fine with the battery, but remember, it won't move an 18-wheeler. Imagine the impact natural gas could have in solving our energy problem. Targeting [heavy-duty trucks](http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits) and fleet vehicles — about 8.5 million in all — could cut our OPEC oil dependence in half in 10 years or less. Fortunately, while we wait for Washington policymakers to lead, the move to replace more expensive, dirtier OPEC oil, diesel or gasoline with cheaper, cleaner domestic natural gas is gaining private-sector support. At an event in Chicago last week, two leaders in the natural gas vehicle industry — Navistar and Clean Energy Fuels — announced a plan to aggressively develop a comprehensive system to build natural-gas [truck](http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits) engines and provide the infrastructure to fuel them. Over-the-road trucks tend to run the same routes on the same schedule. Drivers stop in the same places to rest, eat and refuel. Putting natural-gas refueling stations along the major travel routes is a relatively minor logistical issue. Building natural-gas engines for those trucks will be a major job creator. We're a country awash in natural gas. Since 2008, the biggest shift in energy resources has been the enormous reserves of natural gas in the vast shale deposits in Texas, Louisiana, Arkansas and Appalachia. New deposits are being tested in places like Iowa and Ohio, but even now, we have a 125-year supply of domestic natural gas literally under our collective feet. On the world market, natural gas is [selling](http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits) from $12 per million cubic feet in Europe to $16 in the Middle East. The price in the United States? Less than $3 because of our massive reserves. Getting that natural gas out of the ground and into our [rolling stock](http://articles.chicagotribune.com/2012-02-05/news/ct-perspec-0205-energy-20120205_1_natural-gas-natural-gas-vast-shale-deposits) is another major job creator. A recent study by PricewaterhouseCoopers LLP suggests that by utilizing America's shale gas resources, "U.S. manufacturers could employ approximately 1 million more workers by 2025." America is sending nearly $1 million a minute out of the country to pay for foreign oil. We're paying about $100 per barrel for foreign oil and, in the case of OPEC oil, often to nations that are hostile to our best interests. With gasoline at the pump climbing toward $4 per gallon we might have thought energy would have emerged as a top-tier election year issue. In spite of the lingering threat to our economic recovery and our national security, it has not. For more than four decades, every presidential candidate has said something to the effect of "Elect me, and we'll be energy independent." That's four decades of failed promises. Once we have serious fuel competition, we can control our energy destiny, have a better grasp on our energy costs and achieve what we've been promised for decades. To make that happen, we have to get on our own resources and in this case natural gas is an obvious winner.

### 1AC Warming

#### ( ) Warming’s real, fast, human-induced and causes extinction

Morgan ‘9

[Professor of Current Affairs @ Hankuk University of Foreign Studies, South Korea (Dennis Ray, “World on fire: two scenarios of the destruction of human civilization and possible extinction of the human race”, Futures, Volume 41, Issue 10, December 2009, Pages 683-693, ScienceDirect]

As horrifying as the scenario of human extinction by sudden, fast-burning nuclear fire may seem, the one consolation is that this future can be avoided within a relatively short period of time if responsible world leaders change Cold War thinking to move away from aggressive wars over natural resources and towards the eventual dismantlement of most if not all nuclear weapons. On the other hand, another scenario of human extinction by fire is one that may not so easily be reversed within a short period of time because it is not a fast-burning fire; rather, a slow burning fire is gradually heating up the planet as industrial civilization progresses and develops globally. This gradual process and course is long-lasting; thus it cannot easily be changed, even if responsible world leaders change their thinking about ‘‘progress’’ and industrial development based on the burning of fossil fuels. The way that global warming will impact humanity in the future has often been depicted through the analogy of the proverbial frog in a pot of water who does not realize that the temperature of the water is gradually rising. Instead of trying to escape, the frog tries to adjust to the gradual temperature change; finally, the heat of the water sneaks up on it until it is debilitated. Though it finally realizes its predicament and attempts to escape, it is too late; its feeble attempt is to no avail— **and the frog dies**. Whether this fable can actually be applied to frogs in heated water or not is irrelevant; it still serves as a comparable scenario of how the slow burning fire of global warming may eventually lead to a runaway condition and take humanity by surprise. Unfortunately, by the time the politicians finally all agree with the scientific consensus that global warming is indeed human caused, its development could be too advanced to arrest; the poor frog has become too weak and enfeebled to get himself out of hot water. The Intergovernmental Panel of Climate Change (IPCC) was established in 1988 by the WorldMeteorological Organization (WMO) and the United Nations Environmental Programme to ‘‘assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of humaninduced climate change, its potential impacts and options for adaptation and mitigation.’’[16]. Since then, it has given assessments and reports every six or seven years. Thus far, it has given four assessments.13 With all prior assessments came attacks fromsome parts of the scientific community, especially by industry scientists, to attempt to prove that the theory had no basis in planetary history and present-day reality; nevertheless, as more andmore research continually provided concrete and empirical evidence to confirm the global warming hypothesis, that it is indeed human-caused, mostly due to the burning of fossil fuels, the scientific consensus grew stronger that human induced global warming is verifiable. As a matter of fact, according to Bill McKibben [17], 12 years of ‘‘impressive scientific research’’ strongly confirms the 1995 report ‘‘that humans had grown so large in numbers and especially in appetite for energy that they were now damaging the most basic of the earth’s systems—the balance between incoming and outgoing solar energy’’; ‘‘. . . their findings have essentially been complementary to the 1995 report – a constant strengthening of the simple basic truth that humans were burning too much fossil fuel.’’ [17]. Indeed, 12 years later, the 2007 report not only confirms global warming, with a stronger scientific consensus that the slow burn is ‘‘very likely’’ human caused, but it also finds that the ‘‘amount of carbon in the atmosphere is now increasing at a faster rate even than before’’ and the temperature increases would be ‘‘considerably higher than they have been so far were it not for the blanket of soot and other pollution that is temporarily helping to cool the planet.’’ [17]. Furthermore, almost ‘‘everything frozen on earth is melting. Heavy rainfalls are becoming more common since the air is warmer and therefore holds more water than cold air, and ‘cold days, cold nights and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.’’ [17]. Unless drastic action is taken soon, the average global temperature is predicted to rise about 5 degrees this century, but it could rise as much as 8 degrees. As has already been evidenced in recent years, the rise in global temperature is melting the Arctic sheets. This runaway polar melting will inflict great damage upon coastal areas, which could be much greater than what has been previously forecasted. However, what is missing in the IPCC report, as dire as it may seem, is sufficient emphasis on the less likely but still plausible worst case scenarios, which could prove to have the most devastating, catastrophic consequences for the long-term future of human civilization. In other words, the IPCC report places too much emphasis on a linear progression that does not take sufficient account of the dynamics of systems theory, which leads to a fundamentally different premise regarding the relationship between industrial civilization and nature. As a matter of fact, as early as the 1950s, Hannah Arendt [18] observed this radical shift of emphasis in the human-nature relationship, which starkly contrasts with previous times because the very distinction between nature and man as ‘‘Homo faber’’ has become blurred, as man no longer merely takes from nature what is needed for fabrication; instead, he now acts into nature to augment and transform natural processes, which are then directed into the evolution of human civilization itself such that we become a part of the very processes that we make. The more human civilization becomes an integral part of this dynamic system, the more difficult it becomes to extricate ourselves from it. As Arendt pointed out, this dynamism is dangerous because of its unpredictability. Acting into nature to transform natural processes brings about an . . . endless new change of happenings whose eventual outcome the actor is entirely incapable of knowing or controlling beforehand. The moment we started natural processes of our own - and the splitting of the atom is precisely such a man-made natural process -we not only increased our power over nature, or became more aggressive in our dealings with the given forces of the earth, but for the first time have taken nature into the human world as such and obliterated the defensive boundaries between natural elements and the human artifice by which all previous civilizations were hedged in’’ [18]. So, in as much as we act into nature, we carry our own unpredictability into our world; thus, Nature can no longer be thought of as having absolute or iron-clad laws. We no longer know what the laws of nature are because the unpredictability of Nature increases in proportion to the degree by which industrial civilization injects its own processes into it; through selfcreated, dynamic, transformative processes, we carry human unpredictability into the future with a precarious recklessness that may indeed end in human catastrophe or extinction, for elemental forces that we have yet to understand may be unleashed upon us by the very environment that we experiment with. Nature may yet have her revenge and the last word, as the Earth and its delicate ecosystems, environment, and atmosphere reach a tipping point, which could turn out to be a point of no return. This is exactly the conclusion reached by the scientist, inventor, and author, James Lovelock. The creator of the wellknown yet controversial Gaia Theory, Lovelock has recently written that it may be already too late for humanity to change course since climate centers around the world, . . . which are the equivalent of the pathology lab of a hospital, have reported the Earth’s physical condition, and the climate specialists see it as seriously ill, and soon to pass into a morbid fever that may last as long as 100,000 years. I have to tell you, as members of the Earth’s family and an intimate part of it, that you and especially civilisation are in grave danger. It was ill luck that we started polluting at a time when the sun is too hot for comfort. We have given Gaia a fever and soon her condition will worsen to a state like a coma. She has been there before and recovered, but it took more than 100,000 years. We are responsible and will suffer the consequences: as the century progresses, the temperature will rise 8 degrees centigrade in temperate regions and 5 degrees in the tropics. Much of the tropical land mass will become scrub and desert, and will no longer serve for regulation; this adds to the 40 per cent of the Earth’s surface we have depleted to feed ourselves. . . . Curiously, aerosol pollution of the northern hemisphere reduces global warming by reflecting sunlight back to space. This ‘global dimming’ is transient and could disappear in a few days like the smoke that it is, leaving us fully exposed to the heat of the global greenhouse. We are in a fool’s climate, accidentally kept cool by smoke, and before this century is over billions of us will die and the few breeding pairs of people that survive will be in the Arctic where the climate remains tolerable. [19] Moreover, Lovelock states that the task of trying to correct our course is hopelessly impossible, for we are not in charge. It is foolish and arrogant to think that we can regulate the atmosphere, oceans and land surface in order to maintain the conditions right for life. It is as impossible as trying to regulate your own temperature and the composition of your blood, for those with ‘‘failing kidneys know the never-ending daily difficulty of adjusting water, salt and protein intake. The technological fix of dialysis helps, but is no replacement for living healthy kidneys’’ [19]. Lovelock concludes his analysis on the fate of human civilization and Gaia by saying that we will do ‘‘our best to survive, but sadly I cannot see the United States or the emerging economies of China and India cutting back in time, and they are the main source of emissions. The worst will happen and survivors will have to adapt to a hell of a climate’’ [19]. Lovelock’s forecast for climate change is based on a systems dynamics analysis of the interaction between humancreated processes and natural processes. It is a multidimensional model that appropriately reflects the dynamism of industrial civilization responsible for climate change. For one thing, it takes into account positive feedback loops that lead to ‘‘runaway’’ conditions. This mode of analysis is consistent  with recent research on how ecosystems suddenly disappear. A 2001 article in Nature, based on a scientific study by an international consortium, reported that changes in ecosystems are not just gradual but are often sudden and catastrophic [20]. Thus, a scientific consensus is emerging (after repeated studies of ecological change) that ‘‘stressed ecosystems, given the right nudge, are capable of slipping rapidly from a seemingly steady state to something entirely different,’’ according to Stephen Carpenter, a limnologist at the University of Wisconsin-Madison (who is also a co-author of the report). Carpenter continues, ‘‘We realize that there is a common pattern we’re seeing in ecosystems around the world, . . . Gradual **changes in vulnerability accumulate and** eventually **you get a shock** to the system - a flood or a drought - and, boom, you’re over into another regime. It becomes a self-sustaining collapse.’’ [20]. If ecosystems are in fact mini-models of the system of the Earth, as Lovelock maintains, then we can expect the same kind of behavior. As Jonathon Foley, a UW-Madison climatologist and another co-author of the Nature report, puts it, ‘‘Nature isn’t linear. Sometimes you can push on a system and push on a system and, finally, you have the straw that breaks the camel’s back.’’ Also, once the ‘‘flip’’ occurs, as Foley maintains, then the catastrophic change is ‘‘irreversible.’’ [20]. When we expand this analysis of ecosystems to the Earth itself, it’s frightening. What could be the final push on a stressed system that could ‘‘break the camel’s back?’’ Recently, another factor has been discovered in some areas of the arctic regions, which will surely compound the problem of global ‘‘heating’’ (as Lovelock calls it) in unpredictable and perhaps catastrophic ways. This disturbing development, also reported in Nature, concerns the permafrost that has locked up who knows how many tons of the greenhouse gasses, methane and carbon dioxide. Scientists are particularly worried about permafrost because, as it thaws, it releases these gases into the atmosphere, thus, contributing and accelerating global heating. It is a vicious positive feedback loop that compounds the prognosis of global warming in ways that could very well prove to be the tipping point of no return. Seth Borenstein of the Associated Press describes this disturbing positive feedback loop of permafrost greenhouse gasses, as when warming ‘‘. already under way thaws permafrost, soil that has been continuously frozen for thousands of years. Thawed permafrost releases methane and carbon dioxide. Those gases reach the atmosphere and help trap heat on Earth in the greenhouse effect. The trapped heat thaws more permafrost and so on.’’ [21]. The significance and severity of this problem cannot be understated since scientists have discovered that ‘‘the amount of carbon trapped in this type of permafrost called ‘‘yedoma’’ is much more prevalent than originally thought and may be 100 times [my emphasis] the amount of carbon released into the air each year by the burning of fossil fuels’’ [21]. Of course, it won’t come out all at once, at least by time as we commonly reckon it, but in terms of geological time, the ‘‘several decades’’ that scientists say it will probably take to come out can just as well be considered ‘‘all at once.’’ Surely, within the next 100 years, much of the world we live in will be quite hot and may be unlivable, as Lovelock has predicted. Professor Ted Schuur, a professor of ecosystem ecology at the University of Florida and co-author of the study that appeared in Science, describes it as a ‘‘slow motion time bomb.’’ [21]. Permafrost under lakes will be released as methane while that which is under dry ground will be released as carbon dioxide. Scientists aren’t sure which is worse. Whereas methane is a much more powerful agent to trap heat, it only lasts for about 10 years before it dissipates into carbon dioxide or other chemicals. The less powerful heat-trapping agent, carbon dioxide, lasts for 100 years [21]. Both of the greenhouse gasses present in permafrost represent a global dilemma and challenge that compounds the effects of global warming and runaway climate change. The scary thing about it, as one researcher put it, is that there are ‘‘lots of mechanisms that tend to be self-perpetuating and relatively few that tend to shut it off’’ [21].14 In an accompanying AP article, Katey Walters of the University of Alaska at Fairbanks describes the effects as ‘‘huge’’ and, unless we have a ‘‘major cooling,’’ - unstoppable [22]. Also, there’s so much more that has not even been discovered yet, she writes: ‘‘It’s coming out a lot and there’s a lot more to come out.’’ [22]. 4. Is it the end of human civilization and possible extinction of humankind? What Jonathon Schell wrote concerning death by the fire of nuclear holocaust also applies to the slow burning death of global warming: Once we learn that a holocaust might lead to extinction**,** we have no right to gamble, because if we lose, the game will be over, and neither we nor anyone else will ever get another chance. Therefore, although, scientifically speaking, there is all the difference in the world between the mere possibility that a holocaust will bring about extinction and the certainty of it, morally they are the same, and we have no choice but to address the issue of nuclear weapons as though we knew for a certainty that their use would put an end to our species [23].15 When we consider that beyond the horror of nuclear war, another horror is set into motion to interact with the subsequent nuclear winter to produce a poisonous and super heated planet, the chances of human survival seem even smaller. Who knows, even if some small remnant does manage to survive, what the poisonous environmental conditions would have on human evolution in the future. A remnant of mutated, sub-human creatures might survive such harsh conditions, but for all purposes, human civilization has been destroyed, and the question concerning human extinction becomes moot. Thus, **we have** no other choice but **to consider the finality of it all**, as Schell does: ‘‘Death lies at the core of each person’s private existence, but part of death’s meaning is to be found in the fact that it occurs in a biological and social world that survives.’’ [23].16 But what if the world itself were to perish, Schell asks. Would not it bring about a sort of ‘‘second death’’ – the death of the species – a possibility that the vast majority of the human race is in denial about? Talbot writes in the review of Schell’s book that it is not only the ‘‘death of the species, not just of the earth’s population on doomsday, but of countless unborn generations. They would be spared literal death but would nonetheless be victims . . .’’ [23]. That is the ‘‘second death’’ of humanity – the horrifying, unthinkable prospect that there are no prospects – that there will be no future. In the second chapter of Schell’s book, he writes that since we have not made a positive decision to exterminate ourselves but instead have ‘‘chosen to live on the edge of extinction, periodically lunging toward the abyss only to draw back at the last second, our situation is one of uncertainty and nervous insecurity rather than of absolute hopelessness.’’ [23].17 In other words, the fate of the Earth and its inhabitants has not yet been determined. Yet time is not on our side. Will we relinquish the fire and our use of it to dominate the Earth and each other, or will we continue to gamble with our future at this game of Russian roulette while **time** increasingly **stacks the cards against** our chances of **survival**?

#### ( ) Natural gas vehicles are key to reverse the trend

Beddor et al, ’9

[Christopher, Securing America’s Future Enhancing Our National Security by Reducing Oil Dependence and Environmental Damage, Aug, <http://www.americanprogress.org/issues/2009/08/pdf/energy_security.pdf>]

Natural gas is “by the far the cleanest burning” fossil fuel, and produces slightly more than one-fifth of all U.S. energy.40 Oil and coal combined comprise about two-thirds of all energy consumption, and their combustion produces substantially more global warming and other conventional pollution than natural gas. Combusting natural gas to power motor vehicles produces about one-third of the global warming pollution of petroleum burned in cars.41 It should therefore play a larger role in our energy mix and help reduce our oil use given its domestic abundance and its lower pollutant levels.

#### ( ) Emissions and the next decade are key

Anair and Mahmassani ‘12

[bachelor's and master's degrees in electrical engineering from Cornell University, senior analyst and engineer in the California office of the Union of Concerned Scientists' Clean Vehicles Program AND \*\*degree in Electrical Engineering from the University of Maryland, College Park and degree in Transportation Technology and Policy from the University of California, Davis, Vehicles Analyst/Engineer with UCS (“State of Charge: Electric Vehicles’ Global Warming Emissions and Fuel-Cost Savings across the United States”, Union of Concerned Scientists, April 2012, http://www.ucsusa.org/assets/documents/clean\_vehicles/electric-car-global-warming-emissions-report.pdf]

To meet the challenge of climate change and reduce our nation’s dependence on oil, continuing to run our cars and trucks predominantly on oil-based fuels is not an option. On the other hand, electric vehicles—coupled with clean and sustainable electricity—are important parts of the solution. Driving on electricity is a reality; it provides global warming benefits today and throughout the United States. Nearly half of Americans live in regions where driving an electric vehicle means lower global warming emissions than driving even the best hybrid gasoline vehicle available. Over the lifetime of an EV, the owner can save more than 6,000 gallons of gasoline—a significant contribution to U.S. energy security. But our nation’s reliance on coal-powered electricity limits electric vehicles from delivering their full potential. Only by making improvements to our electricity grid—by decreasing the use of coal and increasing the use of clean and renewable sources of electricity—will electric vehicles deliver their greatest global warming and air pollution benefits. Initiatives to clean up the electricity grid are occurring around the country, but additional efforts are needed both at the state and national level to ensure continued progress. Of course, cleaning up the nation’s electricity production won’t deliver large reductions in the transportation sector’s emissions and oil consumption unless electric vehicles become a market success. While they are now coming onto the market in a much bigger way than ever before, EVs still face many hurdles, including higher up-front costs than gasoline vehicles. Lower fueling costs for EVs, however, provide an important incentive for purchasing them, and our cost analysis of 50 cities across the country shows that EV owners can start saving money immediately on fuel costs by using electricity in place of gasoline. Meanwhile, utilities’ leaders and government policy makers have important roles to play: they must ensure electricity rate plans motivate EV ownership, and they must encourage charging behavior that supports lower emissions and a robust electricity grid. To prevent the worst consequences of global warming, the automotive industry must deliver viable alternatives to the oil-fueled internal-combustion engine— i.e., vehicles boasting zero or near-zero emissions. Such alternative technologies must become market successes in the next 10 to 15 years if they are to comprise the majority of vehicles on the road by 2050—a critical element to reaching an 80 percent reduction in global warming emissions by that year. EVs promise to be one of those technologies, but their success is not assured. To turn the nascent EV market into a mainstream phenomenon over the coming years, continued investments are needed for improving EVs’ performance and costs, incentivizing consumers and manufacturers, expanding accessible charging infrastructure, and reducing barriers to low-cost home charging.

#### ( ) The plan results in a 30% cut in all fuel cycle emissions

NWGA ‘11

[The Northwestern Gas Assc. “Natural Gas Vehicles: Today’s Transportation Solution” 10/27/11, http://www.nwga.org/wp-content/uploads/2012/06/ngvoverview.pdf]

On a total fuel cycle (“well-to-wheels”) basis, the use of natural gas for transportation reduces GHG emissions up to 30 percent compared with conventional transportation fuels. Across most of the world, NGVs’ overall carbon footprint is also smaller than that of electric vehicles (factoring in emissions from coal-generated electricity).

### 1AC Solvency

#### Solvency:

#### ( ) Investment for refueling infrastructure is key – it tips the market and gives automakers confidence necessary to develop

Tanzy and Houk ‘11

[Kathleen Tanzy, Director of Strategic Industry Communications and Steve Houk, Director of Marketing and Promotion Washington - July 18, 2011 Fueling stations key for US shift to natural gas-powered wehicles, Chesapeake Energy CEO tells Platts Energy Week, <http://www.platts.com/PressReleases/2011/071811>, OTT]

Energy executives, politicians and others who are pushing to create a prominent role for natural gas-powered cars and trucks in the US have long pondered a “chicken-or-egg”-type question: should they focus on building the vehicles first, or the fueling stations and other specialized infrastructure they need to thrive? “We think the most important thing right now is to get the infrastructure in place,” [Aubrey McClendon, CEO Chesapeake Energy](http://www.plattsenergyweektv.com/video/default.aspx#/07.17.11+Chesapeake+Energy+Interview/1057630174001), the US’ second-largest gas producer, said Sunday on the [Platts Energy Week](http://www.platts.com/PressReleases/2011/www.plattsenergyweektv.com), an independent, all-energy television news and talk program that airs in the United States. The head of a major U.S. gas producer says America could begin to sharply reduce its need for imported oil by building a relatively small number of compressed natural gas and liquefied natural gas fueling stations across the country. There are currently more than 120,000 convenience stores and other retailers in the U.S. that sell fuel for conventional gasoline-powered cars and trucks, according to the US Census Bureau. But McClendon said the US would only need about 1,000 compressed natural gas (CNG) and liquefied natural gas (LNG) stations to form a “reliable national grid” for gas-powered vehicles across America’s 47,000-mile-long interstate highway system. “When you get to that point, we believe the trucking industry can make a full transition away from diesel made from imported oil, and toward a domestic resource like natural gas,” McClendon said, speaking from his company’s headquarters in Oklahoma City. To that end, McClendon announced last Monday that Chesapeake would invest $150 million in Clean Energy Fuels, a California-based company that is building LNG fueling stations at truck stops across the US Chesapeake’s investment, which will bankroll about 150 new LNG fueling stations, is part of a larger, $1-billion initiative to significantly ramp up its production of gas and oil from deep shale, tight sands and other “unconventional” geologic formations. 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.

#### ( ) Refueling infrastructure’s key to affordability and reliability are – these are the two major inhibitors of market prevalence

Tech ‘12

[Eric. President of Navistar’s Engine Group. “As Fuel Prices Soar, Trucking Industry Seeks Alternatives With Natural Gas”. Forbes http://www.forbes.com/sites/energysource/2012/03/20/as-fuel-prices-soar-trucking-industry-seeks-alternatives-with-natural-gas/]

To break the seemingly endless cycle of dependence on foreign oil, America’s truckers need alternatives. And a promising one is offered by natural gas. Consider the facts. Natural gas today is nearly $1.50 less than diesel fuel for a price-per-gallon equivalent. And right now, America is sitting on an abundant domestic supply of natural gas—one that’s estimated will last for one hundred years or more. Among alternative fuels that could power our nation’s trucks, natural gas is the clear leader. The challenge to using it has been twofold: 1) Making natural gas-powered vehicles more affordable, and 2) Building the infrastructure that enables our abundant supply of natural gas to reach the trucker.

#### ( ) Infrastructure is key to spur industry development of NGV’s

Katz ‘12

[Jon. Managing Editor of IndustryWeek. “The Road to More Natural Gas Cars Starts with Infrastructure” IndustryWeek, 3/28/12 <http://www.industryweek.com/articles/the_road_to_more_natural_gas_cars_starts_with_infrastructure_26956.aspx>]

Natural gas vehicles could provide a revenue boost to natural gas producers reeling from low gas prices and save consumers the equivalent of $1.60 per gallon in gasoline, Mueller says. Southwestern believes so strongly in the possibilities of CNG vehicles, the company implemented a program earlier this year to help 10% of its workforce convert to CNG vehicles. Earlier this month, the company gave away CNG vehicles to 21 employees along with home fueling units. Southwestern is in the second phase of the program, during which the company plans to provide CNG conversion kits and fueling units to select employees. The company plans to continue the program until it converts about 200 workers to CNG vehicles, Mueller says. Making natural-gas powered vehicles a reality may be several years in the making and will likely require the industry to collaborate more with the auto industry and policymakers, says Mueller. Most of the natural gas-vehicle activities so far have been focused on truck fleets. As noted in a recent [Agence France-Presse article](http://www.industryweek.com/articles/thanks_to_fracking_cheap_natural_gas_makes_inroads_as_u-s-_vehicle_fuel_26950.aspx), General Motors Co. ([IW 500/5](http://www.industryweek.com/research/us500/2011/iwus500Company.asp?Input=5)) will begin production by the end of the year on two pickup trucks operating on CNG. The company also produces two vans that use CNG and has sold 1,200 of the vehicles to AT&T. There has been some small car CNG production, including Honda Motor Co.'s ([IW 1000/23](http://www.industryweek.com/research/iw1000/2011/iw1000Company.asp?Input=23)) Civic Natural Gas vehicle. The company is doubling production of the Civic Natural Gas to around 2,000 units this year, says John O'Dell, senior green car editor at [Edmunds.com](http://www.edmunds.com/). But the cars cost about $5,000 more than a similarly equipped gasoline model, O'Dell says. "Although the fuel savings can be tremendous, there are not enough retail natural gas pumps around to make the cars salable in even a majority of the states," he says. "Infrastructure is the key -- as it is or will be with any alternatively fueled vehicle. Somebody's got to see the value in and be able to pony up the cash for a nationwide fueling system that makes using the alternative fuel as easy as using gasoline." A more likely scenario is increased production of commercial vehicles, including full-size cargo vans and heavy-duty pickup trucks, O'Dell says. "This could change if there is a concerted - and successful - effort to install a nationwide natural gas fueling infrastructure, but that's several years down the road, at best," O'Dell says. In Ohio, for instance, the state has entered into an agreement with several states to explore the development of CNG infrastructure for transportation. Ohio is trying to convert its fleet of state cars along with some private-sector operations and local government vehicles to have a large enough CNG fleet to pay for the natural gas stations, Gov. John [Kasich said at the CERA Week conference](http://www.industryweek.com/articles/colorado_and_ohio_governors_talk_fracking_26781.aspx?SectionID=25).

# NGV Backlines

## Oil Solvency

#### ( ) Natural Gas solves oil

Beddor et al, ’09 [Christopher, Securing America’s Future Enhancing Our National Security by Reducing Oil Dependence and Environmental Damage, Aug, <http://www.americanprogress.org/issues/2009/08/pdf/energy_security.pdf>]

Transportation accounts for about 70 percent of U.S. oil consumption45 and about one-fifth of U.S. greenhouse gas pollution.46 President Obama proposed to reduce our foreign oil use by one-third by 2016. The expansion of known and potential reserves of natural gas could replace oil in heavy trucks that are often centrally fueled and are too heavy for hybrid battery-petroleum engines.

#### ( ) Nat Gas Infrastructure k2 reducing foreign oil dependence

Daniel J. Weiss, Mar 7, 2012, Senior Fellow and Director of Cimate Strategy at the Center for American Progress, Testimony before the House Energy and Commerce Committee Subcommittee on Energy and Power U.S. House of Representatives <http://www.americanprogress.org/issues/2012/03/pdf/weiss_testimony.pdf>

The recent spike in oil and gasoline prices is not a first-time event. It has occurred twice previously in the past four years. Fortunately, we are better prepared to withstand its impact because we are using less oil due to the vehicle fuel economy standards adopted by President Obama in 2009. We are also producing more of our own oil. For the first time since President Clinton, the United States is producing a majority of the oil we rely on to power our vehicles and economy. We are less reliant on other nations for oil and send less of our treasure abroad. This progress, however, cannot mask the fundamental fact that we rely too much on a single fuel and are thus extremely vulnerable to volatile prices or international events beyond our control. To end the oil price rollercoaster that inflicts real damage to our economy and middle class, we must dramatically curtail our reliance on oil as our primary transportation fuel. As you know, high oil and gasoline prices slow economic growth and take a real toll on families’ already-strained budgets. Unlike many other commodities, demand for gasoline does not significantly decrease even as prices increase because most people cannot quickly and significantly reduce the amount they drive by changing jobs or buying a new home. Our last two presidents recognized that there are no quick fixes to reduce high oil or gasoline prices. In 2008 [President George W. Bush](http://www.reuters.com/article/2008/04/29/us-bush-gasoline-idUSN2934908020080429) said that “if there was a magic wand to wave, I’d be waving it” to lower prices. Last month [President Obama](http://www.whitehouse.gov/the-press-office/2012/02/23/remarks-president-energy) said that “there are no silver bullets short term when it comes to gas prices—and anybody who says otherwise isn’t telling the truth.” [He also noted](http://www.nytimes.com/2012/03/02/us/politics/obama-calls-for-an-end-to-subsidies-for-oil-and-gas-companies.html) that the United States uses 20 percent of the world’s annual oil consumption but has only 2 percent of the reserves. In lieu of wands, bullets, or slogans, this long-term problem requires long-term solutions. We need a long-term “all of the above” strategy that generates long-term investments in modern fuel economy standards, alternative fuels, and public transportation that can reduce our vulnerability to future oil and gasoline price spikes. In 2005 [President Bush](http://www.nytimes.com/2008/03/03/opinion/03mon4.html?_r=2) supported this idea when he said, “I will tell you with $55 oil, we don’t need incentives to the oil and gas companies to explore. There are plenty of incentives. What we need is to put a strategy in place that will help this country over time become less dependent.” President Obama has demonstrated leadership in using less and producing more oil. In 2011, we consumed the least amount of oil since early 2001, and even more savings are imminent as we implement modern vehicle fuel economy standards. We are producing the most oil in at least eight years. In addition, the administration and many in Congress have supported investments in alternative-fuel vehicles, particularly electric passenger vehicles and natural-gas-powered trucks. Congress must act on these proposals. Unfortunately, the pending House transportation bill would disinvest in public transportation—something that’s essential to us using less oil and protecting families from high gasoline prices. While withholding investments for alternatives to oil, we continue tax breaks for Big Oil companies even though the price of oil is nearly double compared to when President Bush said that such support was unnecessary. This includes tax breaks for the big five oil companies—BP, Chevron, ConocoPhillips, ExxonMobil, and Shell—which made a record $137 billion in profits in 2011 while they produced 4 percent less oil. It makes little sense to continue [$4 billion in annual oil and gas tax breaks](http://www.americanprogress.org/issues/2011/05/big_oil_tax_breaks.html) for oil and gas companies. Instead, we should invest these revenues in helping Americans reduce their oil and gasoline use and save money. There is a proven tool to provide some temporary relief now from high prices. Selling a small amount of oil from the Strategic Petroleum Reserve in coordination with sales from International Energy Agency reserves would boost world oil supplies. Such a sale has occurred under the last four presidents and has lowered oil and gasoline prices every time. This can cut prices and burst the “bubble” caused by Wall Street speculators driving up oil prices for a quick profit. Finally, the Commodities Future Trading Commission must finalize the position limits on large Wall Street speculators to reduce their impact on volatile, high oil prices. Today’s hearing on high gasoline prices is like the rerun of a bad movie. It’s up to you to change the finale. Congress must slash oil dependence by supporting the doubling of vehicle fuel economy standards, investing in alternative fuels, rejuvenating our public transportation infrastructure, and paying for it by ending Big Oil tax breaks. The American people would give this ending a standing ovation.

#### ( ) Solves energy dependence

NWGA ‘11

[The Northwestern Gas Assc. “Natural Gas Vehicles: Today’s Transportation Solution” 10/27/11, http://www.nwga.org/wp-content/uploads/2012/06/ngvoverview.pdf]

• Tapping into our abundant domestic supply of natural gas will not only reduce our reliance on imported foreign oil (currently 72 percent of our transportation consumption), it will keep millions of dollars here at home, to create jobs and invest in our own infrastructure.

## Climate Change Solvency

#### ( ) Natural gas is cleaner

Bredenberg 12 The Damage Done — Natural Gas Vehicles, Cleaner and Greener? March 19th, 2012 | Author: Al Bredenberg http://news.thomasnet.com/green\_clean/2012/03/19/the-damage-done-natural-gas-vehicles-cleaner-and-greener/

The fuel supply pathway can make a big difference in the fuel’s GHG emissions, says the report: If non-North American natural gas is imported as LNG via ocean tanker and then regasified and compressed to produce CNG [compressed natural gas], for example, CNG reduces life-cycle GHG emissions by only 5 percent compared with gasoline. If domestic gas is used, life-cycle GHG emissions are reduced by 15 percent. If gas that otherwise would be flared or landfill gas is used as the feedstock, net GHG emissions can be negative. The following table shows overall 2005 emissions-related damages estimated for compressed natural gas versus conventional gasoline light-duty trucks and automobiles: Mean health and other non-GHG damages in dollars per vehicle mile traveled (VMT) Mean health and non-GHG damages per gasoline gallon equivalent (gge) Carbon footprint in CO2 equivalents in grams/VMT You can see from these figures that natural gas vehicles are somewhat less damaging than gasoline — 91 percent as damaging in health and other environmental effects per VMT and 78 percent per gasoline gallon equivalent. Natural gas has 89 percent the carbon footprint of gasoline in transportation, an 11 percent reduction. So, we find a reasonable argument that natural gas is a cleaner substitute for gasoline for autos and trucks.

#### ( ) Solves oil dependence, economic volatility from oil markets and air pollution

NWGA 11 oct 27 Northwestern Gas Association, “Natural Gas Vehicles: Today’s Transportation Solution”

Unrest in the Middle East and its impact on gasoline prices across North America exposes our Achilles’ heel again and again: a risky and costly addiction to imported oil. Until weaned off middle eastern oil, North America’s economy will continue to be buffeted by political turmoil halfway across the globe. And our air quality will suffer as well: In the Pacific Northwest alone, 50 percent of greenhouse gas (GHG) emissions are attributable to transportation. It’s time to time pick up the pace on alternative forms of transportation - particularly natural gas vehicles (NGVs) - both to enhance our energy independence and reduce green house gas (GHG) emissions. While recent media and consumer attention has focused on electric and biodiesel-fueled vehicles, there is an equally strong – if not stronger – proven candidate whose potential has barely been tapped: NGVs. While electric car (particularly battery) technology continues to develop, NGV technology is relatively mature and used widely across the world. Biofuels sometimes require diverting other valuable resources (such as corn) to transportation use, while NGVs run on an already abundant, domestic resource. And when full fuel cycles are considered, NGVs can have lower overall GHG emissions than electric cars.1 Already there are some 122,000 NGVs on the road in North America – about 110,000 in the U.S. and 12,000 in Canada, according to NGV Global, an international forum and data clearinghouse. This ranks the U.S. 14th and Canada 29th in NGV use worldwide. NGVs come in many forms, including heavy‐duty vehicles, urban transit and school buses, light-duty cars and trucks (often in commercial fleets), even forklifts and “Zambonis” (ice rink resurfacers). NGVs in the U.S. alone used about 40 billion cubic feet of natural gas in 2009, avoiding consumption of some 320 million gallons of gasoline and diesel.2 Yet this is merely a drop in the energy bucket. As of December 2008, nearly 95 percent of U.S. transportation vehicles were fueled by petroleum fuels, according to the U.S. Department of Energy (DOE). Renewable fuel vehicles (using biofuels) accounted for 3 percent and NGVs for 2 percent. In Canada in 2008, petroleumbased fuels supplied 99 percent of transportation energy demands, compared with propane (0.5 percent), electricity (0.2 percent), and natural gas (0.1 percent).3 According to current industry estimates, natural gas used for transportation in the U.S. represents only 0.03 percent of current domestic annual natural gas consumption.4 Given that North America has more than a 100-year domestic supply of natural gas, NGVs are barely tapping an enormous well of opportunity. Clearly, NGVs have huge growth potential and can immediately help us on our journey to achieve energy independence and reduce GHG emissions. But what can we, as consumers and decision-makers, do – at home, at work and through our legislative processes – to maximize the benefits NGVs have to offer?

#### ( ) NGVs better than electric—tech is here

NWGA ‘11

[The Northwestern Gas Assc. “Natural Gas Vehicles: Today’s Transportation Solution” 10/27/11, http://www.nwga.org/wp-content/uploads/2012/06/ngvoverview.pdf]

• While battery research for electric cars is still in its infancy, NGV technology is mature, in widespread use across the globe, and ready to serve a broader role in North America’s energy future.

#### ( ) CNG in cars solves emissions

Guerrero 11 (Jacky, The Catch-22 of Green Energyhttp://www.latinoequalityalliance.com/content/catch-22-green-energy

While visiting Oklahoma City, OK we stopped at a Compressed Natural Gas (CNG) station owned by Chesapeake Energy, a company that provides natural gas for almost all of Oklahoma and most of the United States, to discuss the use of natural gas and its non-threatening impact (low carbon dioxide emissions) it has on our environment–although now debatable. At that moment it seemed like a great idea because it would reduce our carbon footprint, it would gear us away from our dependency on oil and it would have a positive impact on local economies since it is a domestic product; but not without a trade-off. First thing to note is that natural gas is a fossil fuel, a natural resource, and thus has an expiration date, 60 years is what the Natural Gas Supply Association estimated, assuming that in those years our technology has not evolved fast enough to cope with the demand for energy consumption. If so, is this a viable form of green energy to invest in if it is expected to run out in our lifetime? The trade-off is that CNG is the cleanest form of fuel available and in fact only one car, the Honda Civic GX is sold in the United States that runs off this gas. To provide a good comparison, the GX is scored a higher ranking in emission ratings than the Toyota Prius. This is especially appealing to many because the use of petroleum for transportation produces 32 percent of the carbon monoxide that is released into the atmosphere according to the 2010 U.S. Greenhouse Gas Inventory Report. Despite the lack of infrastructure established across the country that would provide enough CNG stations to fuel traveling vehicles; the mere fact that the United States is the “Saudi Arabia” of natural gas, with abundant supplies floating beneath our feat, could possibly create thousands of new jobs in states that desperately need them.

## Fueling Infrastructure Key

#### ( ) Lack of vehicle refueling infrastructure blocks CNG vehicle acceptance

GA Whyatt “Issues Affecting Adoption of Natural Gas Fuel in Light- and Heavy-Duty Vehicles” September 2010, Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830 <http://www.pnl.gov/main/publications/external/technical_reports/PNNL-19745.pdf>, OTT

The inadequate number of natural-gas-refueling stations is a barrier to acceptance of CNG-fueled vehicles by consumers. Similarly, the low number of natural-gas-fueled vehicles needing public refueling stations makes investments in natural-gas-refueling stations unprofitable. The effect of refueling station concentration and other issues related to penetration of natural-gas-fueled vehicles has been examined by Yeh (2007), who compared the experience of CNG-fueled vehicles in Argentina, Brazil, India, New Zealand, and the United States. Yeh identified two conditions that need to be addressed if sustained use of natural-gas-fueled vehicles is to be achieved. First, there must be on the order of 1000 vehicles per refueling station for the stations to be profitable. Second, the number of natural-gas-refueling stations must be at least 10 to 20 percent the number of gasoline-refueling stations to provide driver convenience. Natural gas infrastructure will be discussed further in Section 5.

#### ( ) Fueling Stations Key to Spark NGV Manufacture

[Joe Giesy](mailto:jgiesy@business-journal.com), NATURAL GAS PLENTIFUL; FUELING STATIONS ARE NOT, 5-9**,** 2012

<http://www.sartaonline.com/natural-gas-plentiful-fueling-stations-are-not>, OTT

By the end of 2013, the Stark Area Regional Transit Authority in Canton will have 50 vehicles in its fleet that operate on compressed natural gas, said its executive director, Kirt Conrad. The fleet of 85 buses, which includes nine CNG vehicles, will have 23 more CNG buses by the end of summer, Conrad says. To fuel them, the transit authority invested in a $1.5 million to build CNG stations. “We have built and opened northern Ohio’s first public-private compressed natural gas fueling facility,” Conrad said. “It just opened -- literally -- this month.” The cost savings to switching from diesel should make up the cost in five years, he says. Sarta switched to a CNG fleet because not only is compressed natural gas far less expensive -- one-third the price of diesel -- it’s produced domestically. The price of a new CNG bus is about 10% higher than a comparable diesel vehicle, but fuel costs are lower and mileage is better, Conrad said. “They actually have better fuel mileage than a diesel [model] does of the same year, so we’re seeing a better fuel economy,” he explained. The main push for CNG vehicles, however, comes from environmental concerns -- burning natural gas is less harmful to the environment than other fuels. “It has about 70% less [nitrous oxide] emissions and 50% less carbon dioxide emissions, so there’s a lot [fewer] emission issues there. It’s cleaner for the environment,” Conrad said. Conrad spoke Tuesday at Youngstown State University at the first of three seminars on bus fleets converting to natural gas. The Tech Belt Energy Innovation Center, Warren, is sponsoring the series. The seminar also hosted a panel of speakers made up of Dave Mrowzinski, CNG program manager at IGS Energy; Charlie Reidl, market development manager at Chesapeake Energy Corp.; Brad Couch, CNG business development at Ariel Corp.; and Jerry Hutton, director of gaseous fuels transportation partnership at Clean Fuels Ohio. The panel answered questions from an audience of 36 about the cost of converting to natural gas vehicles, their strengths and weaknesses, and CNG filling stations. The audience consisted of officeholders and fleet operators. The cost of one fueling unit can range from $5,000 for a unit that could be installed in a residential garage to $60,000, said Mrowzinski of IGS Energy. IGS, a natural gas and electric energy commodity supplier, recently entered the market of CNG vehicle refueling appliances for public and private use. “Installation of a natural gas station can be quite expensive,” Mrowzinski said. “There are big capital cost challenges to create a station. Typically, natural gas vehicle fast-fill refueling stations can be anywhere from $500,000 to $2 million, and there are definite economies of scale with larger stations.” Although there is a large difference between the $1 million and $2 million filling stations, the daily profit from the more expensive station can be as much as five times greater. “Aggregating demand, not just on one business alone, but from an entire city or multiple businesses joining together to give demand to a station owner, can be quite advantageous to bringing down your overall cost,” Mrowzinski said. There are two types of station equipment in the natural gas vehicle industry: time-fill and fast-fill, he explained. With fast-fill stations, the gas is pre-compressed and equalizes into the vehicle tank at the same rate it takes to fill a diesel- or gasoline-powered vehicle. With time-fill, it takes longer, and the vehicle is usually left overnight. The larger the fleet, the more likely fast-fill is the better option. Time-fill could prove the better option at bus stations where the vehicles are left overnight, such as schools. The reason TBEIC chose fleet conversion for the seminars is that fleet vehicles on average travel four times as far as a personal vehicle in a given year. “Typically fleets will be the first movers in natural gas vehicles primarily because of the upfront cost barriers,” Mrowzinski said. Couch explained getting the country to switch over to natural gas vehicles is a “chicken or the egg” situation. Automakers hesitate to manufacture such vehicles because it’s difficult to market a vehicle that has few places to refuel, but no one will build such a fueling station because automakers aren’t making the cars.

#### ( ) Infrastructure creation makes NGV’s commercially viable

[Derek Kreindler](http://www.thetruthaboutcars.com/author/derek-kreindler/), [Honda Tells Dealers: Build CNG Fueling Stations, And They Will Come](http://www.thetruthaboutcars.com/2012/03/honda-tells-dealers-build-cng-fueling-stations-and-they-will-come/), March 9, 2012

<http://www.thetruthaboutcars.com/2012/03/honda-tells-dealers-build-cng-fueling-stations-and-they-will-come/>, OTT

This is the Honda Civic GX, a vehicle that runs on compressed natural gas. Despite the Civic GX’s title as one of America’s “[Greenest Vehicles](http://green.autoblog.com/2010/01/22/cng-fueled-honda-civic-gx-ranked-1-on-aceee-greenest-vehicle-li/)“, the Civic GX is pricey, and CNG refueling stations are few and far between – apparently there are [only 830 in the entire United States](http://www.forbes.com/sites/hannahelliott/2011/03/03/the-honda-civic-gx-is-fine-as-long-as-you-avoid-tunnels-and-dont-refuel/2/), with not all of them open to the public. Honda wants to change that – but it wants dealers to bear the costs, monetary and otherwise, of building new fueling outlets. Honda’s Steve Center, in charge of environmental business development, wants to put CNG fueling stations in at least two dealerships in California this year. [Center told Bloomberg](http://www.bloomberg.com/news/2012-03-07/honda-looks-to-u-s-dealers-to-boost-natural-gas-station-network.html) “If the dealer had a fueling station, it would really reduce some of that concern for the customer,” Center said at Honda’s U.S. headquarters in Torrance, California. “It’s not our place to create infrastructure, but it’s a chicken-and-egg situation and we’re going to have to nurse that egg along.” So, it’s not Honda’s place to build infrastructure - but the dealers can go ahead and do it. The costs of the project weren’t disclosed, but off the bat there appears to be some value in installing these stations; getting customers to keep coming back to the dealer can help them build relationships, sell aftermarket parts, servicing other vehicles and build good will among customers. Honda’s pitch appears to be in the beginning stages, but one can guess how they’re going to market the CNG Civic; great fuel economy, from a clean, domestic energy source that’s also free from serious range anxiety (the Civic GX gets about 225-250 miles per tank). In addition to the dealer filling stations, there are home units available too – but they take about 8-10 hours to fill the car up (since the gas isn’t pressurized like commercial stations) and cost about $3,400 for the unit alone. [The days of Jim Cardiges and kickbacks are long over,](http://www.amazon.com/Arrogance-Accords-Inside-Story-Scandal/dp/0965776611) but there’s no reason to think that there may be positive incentives to signing on with the program. Maybe there will be a better allocation of cars. Maybe warranty claims would get paid quicker. Maybe co-op advertising campaigns would get a bigger share of their costs picked up by Honda. For now, this looks like a test program, and Honda will be helping dealers get financing, incentives and approval from local governments. [Yesterday’s initial article](http://www.thetruthaboutcars.com/2012/03/will-natural-gas-prevent-us-from-reaching-a-better-place/) on natural gas vehicles (yes, including LPG/Propane as well as CNG vehicles) had great commentary from the B&B, particularly on the drawbacks of natural gas vehicles. I’m confident that the increasing price of gas along with the eminently marketable angle of a domestic clean energy source means we’ll be hearing a lot more about natural gas in light vehicles, regardless of the fuel’s merits.

#### ( ) Lack of fueling stations, choices and high costs makes NGVs undesirable for consumers in the squo (Also says high oil prices solve the aff…)

Dee-Ann Durbin,AP auto writer, “More natural gas cars to hit market thanks to incentives” March 12**,** 2012

<http://theadvocate.com/home/2262061-125/more-natural-gas-cars-to.html>, OTT

Here are some reasons U.S. buyers have been slow to adopt natural-gas vehicles: LACK OF FUELING STATIONS: There are around 1,000 natural-gas fueling stations in the U.S., but only half of them are open to the public. Most are operated by local governments or private companies to refuel buses and other fleet vehicles. California-based Clean Energy Fuels Corp., a natural gas provider backed by oil tycoon T. Boone Pickens, is planning a big expansion. It aims to install natural-gas pumps at 150 truck stops nationwide over the next few years. But that pales in comparison to the availability of gasoline, which is sold at 117,000 stations in the U.S. That’s why natural gas is still primarily relegated to fleets, which can return to a central refueling station. Filling up at a CNG station is just like pumping gasoline, although the fuel is a highly-compressed gas, not a liquid. FEW CHOICES: There is only one factory-built, natural-gas car sold in the U.S. It’s the natural-gas version of the Honda Civic. Around 13,000 have been sold since the car first went on sale in 1998, mostly to fleets. But Honda’s making a bigger push to sell them to individual buyers. Last year, the company expanded the number of dealers selling natural-gas Civics to nearly 200 in 36 states, up 50 percent from 2010. The company expects to build nearly 4,000 natural-gas Civics in 2012, double the number it initially planned thanks to strong buyer interest. But regular, gas-powered Civics remain the overwhelming favorite. Honda sold 27,000 gasoline-powered Civics in February alone. COST: Additional fuel tanks and parts, and small-scale production make natural-gas vehicles more expensive. The CNG Ram, for example, starts at $47,500, almost $20,000 more than a base Ram 2500. The natural-gas Civic starts at $26,155, or $10,000 more than a base four-door Civic. GM won’t announce the price of its natural-gas trucks until next month, but expect a premium. It can also cost up to $18,000 to convert a gasoline vehicle to a natural gas one, according to Natural Gas Vehicles for America, a lobbying group. The economic benefits aren’t compelling enough for most drivers, said Mary Barcella, director of North American Natural Gas research at consulting firm IHS CERA. With gasoline prices of about $4 per gallon, it would take five years or more to recoup the extra cost of a natural gas vehicle. She thinks natural gas vehicles will be more popular if pump prices rise and stay high for a long time.

#### ( ) Infrastructure solves demand for vehicles

Auto Observer 11 Has CNG's Time Finally Come? By AutoObserver Staff September 30, 2011 http://www.autoobserver.com/2011/09/has-cngs-time-finally-come.html

Few And Far Between At the end of 2010 there were only 1,000 natural-gas filling stations in the U.S, compared to about 159,000 public retail gasoline stations. Natural-gas producers and distributors, businesses and state and local governments a all have stepped up to try to solve the problem, motivated by the desire to make money, save money, and meet federal and state clean car mandates. While the focus largely has been on natural gas-powered commercial trucks and vans, industry insiders say the construction of more stations for these larger vehicles ultimately will open the market for natural-gas passenger vehicles.

#### ( ) Auto industry ready to switch to NG vehicles now—only need the infrastructure

Kreindler 12 Will Natural Gas Prevent Us From Reaching A Better Place? By Derek Kreindler on March 8, 2012 http://www.thetruthaboutcars.com/2012/03/will-natural-gas-prevent-us-from-reaching-a-better-place/

Natural gas could potentially be a “black swan event” for the auto industry, a cheap, clean-burning fuel that could allow for both domestic energy independence and the continued hegemony of the internal combustion engine. Drivers wouldn’t have to worry about foreign oil, range anxiety or battery bricking. The obvious problem is the lack of infrastructure. Natural gas filling stations are scant, to put it mildly. But there are rumblings (so far unsubstantiated – but keep watching TTAC for more info) that building filling stations, be it for hydrogen or other fuels, is easier and cheaper than trying to develop serious long-range, quick charging, sustainable and affordable battery technology. If this turns out to be true, then it suggests that electric cars will be forever relegated to “second car/commuter car” status.

#### ( ) Price is the key inhibitor of public acceptance

Schumacher 12 Use of Natural Gas in Public Transportation Posted by Anne Schumacher Use of Natural Gas in Public Transportation http://begreen.botw.org/2012/01/use-of-natural-gas-in-public-transportation/

Because of all the benefits to using natural gas, you might wonder: why don’t we just switch to natural gas vehicles? In terms of infrastructure, there just aren’t as many refueling stations available for public use. Cities that have a tight budget might not be able to afford the high initial costs associate with transitioning a gasoline public transportation fleet over to CNG. Although tax credits and other incentives are available once the technology is in place, having the natural gas vehicles implemented takes time and money.

#### ( ) Developing infrastructure is key

EP Online 12 Environmental protection A Natural Gas Solution for Transportation Feb 03, 2012 http://eponline.com/articles/2012/02/03/a-natural-solution-for-transportation.aspx

In order for CNG to take hold, many more stations will need to offer it as an option, and the infrastructure for delivering and distributing the fuel around the country will have to be built up. There are currently fewer than 1,000 publically available CNG refueling stations in the United States, in comparison to nearly 200,000 gas stations.

#### ( ) Infrastructure Key

Cohen 12 Natural gas cars: A look under the hood March 22, 2012 | Posted by Ken Cohen http://www.exxonmobilperspectives.com/2012/03/22/natural-gas-cars-a-look-under-the-hood/

Infrastructure cost. For American motorists to fuel up on CNG as easily as they do today on gasoline and diesel, the U.S. would need to build an entirely new network of pipelines and service stations to accommodate high-pressure fueling. In a 2010 study, IHS-CERA estimated it would cost between $8 and $12 billion to have CNG facilities installed in just 10 percent of existing U.S. fueling stations. A single CNG station costs anywhere from $300,000 to $3 million more than a regular gas station.

## AT//States

#### ( ) Fed Key

Floyd Norris, chief financial correspondent of The New York Times, June 21, 2012

“Natural Gas for Vehicles Could Use U.S. Support”

<http://www.nytimes.com/2012/06/22/business/natural-gas-vehicles-are-a-compelling-target-for-a-federal-program.html?pagewanted=all>

The fuel is cheap and plentiful. But there is little infrastructure to deliver it to users, and so there is little demand for equipment to use it. That, in brief, is what is wrong with the [natural gas](http://topics.nytimes.com/top/news/business/energy-environment/natural-gas/index.html?inline=nyt-classifier) vehicle market. And in those facts could be the genesis of an idea for a federal program that would create jobs, save money for consumers and reduce our dependence on foreign [oil](http://topics.nytimes.com/top/news/business/energy-environment/oil-petroleum-and-gasoline/index.html?inline=nyt-classifier). If there were natural gas filling stations along the Interstate highway system, the long-haul trucking industry would almost certainly begin to buy natural gas-fueled trucks. But since there are few such trucks now, the first such stations would have few customers when they opened, meaning they would seem like dubious commercial ventures. Despite that, some stations are being built by the natural gas industry. But the progress is slow, and the oil imports keep coming. So why not have the government, which can borrow money for almost nothing — about three-quarters of 1 percent for five years — put up money to subsidize such stations? Doing so would provide jobs for construction workers, and thus amount to economic stimulus that could really affect a depressed area of the economy. The unemployment rate for construction workers is now 14.2 percent, far above the rate for the rest of the economy. As demand for natural gas vehicles rose, there would also be demand for workers to make them. The main reason all this makes sense now is that the emerging technology of hydraulic fracturing, or “fracking,” has produced an abundance of natural gas, driving down prices. A few decades ago, it was taken for granted that, in the long run, the fact that natural gas was less polluting would lead to it costing more than oil on an energy-equivalent basis. Perhaps natural gas should cost 120 percent as much as oil, we thought then. But the natural gas market is a North American one, because there is little capacity to export gas, while the oil market is a global one. With the current natural gas glut, the American price is less than 20 percent of the price of oil. There is nothing new about the idea of widespread use of natural gas vehicles. “In 1975,” recalled Frank Zarb, who was then President Gerald R. Ford’s energy czar, “I thought there would be a fight between the [electric car](http://topics.nytimes.com/top/reference/timestopics/subjects/e/electric_vehicles/index.html?&inline=nyt-classifier) and the natural gas car.” Nor is there anything new about the government trying to stimulate the market. The Energy Policy Act of 1992 mandated that some fleets buy natural gas vehicles. But then the world entered a prolonged period of relatively cheap oil — the average price was less than $19 a barrel from the end of 1992 through 1998 — and both politicians and citizens stopped worrying much about it. But natural gas vehicles never went away. While some local fleets that had bought such vehicles as a result of the 1992 law got rid of them, others did not. A substantial part of the market for city buses and garbage trucks is now filled by natural gas vehicles. The nature of the business is that those vehicles travel limited routes and can return to their bases — and to a refueling station — each night. All told, there are about 130,000 natural gas vehicles in the United States, about 1 percent of the worldwide total of 13 million vehicles, according to Kathryn Clay, the executive director of the Drive Natural Gas Initiative, a project financed by natural gas producers and pipelines. Not many vehicles are aimed at consumers. Honda has a natural gas version of the Civic, initially sold only to fleets that already had natural gas terminals. Since 2005, the car has been available to retail customers. In Europe, numerous bifuel vehicles can use either natural gas or gasoline, much as hybrid cars can use either gasoline or electricity, but they are only starting to arrive here. American car companies have announced plans to sell bifuel pickup trucks, but the market for them will primarily be companies with their own refueling infrastructure. That is kind of amazing. Imagine if gasoline vehicles were sold only to those who could afford to build and operate their own gas station. It is a measure of how far away from government action we have come that no one seems to be pushing for the government to step up and directly provide the spark for getting an infrastructure in place that would enable Americans to use much more of the natural gas that has become abundant, and therefore much less of the oil that must be imported at high prices. Instead, the natural gas industry supported a bill that would have offered tax credits to those who invested in the infrastructure as well as those who made the vehicles and those who bought them. It was opposed by the chemical industry, which uses a lot of natural gas and wants to keep it cheap. The bill got 51 votes in the Senate, but these days it needs 60 to do anything. There are already big tax subsidies for electric cars, so a case can be made for the similar treatment of natural gas vehicles. But given how cheap natural gas is, it might be far cheaper for the government to provide direct subsidies to get the infrastructure going, rather than provide ongoing subsidies via tax credits. Two kinds of natural gas are used by vehicles. Smaller vehicles use compressed natural gas, while big trucks use liquefied natural gas. The infrastructure would need to support both forms. Christopher R. Knittel, a professor of energy economics at M.I.T., says he thinks the government should take several steps to promote the use of natural gas in vehicles. One step would be to encourage local natural gas utilities to open up their own stations to sell gas for vehicles. He would also like to encourage people to buy their own equipment to compress natural gas at home, using the gas already delivered through pipelines. Such equipment is available now, but few have bought it. “Markets work when prices reflect the social cost of the products,” he said in an interview. “For a variety of reasons, the cost of gasoline now does not reflect all of those costs.” He pointed not only to the cost of pollution but to the risk to the economy from an oil-price shock and to the political dangers of being so dependent on Mideast oil. “Recent advances in natural gas drilling as well as increases in oil prices appear to have made natural gas competitive with oil in the long run,” Mr. Knittel wrote in [a paper released last week by the Brookings Institution](http://www.hamiltonproject.org/papers/leveling_the_playing_field_for_natural_gas_in_transportation/). But, he added, “such a change in price may not be enough to cause the United States to substitute natural gas for oil in the [transportation](http://topics.nytimes.com/top/reference/timestopics/subjects/t/transportation/index.html?inline=nyt-classifier) sector, even when it is socially beneficial to do so.” If natural gas did become widely used in vehicles, a number of things would happen. Natural gas prices would rise, of course, which is why the natural gas industry is eager for that to happen. That would offend the chemical industry, and might alarm homeowners who heat with natural gas. It would reduce the United States trade deficit and, by lowering the use of oil, put a damper on that market. Higher natural gas prices could also make other alternative fuels more likely to be economical, something that is hard to accomplish now with natural gas so cheap. Natural gas prices are now so low that it is possible the market will develop without government help. A number of plans have been announced to build refueling stations near interstate highways, in hopes of attracting trucking companies that use those routes. But given the need for quick action — last year the United States spent $750 billion importing oil and oil products — it makes sense for the government to move to develop the natural gas transportation market as quickly as possible. Some economists have trouble understanding why so little is happening in Washington. “I think a political leader who jumped on this issue would be very successful,” said James D. Hamilton, a professor at the University of California, San Diego, who has been pushing natural gas use in transportation on the [Econbrowser blog](http://www.econbrowser.com/archives/2012/06/using_natural_g.html). In a different political environment, it would be an obvious policy proposal for a presidential candidate. But so far, it is an idea without visible political support.

#### ( ) Federal action key to NGV development

American Gas Association ‘9 [AGA Viewpoint on Natural Gas as a Transportation Fuel, Sept, http://www.aga.org/our-issues/natural-gas-vehicles/Documents/AGAViewpointonNaturalGasVehiclesFinal091009\_3\_.pdf]

Using natural gas instead of gasoline or diesel to power vehicles is a low-cost, low-emissions solution for reducing our nation’s dependence on foreign energy sources while also reducing greenhouse gas emissions and urban smog. Natural gas-powered vehicles (NGVs) in use today are helping to improve air quality by displacing petroleum-powered cars, vans, trucks and buses which contribute about three fourths of the carbon dioxide pollution found in urban areas. In 2008, use of NGVs displaced almost 300 million gallons of petroleum use in the U.S. Increasing the use of natural gas, an abundant domestic resource, as a transportation fuel, is a national security imperative – 70% of the oil consumed by the U.S. is imported. Natural gas-powered vehicles produce up to 30% fewer greenhouse gas emissions (GHGs) -- based on a wells-to-wheels analysis (source: California Air Resources Board) – than petroleum-fueled vehicles. Light duty vehicles fueled by natural gas can reduce greenhouse gas emissions by 30 percent as compared with gasoline fueled vehicles, while use of natural gas instead of diesel to fuel medium- to heavy-duty vehicles can reduce greenhouse gas emissions by 20%. Converting just one refuse truck from diesel to natural gas has an emissions reduction impact equivalent to taking 325 petroleum-fueled cars off the road. Relative to new model gasoline-fueled vehicles, natural gas powered vehicles can reduce exhaust emissions of carbon monoxide (CO) by about 11%, volatile organic compounds (VOCs) by 55% and nitrogen oxides (NOx) by 54%, while producing an insignificant amount of ground-level ozone. The environmental profile for NGVs is further improved when renewable natural gas (biomethane) or natural gas/battery hybrid vehicles are used. Renewable natural gas is produced in landfills and agriculture waste sites, among other places. When captured and used as a fuel, it reduces carbon emissions both by preventing the direct release of methane into the atmosphere and by replacing the petroleum-based fuel that would have otherwise been used for transportation. On a wells-to-wheels basis, an NGV fueled with 100% renewable natural gas results in almost 90% fewer GHGs than if it were fueled with gasoline or diesel. Natural gas/battery hybrid vehicles, relative to the average new gasoline-powered vehicle, produce 58% fewer GHGs. NGVs are available to meet American transportation needs today. The natural gas fueled Honda Civic has been rated “Greenest Vehicle” for six years by the American Council for an Energy Efficient Economy and the EPA has called it the “cleanest internal-combustion vehicle on Earth.” Natural gas fueled vehicles, especially in high-use, urban applications such as fleets, provide significant emissions and air quality improvements over gasoline and diesel counterparts. As cities and states seek ways to minimize local air pollution and global carbon emissions, government, industry and interested stakeholders must work together to ensure that NGVs are further developed as a choice. Over 98% of the natural gas consumed in the U.S. is produced in North America. The Potential Gas Committee estimates the domestic resource base for natural gas to last 100 years at current usage levels. Increasing the use of natural gas as a transportation fuel is an important tool in reducing our nation’s dependence on foreign oil. An array of options will need to be developed to meet that goal. Federal legislation supporting transportation alternatives like natural gas will be crucial -- including extending tax incentives for alternative fuel vehicle purchases, conversions and production, alternative fueling station infrastructure, alternative fuel use, along with support for renewable natural gas production. Natural gas vehicles powered by domestically-produced natural gas are available now to get our country on the path to a more secure future – economically, environmentally and geopolitically.

# \*\*\*Flex Fuel Vehicles

## 1AC CORE

### 1AC Inherency

#### Inherency:

#### ( ) Transportation infrastructure investment and spending in the status quo

Laing 7-6

[Keith. Staffer for the Hill. “Obama Signs Highway Bill” The Hill, 7/6/12 ln]

President Obama signed a $105 billion transportation bill on Friday, bringing to an end a three-year fight over road and transit spending.¶ The bill signing capped a day that began with an unemployment report showing the U.S. economy had added only 80,000 jobs in June, leaving the national unemployment rate unchanged at 8.2 percent. Obama has touted the highway bill as a jobs bill, and at the White House signing ceremony he was surrounded by construction workers and students. The ceremony began after the president concluded a two-day campaign trip through the swing states of Ohio and Pennsylvania.¶ “First of all, this bill will keep thousands of construction workers on the job rebuilding our nation’s infrastructure," Obama said in a quick speech delivered less than an hour after he landed at Andrews Air Force base in suburban Washington.¶ “Second, this bill will keep interest rates on federal student loans from doubling this year, which would have hit nearly seven and a half million students with an average of $1,000 more on their loan payments,” he continued. “These steps are going to make a real difference in the lives of millions of Americans.” Republicans had sharply criticized the president for the unemployment numbers on Friday.¶ “Millions and millions of families are struggling and suffering because the president's policies have not worked for them,” Republican presidential nominee Mitt Romney said at a press conference in New Hampshire, where he is on vacation with his family.¶ “This kick in the gut has got to end,” Romney added.¶ Obama argued at the transportation bill signing on Friday that lawmakers in Congress should send him more bills like the measure he was signing into law.¶ “My hope is this bipartisan spirit spills over into the next phase,” Obama said. “That we can start putting more construction workers back to work – not just those that were already on existing projects that were threatened to be laid off – but also getting some new projects done.¶ “My message to Congress is the same thing I’ve been saying for months now — let’s keep going,” Obama continued. “Let’s keep finding ways to work together to grow the economy and help put more folks back to work. There’s no excuse for inaction where there’s so many Americans trying to get back on their feet.”¶ The bill Obama signed provides road and transit funding for the next two years. It also extends a 3.4 percent interest rate on student loans for one year and a flood insurance program for five.

#### ( ) The alternative vehicle market is drying up – lack of refueling infrastructure is the *key reason*

Kemp 5-25

[John. Market Analyst for the Associated Press. “Will US Federal Fleet help Alternative Fuel Switch?” The Associated Press, 5/25/12 ln]

Federal law defines alternative fuel vehicles broadly to include both those running on alternative fuels such as compressed natural gas (CNG), liquefied natural gas (LNG), hydrogen and high blend ethanol (E85) as well as certain qualifying hybrid electric vehicles run on a combination of regular petroleum and electricity (42 USC 13211). In 2010, there were nearly 1 million vehicles running on alternative fuels in use across the United States, according to the Department of Energy's Alternative Fuels and Advanced Vehicles Data Center, up from less than 400,000 a decade earlier. In addition, more than 2 million hybrid electric vehicles had been sold over the same period. Alternative fuelled vehicles are still a tiny minority of vehicles on U.S. roads, but the number is increasingly rapidly. The problem is that few are actually filling up with alternatives to gasoline owing to the lack of outlets actually selling alternative fuels such as E85 or LNG. There were just 10,000 fuelling stations dispensing alternative fuels in 2011 (up from less than 7,000 in 2010). Of those, a little over 3,300 were supplying electricity (six times as many as in 2010 making this the fastest growing segment of the alternative fuel infrastructure). But less than 1,000 dispensed compressed natural gas, and just 45 dispensed LNG. Even E85 was available from fewer than 2,500 outlets. In contrast, there are almost 160,000 retail gasoline stations across the country, and many more private refuelling facilities owned by large fleet operators such as UPS, transit systems, and the federal government. Availability problems are compounded by the uneven distribution of alternative fuelling stations. There are lots in California, the nation's biggest vehicle market, and another concentration in the ethanol-producing states of the Midwest such as Illinois, Indiana and Minnesota, but not many in the rest of the country.

### 1AC Plan Text

#### Plan: The United States federal government should substantially increase its investment for fueling infrastructure for vehicles cable of using mixtures of ethanol, methanol, and/or gasoline. We’ll clarify.

### 1AC Oil

#### Advantage [ ] is Oil – Scenario 1 is Prices:

#### ( ) Oil prices are low – already below $100 per barrel

Rozhnov 7-23

[Konstantin. Oil Reporter for the Wall Street Journal. “Oil Prices Plunge 4%” The Wall Street Journal, 7/23/12 ln]

Crude-oil futures skidded on worries over global demand for oil, as the euro-zone's sovereign debt crisis pushed down European stocks and the euro.¶ "Focus is back on Europe, and there's a bit of a nervousness in the market," said Ole Hansen head of commodity strategy at Saxo Bank.¶ The front-month September Brent contract on London's ICE futures exchange was down $3.40, or 3.4%, at $103.43 per barrel. Crude-oil futures trading on the New York Mercantile Exchange fell 4% to $88.21 per barrel.¶ The soaring cost of Spanish government borrowing costs and worries over Greece ended the $10-a-barrel rise in oil prices which lasted for seven trading days up to last Thursday, analysts said.¶ "This price rise wasn't the result of any change in fundamentals but to supply risks," Commerzbank said in a note. "Although these supply risks haven't gone away [...] they are likely to merely slow the price slide so long as there is no further escalation of the situation in Syria or of the Iran conflict."¶ Also, activity in the oil futures market is relatively light now due to the summer holiday season and it doesn't take much to move the market, said Saxo's Mr. Hansen.

#### ( ) These trends will continue over the medium-term – crumbling demand and global economic stagnation ensure a 7% drop in 2013

AFP 7-12

[The Agence France Presse. “IAE: Oil Prices May Fall 7%” The Agence France Presse, 7/12/12 ln]

Oil prices are unlikely to fall much further over the balance of this year but could come under pressure in 2013 as the global economy falters due to slower US and Chinese growth, the IEA said Thursday. The International Energy Agency, which advises developed countries on energy policy, said supply risks appeared to have put a floor under prices for this year even as global economic growth slows.¶ But for 2013, oil prices could fall in real terms by more than 7.0 percent, based on current models and futures contracts, it said, adding that such a downturn should marginally support demand.¶ Global economic growth this year will likely come in at 3.3 percent, down from the previous estimate of 3.5 percent as an "exceptionally challenging macroeconomic backdrop" forced the IEA to change its forecasts.¶ For 2013, the global economy should grow 3.8 percent, down from the previous 4.1-percent estimate based on figures in April from the International Monetary Fund, it added.¶ "Concerns are mounting on the sustainability of the eurozone, there has been a definite easing in China's economic impetus and the US outlook has weakened," the IEA said in its latest monthly report.¶ "Ongoing debt concerns across the developed world will likely see associated austerity measures curtailing government, business and consumer expenditure levels alike," it said.¶ The IMF is expected to issue new economic growth forecasts shortly.¶ Oil prices were slightly easier, with New York's main contract, light sweet crude for delivery in August, down 34 cents to $85.47 a barrel.¶ Brent North Sea crude for August shed 22 cents to $100.01, having fallen as low as $89 in late June after hitting highs in March of around $125. In terms of oil demand, the IEA left its 2012 growth forecast at around 800,000 barrels per day (bpd) to around 89.9 million bpd, with 2013 gaining a "relatively muted" 1.0 mbd to 90.9 mbd, led by Asia.¶ The increase next year, while marginally more than the expected 2012 gain, was much less than would have been expected based on trends before the 2008 global financial crisis brought the economy to its knees, it said.¶ The eurozone debt crisis has since undercut growth further.¶ The IEA said that total global oil supply in June was down 500,000 bpd to some 90.4 mpd, with OPEC production slipping 100,000 bpd to 31.8 mpd.¶ Among OPEC members, the IEA noted that Iranian output had slumped to near 22-year lows at 3.2 mbd in June, down 100,000 bpd from May as US and EU sanctions ramp up from July 1.

#### ( ) Oil price freefall will collapse financing for global Anti-Americanism in Iran and Venezuela – but future price increases cause revitalization

Levy & Slackman ‘8

[Cliff and Michael – Trade Desk at the New York Times. “3 Oil-Rich Countries Face a Reckoning” The New York Times, 10/21/8 ln]

As the price of oil roared to ever higher levels in recent years, the leaders of Venezuela, Iran and Russia muscled their way onto the world stage, using checkbook diplomacy and, on occasion, intimidation. Now, plummeting oil prices are raising questions about whether the countries can sustain their spending — and their bids to challenge United States hegemony. For all three nations, oil money was a means to an ideological end. President Hugo Chávez of Venezuela used it to jump-start a socialist-inspired revolution in his country and to back a cadre of like-minded leaders in Latin America who were intent on eroding once-dominant American influence. Iran extended its influence across the Middle East, promoted itself as the leader of the Islamic world and used its petrodollars to help defy the West’s efforts to block its nuclear program. Russia, which suffered a humiliating economic collapse in the 1990s after the fall of communism, recaptured some of its former standing in the world. It began rebuilding its military, wrested control of oil and gas pipelines and pushed back against Western encroachment in the former Soviet empire. But such ambitions are harder to finance when oil is at $74.25 a barrel, its closing price Monday in New York, than when it is at $147, its price as recently as three months ago. That is not to say that any of the countries is facing immediate economic disaster or will abandon long-held political goals. And the price of oil, still double what was considered high just a few years ago, could always shoot back up. Still, Russia, Iran and Venezuela have all based their spending on oil prices they thought were conservative but are now close to the market level. Significant further drops could tip the three countries into deficit spending or at least force them to choose among priorities. A worldwide recession, which many economists say is likely, would worsen matters, dampening energy demand and holding down prices. It is not clear whether the new pressures could create opportunities for the United States to ease tensions, or whether the three countries’ leaders will rely more on angry words even if they cannot afford provocative actions. Mr. Chávez has continued his overtures to Russia. He, Prime Minister Vladimir V. Putin of Russia and President Mahmoud Ahmadinejad of Iran may now see the United States, hobbled by financial crisis, as even more vulnerable. Daniel Yergin, chairman of Cambridge Energy Research Associates, a consulting firm in Cambridge, Mass., said oil states were facing something of a reckoning. Originally, he said, they saw the economic crisis as a problem mainly for the United States — but then oil prices went into free fall. “Now, the producers are experiencing a reverse oil shock,” Mr. Yergin said. “As revenue went up, government spending went up and expectations of a continuing windfall led to greater and greater ambitions. Now they are finding how integrated they are into this globalized world.”

#### ( ) The plan destroys oil prices and dissolves OPEC – reduces prices to $50 per barrel and sets an international standard for flex fuels

Zubrin ‘8

[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]

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.

#### ( ) Now’s key – every new fleet of vehicles delays the transition

Luft ‘8

[Dr. Gal. Exec Dir of the Institute for the Analysis of Global Security. “Sovereign Wealth Funds, Oil, and the New World Economic Order” – Testimony before the House Committee on Foreign Affairs, FDCH, May 2008. Ln]

Break the oil cartel. In the long run, the only way to roll back the new economic order and restrain OPEC's control over the world economy is to reduce the inherent value of its commodity. This cannot be done as long as we continue to put on our roads cars that can run on nothing but petroleum. Every year 17 million new cars roll onto America's roads. Each of these cars will have a lifespan of nearly 17 years. In the next Congressional session 35 million new cars will be added. If the next president presides for two terms he or she will preside over the introduction of 150 million new cars. If we allow all those cars to be gasoline only we are locking our future to petroleum for decades to come. I cannot think of something more detrimental to America's security than Congress allowing this to happen. Congress can break OPEC's monopoly over the transportation sector by instituting fuel choice. The cheapest, easiest and most immediate step should be a federal Open Fuel Standard, requiring that every new car put on the road be a flex fuel car, which looks and operates exactly like a gasoline car but has a $100 feature which enables it to run on any combination of gasoline and alcohol. Millions of flex fuel cars will begin to roll back oil's influence by igniting a boom of innovation and investment in alternative fuel technologies. The West is not rich in oil, but it is blessed with a wealth of other energy sources from which alcohol fuels - such as ethanol and methanol – capable of powering flexible fuel vehicles, can be affordably and cleanly generated. Among them: vast rich farmland, hundreds of years' worth of coal reserves, and billions of tons a year of agricultural, industrial and municipal waste. Even better: in an alcohol economy, scores of poor developing countries which right now struggle under the heavy economic burden caused by high oil prices would be able to become net energy exporters. With hot climate and long rainy seasons countries in south Asia, Africa and Latin America enjoy the perfect conditions for the production of sugarcane ethanol, which costs roughly half the price and is five times more efficient than corn ethanol. Hence, a shift to alcohol enabled cars will enable developing countries to generate revenues and emerge as a powerful force that could break OPEC's dominance over the global transportation sector.

#### ( ) Venezuela is aggressively pursuing anti-Americanism – includes rogue nuclear development and terrorism – low oil prices are key to derailment

IBD ‘8

[The Investor’s Business Daily. “Chavez’s Nightmare” IBD, 10/1/8 ln]

Why do we say this? Because Chavez is using his abundant oil earnings for three purposes: to buy regional influence, to buy arms and now to introduce Russian nuclear proliferation to our hemisphere. All are serious threats that the next U.S. president will face if global oil prices remain high. Only lower oil prices will stop him. That's because oil prices, not ideas, fuel his capacity to act. The self-described communist has stolen and wasted a lot of the $800 billion in oil revenue that has flowed to Venezuela over the last decade, mainly from U.S. buyers. But he's managed to use much of it like a captured weapon to undercut what he calls the "empire." Chavez is also well on the way to making the hemisphere his playground. He has used oil cash to buy off leaders in Argentina; bankroll vassal states in Ecuador, Nicaragua and Bolivia; win new friends in Paraguay; meddle in elections in Peru, El Salvador and Mexico; and finance terrorists in Colombia. Now he's extended his influence in unexpected new places such as Costa Rica, Honduras, St. Vincent, the Grenadines and Dominica, all of which have made disturbing diplomatic moves in his direction. Fewer and fewer U.S. allies will be left standing against this Chavista tide of corrupt oil largesse. What's more, Chavez is the region's chief arms proliferator, forking out $4.4 billion for Russian advanced jet fighters, small arms, submarines and now missile systems, none of which he needs. The stakes rise further with his invitation to Russian influence, starting with "peaceful" nuclear energy development in a nation where gas sells for 18 cents a gallon. Like fellow petrotyrant Iran, development of nuclear weapons — in this case, 1,350 miles from Key West, Fla. — will be next on his to-do list. A third petrotyranny, Russia, still bitter over its loss of empire and blaming the U.S., assures Chavez it will gladly pay for this. As disturbing as this picture is, there's little doubt next year's list of Chavista "achievements" will be longer. The one thing that will cut it short is an end to high oil prices. Chavez said as much Tuesday in speaking to friends at a gathering of leftist leaders in Manaus, Brazil. Turmoil in U.S. financial markets will slow global growth and hit Latin America hard, he said, adding that a drop in oil revenue hit Venezuela like "a hurricane, or more than one hurricane, it's a hundred hurricanes." A downturn in the U.S. economy is one way to lower oil prices. But it's far preferable to defang Chavez by creating permanent substitutes for his petroleum products in U.S. markets.

#### ( ) Venezuelan anti-Americanism escalates into a second cold war – causes nuclear acquisition and global state failure

Abelgas ‘8

[Valerie. Columnist for the Philippine Post. “The Second Cold War” Ang Peryodiko, V6 No19 http://www.angperyodiko.ca/opinion\_columns/val\_abelgas/abelgas\_vol6no19.html, 10/2/8]

The dispatch by Moscow of the nuclear-powered missile cruiser Peter the Great and three other ships to Venezuela on Monday has made the resurgence of the Cold War between the United States and Russia imminent, if it has not actually began. As in the original Cold War, which began with the fall and split of Germany in World War II in 1945 and ended with the break-up of the Soviet Union and the reunification of Germany in 1990, Latin America is turning out to be an important battleground for the two superpowers. Russia has recently intensified its contacts with Venezuela -- an oil-rich nation that has been a pain in the neck for the US -- Cuba and other South American nations following the heightening of tensions between the two superpowers in the dispute over Georgia. The incident brings to mind the Cuban Missile Crisis in October 1962 when the world came closest to a nuclear war, and which ended when American President John F. Kennedy and United Nations Secretary General U Thant reached an agreement with Soviet Premier Nikita Kruschev to dismantle Soviet missiles in Cuba in exchange for a no-invasion agreement and the removal of US missiles in Turkey. The emerging new Cold War is starting in almost the same manner as the old one. In 1945, shortly after Germany surrendered to the Allies and was split into West and East Germany, Russia, fearing another invasion from Western Europe after Germany had tried to invade it three times in the last 150 years, formed a buffer zone from Western Europe by exerting its might over what later became known as the Iron Curtain – Bulgaria, Czechoslovakia, Hungary, Poland and Romania. These countries, along with the Soviet Union, formed the Warsaw Pact, the formation of which was in response to the formation of the United States-led North Atlantic Treaty Organization (NATO). With the Soviets ready to extend its sphere of influence to Greece and Turkey in 1947 – with the Greeks in the midst of a civil war and the Turks needing help to modernize its society -- then US Undersecretary of State Dean Acheson called on Congress to come to the assistance of the two countries, arguing that if these countries fall into the hands of the communists, the neighboring nations would also subsequently fall. This later became known as the Domino Theory. Thus, the Cold War intensified as the two major victors of the Second World War raced to claim the spoils of war. The Cold War was characterized by satellite wars, foremost of which were the Korean War and the Vietnam War. The score was tied in the Korean War, with Korea being divided into North and South Korea, but the communists prevailed in the Vietnam War, with Hanoi overpowering Saigon after the US abandoned its ally. The Cold War also saw the emergence of the Nuclear Arms Race, with both the Soviets and the Americans battling to have more and superior nuclear bombs; the Space Race, which was dominated by the Soviets early on until the Americans beat them to the moon; the close calls to disaster during the Bay of Pigs Invasion and the Cuban Missile Crisis; and the calming policy that came to be known as détente. The Cold War put the world constantly on the edge of fear and devastation for 45 years while the two superpowers expanded their spheres of influence to wide parts of the globe and threatened to annihilate each other. With the emergence of a rationale leader in the Soviet Union in the 1980s in the person of Mikhail Gorbachev, the Cold War began to thaw. Gorbachev declared, upon assuming the position of general secretary of the Communist Party of the Soviet Union, that beyond a certain point, which, according to him, had been reached and passed at that time, increases in military power were useless. Gorbachev launched his glasnost (openness) and perestroika (economic restructuring) policies that triggered the end of the Cold War, and eventually of the once powerful Soviet Union. I was lucky to witness the Soviet Union’s transformation at that time when the Novosti Press Agency invited fellow journalist Maritess Vitug and I in August of 1988 to visit the cities of Moscow and Leningrad (now St. Petersburg) in Russia, Tbilisi in the Georgian Republic, and Baku in the Azerbaijan Republic. A couple of years later, the arms race came to an end and Gorbachev abandoned the Brezhnev Doctrine, which declared that no satellite country in Eastern Europe would be allowed to defect. Within months, democratic movements emerged in these Iron Curtain countries and their authoritarian governments fell one by one, ironically like dominoes. The Cold War ended where it started, with the tearing down of the Berlin Wall in November 1989 and the reunification of the two Germanys. With Russia now trying to create another buffer zone around its southern borders, and the United States racing to exert influence over these former Soviet republics around the Caspian Sea, which incidentally hold a huge reserve of oil and natural gas and host major oil pipelines to the East and to Central Asia, it was inevitable that history would repeat itself. For years after the break-up of the once powerful Soviet Union, Russia was pictured by the West as a defeated country. Crippled by the sudden turn of events, the Russians were faced with domestic problems – rising crime rates, government corruption, separatism, economic depression, rising poverty and social discontent. But since the financial collapse of 1998, Russia’s economy has taken a major rebound, powered by its huge oil and gas reserves. It is the world’s eighth largest oil producer, the world’s top natural gas producer, has the world’s fifth largest foreign reserves at $600 million, and has the world’s fifth largest gold reserves. It supplies 30% of Europe’s oil needs and 40% of its gas. Its economy grows by an average of 6 to 7 percent annually since 1999, and its stock market index increased by 83 percent last year. In contrast, the US economy is experiencing the biggest turmoil since the Great Depression with its financial institutions in serious jeopardy, its stock market in chaos, its economy teetering on the precipice of a deep recession or worse, another depression, its body politic currently immersed in extremely divisive political campaign, and more importantly, its credibility and influence among the world’s nations in serious doubt. Unlike the first Cold War, the Second Cold War is not a race for political influence but is a battle for the world’s dwindling oil and gas reserves. It is not coincidental that it started in an area where vast oil and gas reserves sit – the Caspian Sea region. And it’s not merely symbolic that Russia has decided to intensify it by sending a part of its naval fleet to oil-rich Venezuela. The Second Cold War’s satellite wars will not be fought in Korea or Vietnam, but is now being fought in Iraq and soon in Iran, both oil-producing countries. Don’t expect insurrections and skirmishes in Cuba. They will occur in oil-producing countries, such as Venezuela, Georgia, Azerbaijan, Iran, and possibly the oil-rich region of Brunei, Indonesia, the Spratlys in the China Sea, and Mindanao. While the economy and the Iraq problem are the central issues in the US presidential campaign, there is a need to recognize that the Second Cold War has begun and should, therefore, be an important parameter in the choice of this great nation’s next leader. Should we elect a leader who will be firm and strong, but who will gently and calmly steer us through the troubled waters of the Second Cold War, or should we choose one who has for years ruled out conciliation with Russia, wanted Russia out of the stabilizing economic group G-8, and who has been itching for a direct confrontation with the long-time Cold War rival? Should it be Barack Obama or John McCain? The debates on this important foreign policy matter have not begun. But the Second Cold War is well way off the starting gate.

#### ( ) State failure explains every impact

Manwaring ‘4

[Max. Latin America Expert @ CSIS, PhD in Poli Sci from UChicago. Shadows of the Past and Images of the Future 2004, Pg 36-8]

State failure is an evolutionary process, not an outcome. This state of affairs is often brought on by poor, irresponsible, and insensitive governance, and leads to at least one other very fundamental reason why states fail. That is, state failure can be a process that is exacerbated by nonstate (insurgent) groups that, for whatever reason, want to take down or exercise illicit control over a given government. In Latin America, Colombia is, Peru has been, and both continue to be good examples of this. The narco-insurgent/terrorist [is a] threat to the authority of the central governments. Through murder, kidnapping, corruption, intimidation, destruction of infrastructure, and other means of coercion and persuasion, these violent, internal, nonstate actors compromise the exercise of state authority. The government and its institutions become progressively less and less capable of performing the tasks of governance, including exercising their fundamental personal security functions to protect citizens. As a result, the narco-insurgents become increasingly wealthy and powerful, and affected countries deteriorate further and further toward failed state status. Peru’s Sendero Luminoso calls violent and destructive activities that facilitate the processes of state failure armed propaganda. Drug cartels operating in that country and throughout the Andean Ridge of South America and elsewhere call these activities business incentives. Thus, in addition to helping to provide wider latitude to further their specific objectives, Sendero’s and other violent nonstate actors’ armed propaganda and business incentives are aimed at lessening a regime’s credibility and capability in terms of its ability and willingness to govern and develop its national territory and society. This debilitating and destabilizing activity generates the most dangerous long-term security challenge facing the global community today. More specifically, failing or failed states in Latin America, Africa, the Middle-East, and Asia are breeding grounds for instability, insurgency, and terrorism. A breakdown in institutional governance can breed or exacerbate humanitarian disasters and major refugee flows. Such states can host networks of all kinds, including criminal business enterprises and/or some form of ideological, religious, or populist crusade. They also spawn a variety of pernicious and lethal activities and outcomes, including torture and murder; poverty, starvation, and disease; the recruitment and use of child soldiers; trafficking in women and human organs for transplants; trafficking and proliferation of conventional weapons systems and weapons of mass destruction; genocide, ethnic cleansing, warlordism; and criminal anarchy and insurgency. At the same time, these networks and activities normally are unconfined and spill over into regional syndromes of destabilization and conflict. Additionally, failing and failed states simply do not go away. Ample evidence demonstrates that failing and failed states become dysfunctional states, rogue states, criminal states, narco-states, or new people’s democracies. Moreover, failing and failed states tend not to (1) buy U.S. and other exporting nations’ products, (2) be interested in developing democratic and free market institutions and human rights, or (3) cooperate on shared problems such as illegal drugs, illicit arms flows, debilitating refugee flows, and potentially dangerous environmental problems. In short, the longer they persist, the more they and their associated problems endanger global security, peace, and prosperity.

#### ( ) Venezuelan nuclear acquisition causes extinction

Zulauga ‘5

[Felipe. President of Visions of Latin America at the Univ of Pitt. “Venezuela…A Good Neighbor?” 2005, http://www.ucis.pitt.edu/clas/publications/Visions\_vol1\_issue1.pdf]

Although Chavez indicates that the development of nuclear power is to be for peaceful purposes only, his statement in May was not well received in the majority of Venezuela’s neighboring countries or in the United States. But why is Chavez’s idea regarded with suspicion by the international community? Why is his initiative viewed as a threat rather than a positive development? The most likely answer can be summed up by security and stability reasons, as Venezuela is seeking a more secure position in the global context. However, this ambition engenders concerns in the Latin American region and could potentially generate serious repercussions for the entire Latin American community Among these concerns is determining the true reason as to why President Chavez aspires to acquire nuclear energy. According to Douglas Mackinnon in an article from the Houston Chronicle, the real reason that Chavez wants to develop nuclear technology is for the purpose of developing nuclear weapons! It may be hard to determine the credibility of this statement, but considering Mackinnon’s source is a high ranking official for a Latin American government, it should not be taken lightly. It is upsetting and almost incomprehensible to conceive of the Venezuelan government developing nuclear weapons. This not only poses a threat to the stability and security of the Latin American region, but it also has the potential to cause a nuclear crisis at the global level. If nuclear technology is developed in Venezuela for the purpose of acquiring nuclear arms, the country will violate the Treaty of Tlatelcol, which prohibits nuclear weapons in Latin America. This treaty, signed by 23 Latin American states, has been the pillar in maintaining nuclear security for the entire region and sets an example for other regions to successfully achieve nuclear-free zones. However, if Venezuela officially decides to break the treaty by achieving nuclear power, it is probable that other countries with previous intentions to develop military nuclear capacity - such as Mexico, Chile, Brazil and Argentina – will follow suit.

#### ( ) US-Iran tensions are rapidly increasing – ensures terrorist attacks around the globe

Miller 7-19

[John. Intl Desk for CBS News. “Ex-Revolutionary Guard member: Iran ready with terror plans to hit U.S. if Israel attacks.” CBS News, 7/19/12 ln]

A former Iranian agent from that country's feared Revolutionary Guard corps - a man who's been on the inside - tells CBS News that a surrogate, stealth war, carried out in the shadows by both sides, has been going on for more than a year.¶ It began with the targeted killings of Iranian scientists working on that country's nuclear program.¶ Then a computer virus was covertly deployed against Iranian nuclear sites. The virus was designed to make the sites self-destruct. Iran publicly accused the U.S., Great Britain and Israel of being behind the plots.¶ And now, it appears Iran is striking back.¶ "They're looking at this saying, 'We've got to respond. Aggression has been taken against us,"' says former CIA analyst Phil Mudd. "So that's the first factor. The second factor is, in the background, they're hearing the drumbeats of war."¶ That drumbeat is the continued discussion over if or when Israel might launch airstrikes against more than a dozen underground suspected Iranian nuclear sites.¶ But Iran hasn't backed away.¶ Since the killing of the last Iranian scientist, Iran has been linked to a series of plots:¶ -- A bomb attached to the car driven by the wife of an Israeli diplomat in India¶ -- A plan to use local organized crime hit men in a sniper attack in the U.S., and Israeli targets in Azerbaijan and the nation of Georgia¶ -- A plot using a Mexican drug cartel to kill the Saudi ambassador in a crowded restaurant in Washington, D.C.¶ -- And just days ago, in Kenya a suspected plot to attack a synagogue in Nairobi and Israeli-owned hotels in the coastal city of Mombasa¶ The two suspected Iranian agents captured in Kenya on July 3 are believed to be members of Iran's elite Revolutionary Guard force.¶ Reza Kahlili was once a member of that force himself and for years, he says, a double agent who supplied information to the CIA.¶ He says these attacks are Iran's version of a warm-up, in the event of a full conflict with Israel.¶ "They're just sending signals that they are capable of, and the order is by Ayatollah Khamenei, the Iranian supreme leader that, should war break out, then all terror cells will become activated and attack major interests of America, Israel, European countries and even within America," warns Kahlili, author of "A Time to Betray."¶ But, given the number of alleged plots by Iran against Israeli targets, some analysts wonder why Iran would seem to keep provoking the very attack they say they want to avoid.¶ "The mindset of this organization that is the Iranian intelligence service and this government is not a Western mindset," Mudd observes. "We see stability as a goal. They see instability and revolution as a goal."¶ Kahlili says, in the event of an Israeli airstrike, Iran is prepared to up the ante, not by responding militarily, but with a global campaign of terror attacks.¶ "Should it become an all-out war, then they will definitely respond on the world stage by terrorist attacks within the U.S., in Europe, and against America's interests, against Israel's interests," Kahlili says.¶ Intelligence officers believe Iran has already done the pre-operation surveillance for a series of terrorist attacks.¶ There's plenty of evidence that Tehran has scoped out targets, taken photos and written plans for terrorist strikes in the Mideast, Europe, South America, and even the United States.

#### ( ) *Sustained* low oil prices devastate Iran’s ability to effectively attack American interests

Collie ‘8

[Tim. Middle East Correspondent and Finalist for the Pulitzer Prize. “Cheap Oil could Alter International Landscape” [www.newsmax.com/international/cheap\_crude\_oil/2008/10/17/141607 10/17/8](http://www.newsmax.com/international/cheap_crude_oil/2008/10/17/141607%2010/17/8) ]

In neighboring Iran, however, the falling oil price could prompt a retreat from international adventurism to more focus inside that country’s borders. Improbably, Iranians already pay high domestic prices because of inefficient markets, and dilapidated infrastructure. On Friday, Israeli President Shimon Peres said that, “We see only our troubles, but we must note that there is finally a drop in oil prices, and this is a severe blow to Iran.” “If the price of oil continues to drop, Iran will not be able maintain its military spending [levels],” Peres said. That would mean less money to supply its proxies, Hamas, which controls the Gaza Strip, and Hezbollah, which has essentially built a state-within-a-state inside Lebanon.

#### ( ) Also forces Iran to the negotiating table

Bock ‘8

[Alan. Senior Writer at WorldNetDaily. “An Upside to the Financial Crisis?” <http://www.antiwar.com/bock/?articleid=13676>, 10/27/8]

Iran has used petrodollars to spread its influence in Iraq and the rest of the Middle East, to subsidize Hezbollah and Hamas, to buy off domestic critics appalled at the government's mismanagement of the economy, and to establish commercial relations with European countries, thus dampening opposition to its nuclear plans. If oil prices stay low, it may have to cut back its foreign meddling and reach some kind of compromise on its nuclear ambitions. President Mahmoud Ahmadinejad, who has been steadily losing popularity anyway, could well be defeated in next June's elections. The consequences in the rest of the Middle East could be interesting. Already tentative negotiations are taking place between Israel and Syria, with the likely implicit deal being to let Syria run Lebanon in exchange for eliminating Syrian support for Hezbollah. If Iran has diminished capacity to subsidize such groups, and if the U.S. has the minimal intelligence needed to start meeting with Iran and figuring out how the various interests in the region can be reconciled, given diminished capacity for both the U.S. and Iran, is there a chance that peace – or at least a period of the absence of open conflict – might start to break out?

#### ( ) No alt causes – Iran’s economy would not be able to recover and oil is key

Kudlow ‘7

[Larry. Host of CNBC’s Kudlow & Company. “Investors Say: Give the Iraq Plan a Chance. I agree” 1/12/7,

And let’s not forget that plunging oil prices — from nearly $80 a barrel all the way down to $52 — will do severe damage to Iran’s already tenuous fiscal position. As the new U.S. security blanket protects Persian Gulf shipping lanes from any Iranian mischief, continued oil-price declines will bleed the weak Iranian economy. That, in turn, will undermine Iran’s ability to financially assist terrorist groups like Hezbollah and Hamas, or anti-American factions in Iraq. Think of it: Falling oil prices not only reflect lower war and political risk, but they are actually doing enormous damage to one of the Middle East’s top risk producers: Iran.

#### ( ) Iranian-sponsored terrorist attacks cause nuclear war

Speice ‘6

[Patrick. JD Candidate at William and Mary, 2003 BA from Wake Forest. “Note: Negligence and Nuclear Nonproliferation: Eliminating the Current Liability Barrier to Bilateral US-Russian Nonproliferation Assistance Programs” William and Mary Law Review, Feb 2006 ln]

The potential consequences of the unchecked spread of nuclear knowledge and material to terrorist groups that seek to cause mass destruction in the United States are truly horrifying. A terrorist attack with a nuclear weapon would be devastating in terms of immediate human and economic losses. 49 Moreover, there would be immense political pressure in the United States to discover the perpetrators and retaliate with nuclear weapons, massively increasing the number of casualties and potentially triggering a full-scale nuclear conflict. 50 In addition to the threat posed by terrorists, leakage of nuclear knowledge and material from Russia will reduce the barriers that states with nuclear ambitions face and may trigger widespread proliferation of nuclear weapons. 51 This proliferation will increase the risk of nuclear attacks against the United States [\*1440] or its allies by hostile states, 52 as well as increase the likelihood that regional conflicts will draw in the United States and escalate to the use of nuclear weapons. 53

#### Scenario 2 is Dependence:

#### ( ) It makes extinction inevitable – try or die for the aff

Freeman ‘4

[Robert. Energy Expert @ Heritage Foundation. “Will the End of Oil mean the End of America?” [www.commondreams.org](http://www.commondreams.org) Feb 2004]

America has its own hand in a coconut, one that may doom it just as surely as the monkey. That coconut is its dependence on cheap oil in a world where oil will soon come to an end. The choice we face (whether to let the food go or hold onto it) is whether to wean ourselves off of oil—to quickly evolve a new economy and a new basis for civilization—or to continue to secure stable supplies from the rest of the world by force. As with Pirsig’s monkey, the alternative consequences of each choice could not be more dramatic. Weaning ourselves off of cheap oil, while not easy, will help ensure the vitality of the American economy and the survival of its political system. Choosing the route of force will almost certainly destroy the economy and doom America’s short experiment in democracy. To date, we have chosen the second alternative: to secure oil by force. The evidence of its consequences are all around us. They include the titanic US budget and trade deficits funding a gargantuan, globally-deployed military and the Patriot Act and its starkly anti-democratic rescissions of civil liberties. **There is little time left to change this choice before its consequences become irreversible.** The world is quickly running out of oil. In the year 2000, global production stood at 76 Million Barrels per Day (MBD). By 2020, demand is forecast to reach 112 MBD, an increase of 47%. But additions to proven reserves have virtually stopped and it is clear that pumping at present rates is unsustainable. Estimates of the date of “peak global production” vary with some experts saying it already may have occurred as early as the year 2000. New Scientist magazine recently placed the year of peak production in 2004. Virtually all experts believe it will almost certainly occur before the end of this decade. And the rate of depletion is accelerating. Imagine a production curve that rises slowly over 145 years—the time since oil was discovered in Pennsylvania in 1859. Over this time, the entire world shifted to oil as the foundation of industrial civilization. It invested over one hundreds trillion dollars in a physical infrastructure and an economic system run entirely on oil. But oil production is now at its peak and the right hand side of the curve is a virtual drop off. Known reserves are being drawn down at 4 times the rate of new discoveries. The reason for the drop off is that not only have all the “big” discoveries already been made, the rate of consumption is increasing dramatically. Annual world energy use is up five times since 1945. Increases are now driven by massive developing countries—China, India, Brazil—growing and emulating first or at least second world consumption standards. Fixed supply. Stalled discoveries. Sharply increased consumption. This is the formula for global oil depletion within the next few decades. The situation is especially critical in the US. With barely 4% of the world’s population, the US consumes 26% of the world’s energy. But the US produced only 9 MBD in 2000 while consuming 19 MBD. It made up the difference by importing 10 MBD, or 53% of its needs. By 2020, the US Department of Energy forecasts domestic demand will grow to 25 MBD but production will be down to 7 MBD. The daily shortfall of 18 MBD or 72% of needs, will all need to be imported. Perhaps it goes without saying but it deserves repeating anyway: oil is the sine qua non of “industrial” civilization—the one thing without which such civilization cannot exist. All of the world’s 600 million automobiles depend on oil. So do virtually all other commodities and critical processes: airlines, chemicals, plastics, medicines, agriculture, heating, etc. Almost all of the increase in world food productivity over the past 50 years is attributable to increases in the use of oil-derived additives: pesticides; herbicides; fungicides; fertilizers; and machinery. When oil is gone, civilization will be stupendously different. The onset of rapid depletion will trigger convulsions on a global scale, including, likely, global pandemics and die-offs of significant portions of the world’s human population. The “have” countries will face the necessity kicking the “have-nots” out of the global lifeboat in order to assure their own survival. Even before such conditions are reached, inelastic supply interacting with inelastic demand will drive the price of oil and oil-derived commodities through the stratosphere, effecting by market forces alone massive shifts in the current distribution of global wealth. If the US economy is not to grind to a halt under these circumstances it must choose one of three alternate strategies: dramatically lower its living standards (something it is not willing to do); substantially increase the energy efficiency of its economy; or make up the shortfall by securing supplies from other countries. President Bush’s National Energy Policy published in March 2001 explicitly commits the US to the third choice: Grab the Oil. It is this choice that is now driving US military and national security policy. And, in fact, the past 60 years of US policy in the Middle East can only be understood as the effort to control access to the world’s largest supply of oil. Witness, for example, the deep US embrace of Saudi Arabia since World War II. One quarter of all US weapons sales between 1950 and 2000 went to Saudi Arabia despite its horrifically repressive, literally medieval tribal nature. The CIA’s overthrow of Mohamed Mosadegh in Iran in 1953 after he nationalized his country’s oil is another example. So, too, was the US strategic embrace of Israel during the 1967 Six Day War. The US was deeply mired in Vietnam but needed a “cop on the beat” to challenge Arab states—Egypt, Iraq, Syria, Yemen—that were “going Soviet.” It has stuck with that relationship ever since. More recent examples of national strategy in bondage to the compulsion for oil include US support for Saddam Hussein in the Iran/Iraq War; its support for Osama bin Laden in the Afghanistan War against the Soviet Union; and, of course, the most recent invasion of Iraq to seize its oilfields and forward position US forces for an invasion of neighboring Saudi Arabia when it is inevitably destroyed by internal civil war. And **under a Grab the Oil strategy, militarization of US society will only deepen**. The reason is that a very major portion of the world’s oil is, by accident of geology, in the hands of states hostile to the US. Fully 60% percent of the world’s proven reserves of oil are in the Persian Gulf. They lie beneath Muslim countries undergoing a religious revolution that wants to return the industrial world to a pre-modern order governed by a fundamentalist Islamic theocracy. Saudi Arabia alone controls 25% of all the world’s oil, more than that of North America, South America, Europe and Africa combined. Kuwait, Iran and Iraq, each control approximately 10% of the world’s oil. Another 15% of the world’s oil lies in the Caspian Sea region, also a dominantly Muslim region. It includes a group of post-Soviet, satellite and buffer states that lack any semblance of legal or market systems. They are extraordinarily corrupt, really just Gangster Thugocracies masquerading as countries. Think Afghanistan. Both Russia and China consider this region part of their “sphere of strategic influence” portending significant clashes for the US over coming decades. As long as the US chooses the Grab the Oil alternative, the implications for national policy are inescapable. The combination of all these facts—fixed supply, rapid depletion, lack of alternatives, severity of consequences, and hostility of current stockholding countries—drive the US to HAVE to adopt an aggressive and pre-emptive military posture and to carry out a nakedly colonial expropriation of resources from weaker countries around the world. This is why the US operates some 700 military bases around the world and spends over half a trillion dollars per year on military affairs, more than all the rest of the world—its “allies” included—combined. This is why the Defense Department’s latest Quadrennial Review stated, “The US must retain the capability to send well-armed and logistically supported forces to critical points around the globe, even in the face of enemy opposition.” This is why Pentagon brass say internally that current force levels are inadequate to the strategic challenges they face and that they will have to re-instate the draft after the 2004 elections. But the provocation occasioned by grabbing the oil, especially from nations ideologically hostile to the US, means that military attacks on the US and the recourse to military responses will only intensify until the US is embroiled in unending global conflict. This is the perverse genius of the Grab the Oil strategy: it comes with its own built-in escalation, its own justification for ever more militarization—without limit. It will blithely consume the entire US economy, the entire society, without being sated. It is, in homage to Orwell, Perpetual War for Perpetual Grease.

#### ( ) Price spikes are also inevitable – makes global economic collapse an unavoidable reality

Supply Chain ‘8

[The Supply Chain Digest. “Does US Need a “No Oil” Contingency Plan?” http://www.scdigest.com/assets/On\_Target/08-09-30-3.php?cid=1964, 9/30/8]

To say that there are some stress points in the world right now is an understatement. From the global financial crisis to accelerating Russian aggression, the “hot spots” in both a geographic and political/economic sense are many. With that backdrop, does the US need a national plan that lays out a blueprint for something almost unthinkable – a highly restricted flow of oil? Yes, says Edwin Black, an author who has just written a new book titled The Plan: How to Save America When the Oil Stops — or the Day Before. “Government has prepared for hurricanes, anthrax, terrorism and every other disaster, but not the one threatened daily — a protracted oil stoppage, whether caused by terrorism, intervention in the Persian Gulf or a natural disaster,” Black says. Is such a scenario worth planning for? It would seem so. The US currently imports about 60% of its total oil consumption. While friendly neighbors Canada and Mexico are the number 1 and 3 sources of those oil imports, much less secure and stable sources such as Saudi Arabia, Venezuela and Nigeria make up the rest of the top 5 (see chart below). In a global crisis, no one can be sure how much oil might move even from friendly countries. “First the trucks and shippers will curtail shipments. Shelves will become scant and in some cases bare,” Black cheerfully notes in the book's first pages. “Quickly, unemployment will become epidemic as people are laid off due to economic contraction or because many will simply be unable to get to work. That in turn will worsen the country’s economic convulsion. Mobile America will cease to exist as we knew it because transportation via automobiles, taxis, buses, planes and other vehicular traffic will become an ever more unaffordable luxury. When people cannot get from Point A to Point B, the nation’s economic vitality will quickly wither.” There are a variety of risks, ranging from those that would curtail the flow of oil modestly to ones where global trade in oil would be significantly stanched. Example scenarios that would impede the flow of oil could include war in the Middle East, further Russian aggression and energy extortion, terrorist actions against pipelines or ports, etc. Black says, for example, that should there be a military strike in the Strait of Hormuz near Iran, the US would have to tap its Strategic Petroleum Reserve immediately. “Like any snow emergency, water drought or natural disaster, a national oil supply emergency should be governed by a plan,” Black states. “A Plan? America does not have such a plan. No Plan A. No Plan B.”

#### ( ) Economic collapse causes extinction

Freidberg and Schoenfeld ‘8

[\*Professor of Politics and IR at Princeton’s Woodrow Wilson School, AND \*\*senior editor of Commentary and a visiting scholar at the Witherspoon Institute in Princeton (10/21/2008, Aaron and Gabriel, “The Dangers of a Diminished America”, Wall Street Journal, http://online.wsj.com/article/SB122455074012352571.html?mod=googlenews\_wsj]

With the global financial system in serious trouble, is America's geostrategic dominance likely to diminish? If so, what would that mean?¶ One immediate implication of the crisis that began on Wall Street and spread across the world is that the primary instruments of U.S. foreign policy will be crimped. The next president will face an entirely new and adverse fiscal position. Estimates of this year's federal budget deficit already show that it has jumped $237 billion from last year, to $407 billion. With families and businesses hurting, there will be calls for various and expensive domestic relief programs.¶ In the face of this onrushing river of red ink, both Barack Obama and John McCain have been reluctant to lay out what portions of their programmatic wish list they might defer or delete. Only Joe Biden has suggested a possible reduction -- foreign aid. This would be one of the few popular cuts, but in budgetary terms it is a mere grain of sand. Still, Sen. Biden's comment hints at where we may be headed: toward a major reduction in America's world role, and perhaps even a new era of financially-induced isolationism.¶ Pressures to cut defense spending, and to dodge the cost of waging two wars, already intense before this crisis, are likely to mount. Despite the success of the surge, the war in Iraq remains deeply unpopular. Precipitous withdrawal -- attractive to a sizable swath of the electorate before the financial implosion -- might well become even more popular with annual war bills running in the hundreds of billions.¶ Protectionist sentiments are sure to grow stronger as jobs disappear in the coming slowdown. Even before our current woes, calls to save jobs by restricting imports had begun to gather support among many Democrats and some Republicans. In a prolonged recession, gale-force winds of protectionism will blow.¶ Then there are the dolorous consequences of a potential collapse of the world's financial architecture. For decades now, Americans have enjoyed the advantages of being at the center of that system. The worldwide use of the dollar, and the stability of our economy, among other things, made it easier for us to run huge budget deficits, as we counted on foreigners to pick up the tab by buying dollar-denominated assets as a safe haven. Will this be possible in the future?¶ Meanwhile, traditional foreign-policy challenges are multiplying. The threat from al Qaeda and Islamic terrorist affiliates has not been extinguished. Iran and North Korea are continuing on their bellicose paths, while Pakistan and Afghanistan are progressing smartly down the road to chaos. Russia's new militancy and China's seemingly relentless rise also give cause for concern.¶ If America now tries to pull back from the world stage, it will leave a dangerous power vacuum. The stabilizing effects of our presence in Asia, our continuing commitment to Europe, and our position as defender of last resort for Middle East energy sources and supply lines could all be placed at risk.¶ In such a scenario there are shades of the 1930s, when global trade and finance ground nearly to a halt, the peaceful democracies failed to cooperate, and aggressive powers led by the remorseless fanatics who rose up on the crest of economic disaster exploited their divisions. Today we run the risk that **rogue states may choose to become ever more reckless with their nuclear toys**, just at our moment of maximum vulnerability.¶ The aftershocks of the financial crisis will almost certainly rock our principal strategic competitors even harder than they will rock us. The dramatic free fall of the Russian stock market has demonstrated the fragility of a state whose economic performance hinges on high oil prices, now driven down by the global slowdown. China is perhaps even more fragile, its economic growth depending heavily on foreign investment and access to foreign markets. Both will now be constricted, inflicting economic pain and perhaps even sparking unrest in a country where political legitimacy rests on progress in the long march to prosperity.¶ None of this is good news if the authoritarian leaders of these countries seek to divert attention from internal travails with external adventures.¶ As for our democratic friends, the present crisis comes when many European nations are struggling to deal with decades of anemic growth, sclerotic governance and an impending demographic crisis. Despite its past dynamism, Japan faces similar challenges. India is still in the early stages of its emergence as a world economic and geopolitical power.¶ What does this all mean? There is no substitute for America on the world stage. The choice we have before us is between the potentially disastrous effects of disengagement and the stiff price tag of continued American leadership.

#### ( ) The plan resolves this by creating a market and crowding OPEC out

Zubrin ‘8

[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.

### 1AC Warming

#### Advantage [ ] is Climate Change:

#### ( ) Warming’s real, fast, human-induced and causes extinction

Morgan ‘9

[Professor of Current Affairs @ Hankuk University of Foreign Studies, South Korea (Dennis Ray, “World on fire: two scenarios of the destruction of human civilization and possible extinction of the human race”, Futures, Volume 41, Issue 10, December 2009, Pages 683-693, ScienceDirect]

As horrifying as the scenario of human extinction by sudden, fast-burning nuclear fire may seem, the one consolation is that this future can be avoided within a relatively short period of time if responsible world leaders change Cold War thinking to move away from aggressive wars over natural resources and towards the eventual dismantlement of most if not all nuclear weapons. On the other hand, another scenario of human extinction by fire is one that may not so easily be reversed within a short period of time because it is not a fast-burning fire; rather, a slow burning fire is gradually heating up the planet as industrial civilization progresses and develops globally. This gradual process and course is long-lasting; thus it cannot easily be changed, even if responsible world leaders change their thinking about ‘‘progress’’ and industrial development based on the burning of fossil fuels. The way that global warming will impact humanity in the future has often been depicted through the analogy of the proverbial frog in a pot of water who does not realize that the temperature of the water is gradually rising. Instead of trying to escape, the frog tries to adjust to the gradual temperature change; finally, the heat of the water sneaks up on it until it is debilitated. Though it finally realizes its predicament and attempts to escape, it is too late; its feeble attempt is to no avail— **and the frog dies**. Whether this fable can actually be applied to frogs in heated water or not is irrelevant; it still serves as a comparable scenario of how the slow burning fire of global warming may eventually lead to a runaway condition and take humanity by surprise. Unfortunately, by the time the politicians finally all agree with the scientific consensus that global warming is indeed human caused, its development could be too advanced to arrest; the poor frog has become too weak and enfeebled to get himself out of hot water. The Intergovernmental Panel of Climate Change (IPCC) was established in 1988 by the WorldMeteorological Organization (WMO) and the United Nations Environmental Programme to ‘‘assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of humaninduced climate change, its potential impacts and options for adaptation and mitigation.’’[16]. Since then, it has given assessments and reports every six or seven years. Thus far, it has given four assessments.13 With all prior assessments came attacks fromsome parts of the scientific community, especially by industry scientists, to attempt to prove that the theory had no basis in planetary history and present-day reality; nevertheless, as more andmore research continually provided concrete and empirical evidence to confirm the global warming hypothesis, that it is indeed human-caused, mostly due to the burning of fossil fuels, the scientific consensus grew stronger that human induced global warming is verifiable. As a matter of fact, according to Bill McKibben [17], 12 years of ‘‘impressive scientific research’’ strongly confirms the 1995 report ‘‘that humans had grown so large in numbers and especially in appetite for energy that they were now damaging the most basic of the earth’s systems—the balance between incoming and outgoing solar energy’’; ‘‘. . . their findings have essentially been complementary to the 1995 report – a constant strengthening of the simple basic truth that humans were burning too much fossil fuel.’’ [17]. Indeed, 12 years later, the 2007 report not only confirms global warming, with a stronger scientific consensus that the slow burn is ‘‘very likely’’ human caused, but it also finds that the ‘‘amount of carbon in the atmosphere is now increasing at a faster rate even than before’’ and the temperature increases would be ‘‘considerably higher than they have been so far were it not for the blanket of soot and other pollution that is temporarily helping to cool the planet.’’ [17]. Furthermore, almost ‘‘everything frozen on earth is melting. Heavy rainfalls are becoming more common since the air is warmer and therefore holds more water than cold air, and ‘cold days, cold nights and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.’’ [17]. Unless drastic action is taken soon, the average global temperature is predicted to rise about 5 degrees this century, but it could rise as much as 8 degrees. As has already been evidenced in recent years, the rise in global temperature is melting the Arctic sheets. This runaway polar melting will inflict great damage upon coastal areas, which could be much greater than what has been previously forecasted. However, what is missing in the IPCC report, as dire as it may seem, is sufficient emphasis on the less likely but still plausible worst case scenarios, which could prove to have the most devastating, catastrophic consequences for the long-term future of human civilization. In other words, the IPCC report places too much emphasis on a linear progression that does not take sufficient account of the dynamics of systems theory, which leads to a fundamentally different premise regarding the relationship between industrial civilization and nature. As a matter of fact, as early as the 1950s, Hannah Arendt [18] observed this radical shift of emphasis in the human-nature relationship, which starkly contrasts with previous times because the very distinction between nature and man as ‘‘Homo faber’’ has become blurred, as man no longer merely takes from nature what is needed for fabrication; instead, he now acts into nature to augment and transform natural processes, which are then directed into the evolution of human civilization itself such that we become a part of the very processes that we make. The more human civilization becomes an integral part of this dynamic system, the more difficult it becomes to extricate ourselves from it. As Arendt pointed out, this dynamism is dangerous because of its unpredictability. Acting into nature to transform natural processes brings about an . . . endless new change of happenings whose eventual outcome the actor is entirely incapable of knowing or controlling beforehand. The moment we started natural processes of our own - and the splitting of the atom is precisely such a man-made natural process -we not only increased our power over nature, or became more aggressive in our dealings with the given forces of the earth, but for the first time have taken nature into the human world as such and obliterated the defensive boundaries between natural elements and the human artifice by which all previous civilizations were hedged in’’ [18]. So, in as much as we act into nature, we carry our own unpredictability into our world; thus, Nature can no longer be thought of as having absolute or iron-clad laws. We no longer know what the laws of nature are because the unpredictability of Nature increases in proportion to the degree by which industrial civilization injects its own processes into it; through selfcreated, dynamic, transformative processes, we carry human unpredictability into the future with a precarious recklessness that may indeed end in human catastrophe or extinction, for elemental forces that we have yet to understand may be unleashed upon us by the very environment that we experiment with. Nature may yet have her revenge and the last word, as the Earth and its delicate ecosystems, environment, and atmosphere reach a tipping point, which could turn out to be a point of no return. This is exactly the conclusion reached by the scientist, inventor, and author, James Lovelock. The creator of the wellknown yet controversial Gaia Theory, Lovelock has recently written that it may be already too late for humanity to change course since climate centers around the world, . . . which are the equivalent of the pathology lab of a hospital, have reported the Earth’s physical condition, and the climate specialists see it as seriously ill, and soon to pass into a morbid fever that may last as long as 100,000 years. I have to tell you, as members of the Earth’s family and an intimate part of it, that you and especially civilisation are in grave danger. It was ill luck that we started polluting at a time when the sun is too hot for comfort. We have given Gaia a fever and soon her condition will worsen to a state like a coma. She has been there before and recovered, but it took more than 100,000 years. We are responsible and will suffer the consequences: as the century progresses, the temperature will rise 8 degrees centigrade in temperate regions and 5 degrees in the tropics. Much of the tropical land mass will become scrub and desert, and will no longer serve for regulation; this adds to the 40 per cent of the Earth’s surface we have depleted to feed ourselves. . . . Curiously, aerosol pollution of the northern hemisphere reduces global warming by reflecting sunlight back to space. This ‘global dimming’ is transient and could disappear in a few days like the smoke that it is, leaving us fully exposed to the heat of the global greenhouse. We are in a fool’s climate, accidentally kept cool by smoke, and before this century is over billions of us will die and the few breeding pairs of people that survive will be in the Arctic where the climate remains tolerable. [19] Moreover, Lovelock states that the task of trying to correct our course is hopelessly impossible, for we are not in charge. It is foolish and arrogant to think that we can regulate the atmosphere, oceans and land surface in order to maintain the conditions right for life. It is as impossible as trying to regulate your own temperature and the composition of your blood, for those with ‘‘failing kidneys know the never-ending daily difficulty of adjusting water, salt and protein intake. The technological fix of dialysis helps, but is no replacement for living healthy kidneys’’ [19]. Lovelock concludes his analysis on the fate of human civilization and Gaia by saying that we will do ‘‘our best to survive, but sadly I cannot see the United States or the emerging economies of China and India cutting back in time, and they are the main source of emissions. The worst will happen and survivors will have to adapt to a hell of a climate’’ [19]. Lovelock’s forecast for climate change is based on a systems dynamics analysis of the interaction between humancreated processes and natural processes. It is a multidimensional model that appropriately reflects the dynamism of industrial civilization responsible for climate change. For one thing, it takes into account positive feedback loops that lead to ‘‘runaway’’ conditions. This mode of analysis is consistent  with recent research on how ecosystems suddenly disappear. A 2001 article in Nature, based on a scientific study by an international consortium, reported that changes in ecosystems are not just gradual but are often sudden and catastrophic [20]. Thus, a scientific consensus is emerging (after repeated studies of ecological change) that ‘‘stressed ecosystems, given the right nudge, are capable of slipping rapidly from a seemingly steady state to something entirely different,’’ according to Stephen Carpenter, a limnologist at the University of Wisconsin-Madison (who is also a co-author of the report). Carpenter continues, ‘‘We realize that there is a common pattern we’re seeing in ecosystems around the world, . . . Gradual **changes in vulnerability accumulate and** eventually **you get a shock** to the system - a flood or a drought - and, boom, you’re over into another regime. It becomes a self-sustaining collapse.’’ [20]. If ecosystems are in fact mini-models of the system of the Earth, as Lovelock maintains, then we can expect the same kind of behavior. As Jonathon Foley, a UW-Madison climatologist and another co-author of the Nature report, puts it, ‘‘Nature isn’t linear. Sometimes you can push on a system and push on a system and, finally, you have the straw that breaks the camel’s back.’’ Also, once the ‘‘flip’’ occurs, as Foley maintains, then the catastrophic change is ‘‘irreversible.’’ [20]. When we expand this analysis of ecosystems to the Earth itself, it’s frightening. What could be the final push on a stressed system that could ‘‘break the camel’s back?’’ Recently, another factor has been discovered in some areas of the arctic regions, which will surely compound the problem of global ‘‘heating’’ (as Lovelock calls it) in unpredictable and perhaps catastrophic ways. This disturbing development, also reported in Nature, concerns the permafrost that has locked up who knows how many tons of the greenhouse gasses, methane and carbon dioxide. Scientists are particularly worried about permafrost because, as it thaws, it releases these gases into the atmosphere, thus, contributing and accelerating global heating. It is a vicious positive feedback loop that compounds the prognosis of global warming in ways that could very well prove to be the tipping point of no return. Seth Borenstein of the Associated Press describes this disturbing positive feedback loop of permafrost greenhouse gasses, as when warming ‘‘. already under way thaws permafrost, soil that has been continuously frozen for thousands of years. Thawed permafrost releases methane and carbon dioxide. Those gases reach the atmosphere and help trap heat on Earth in the greenhouse effect. The trapped heat thaws more permafrost and so on.’’ [21]. The significance and severity of this problem cannot be understated since scientists have discovered that ‘‘the amount of carbon trapped in this type of permafrost called ‘‘yedoma’’ is much more prevalent than originally thought and may be 100 times [my emphasis] the amount of carbon released into the air each year by the burning of fossil fuels’’ [21]. Of course, it won’t come out all at once, at least by time as we commonly reckon it, but in terms of geological time, the ‘‘several decades’’ that scientists say it will probably take to come out can just as well be considered ‘‘all at once.’’ Surely, within the next 100 years, much of the world we live in will be quite hot and may be unlivable, as Lovelock has predicted. Professor Ted Schuur, a professor of ecosystem ecology at the University of Florida and co-author of the study that appeared in Science, describes it as a ‘‘slow motion time bomb.’’ [21]. Permafrost under lakes will be released as methane while that which is under dry ground will be released as carbon dioxide. Scientists aren’t sure which is worse. Whereas methane is a much more powerful agent to trap heat, it only lasts for about 10 years before it dissipates into carbon dioxide or other chemicals. The less powerful heat-trapping agent, carbon dioxide, lasts for 100 years [21]. Both of the greenhouse gasses present in permafrost represent a global dilemma and challenge that compounds the effects of global warming and runaway climate change. The scary thing about it, as one researcher put it, is that there are ‘‘lots of mechanisms that tend to be self-perpetuating and relatively few that tend to shut it off’’ [21].14 In an accompanying AP article, Katey Walters of the University of Alaska at Fairbanks describes the effects as ‘‘huge’’ and, unless we have a ‘‘major cooling,’’ - unstoppable [22]. Also, there’s so much more that has not even been discovered yet, she writes: ‘‘It’s coming out a lot and there’s a lot more to come out.’’ [22]. 4. Is it the end of human civilization and possible extinction of humankind? What Jonathon Schell wrote concerning death by the fire of nuclear holocaust also applies to the slow burning death of global warming: Once we learn that a holocaust might lead to extinction**,** we have no right to gamble, because if we lose, the game will be over, and neither we nor anyone else will ever get another chance. Therefore, although, scientifically speaking, there is all the difference in the world between the mere possibility that a holocaust will bring about extinction and the certainty of it, morally they are the same, and we have no choice but to address the issue of nuclear weapons as though we knew for a certainty that their use would put an end to our species [23].15 When we consider that beyond the horror of nuclear war, another horror is set into motion to interact with the subsequent nuclear winter to produce a poisonous and super heated planet, the chances of human survival seem even smaller. Who knows, even if some small remnant does manage to survive, what the poisonous environmental conditions would have on human evolution in the future. A remnant of mutated, sub-human creatures might survive such harsh conditions, but for all purposes, human civilization has been destroyed, and the question concerning human extinction becomes moot. Thus, **we have** no other choice but **to consider the finality of it all**, as Schell does: ‘‘Death lies at the core of each person’s private existence, but part of death’s meaning is to be found in the fact that it occurs in a biological and social world that survives.’’ [23].16 But what if the world itself were to perish, Schell asks. Would not it bring about a sort of ‘‘second death’’ – the death of the species – a possibility that the vast majority of the human race is in denial about? Talbot writes in the review of Schell’s book that it is not only the ‘‘death of the species, not just of the earth’s population on doomsday, but of countless unborn generations. They would be spared literal death but would nonetheless be victims . . .’’ [23]. That is the ‘‘second death’’ of humanity – the horrifying, unthinkable prospect that there are no prospects – that there will be no future. In the second chapter of Schell’s book, he writes that since we have not made a positive decision to exterminate ourselves but instead have ‘‘chosen to live on the edge of extinction, periodically lunging toward the abyss only to draw back at the last second, our situation is one of uncertainty and nervous insecurity rather than of absolute hopelessness.’’ [23].17 In other words, the fate of the Earth and its inhabitants has not yet been determined. Yet time is not on our side. Will we relinquish the fire and our use of it to dominate the Earth and each other, or will we continue to gamble with our future at this game of Russian roulette while **time** increasingly **stacks the cards against** our chances of **survival**?

#### ( ) Emissions and the next decade are key

Anair and Mahmassani ‘12

[bachelor's and master's degrees in electrical engineering from Cornell University, senior analyst and engineer in the California office of the Union of Concerned Scientists' Clean Vehicles Program AND \*\*degree in Electrical Engineering from the University of Maryland, College Park and degree in Transportation Technology and Policy from the University of California, Davis, Vehicles Analyst/Engineer with UCS (“State of Charge: Electric Vehicles’ Global Warming Emissions and Fuel-Cost Savings across the United States”, Union of Concerned Scientists, April 2012, http://www.ucsusa.org/assets/documents/clean\_vehicles/electric-car-global-warming-emissions-report.pdf]

To meet the challenge of climate change and reduce our nation’s dependence on oil, continuing to run our cars and trucks predominantly on oil-based fuels is not an option. On the other hand, electric vehicles—coupled with clean and sustainable electricity—are important parts of the solution. Driving on electricity is a reality; it provides global warming benefits today and throughout the United States. Nearly half of Americans live in regions where driving an electric vehicle means lower global warming emissions than driving even the best hybrid gasoline vehicle available. Over the lifetime of an EV, the owner can save more than 6,000 gallons of gasoline—a significant contribution to U.S. energy security. But our nation’s reliance on coal-powered electricity limits electric vehicles from delivering their full potential. Only by making improvements to our electricity grid—by decreasing the use of coal and increasing the use of clean and renewable sources of electricity—will electric vehicles deliver their greatest global warming and air pollution benefits. Initiatives to clean up the electricity grid are occurring around the country, but additional efforts are needed both at the state and national level to ensure continued progress. Of course, cleaning up the nation’s electricity production won’t deliver large reductions in the transportation sector’s emissions and oil consumption unless electric vehicles become a market success. While they are now coming onto the market in a much bigger way than ever before, EVs still face many hurdles, including higher up-front costs than gasoline vehicles. Lower fueling costs for EVs, however, provide an important incentive for purchasing them, and our cost analysis of 50 cities across the country shows that EV owners can start saving money immediately on fuel costs by using electricity in place of gasoline. Meanwhile, utilities’ leaders and government policy makers have important roles to play: they must ensure electricity rate plans motivate EV ownership, and they must encourage charging behavior that supports lower emissions and a robust electricity grid. To prevent the worst consequences of global warming, the automotive industry must deliver viable alternatives to the oil-fueled internal-combustion engine— i.e., vehicles boasting zero or near-zero emissions. Such alternative technologies must become market successes in the next 10 to 15 years if they are to comprise the majority of vehicles on the road by 2050—a critical element to reaching an 80 percent reduction in global warming emissions by that year. EVs promise to be one of those technologies, but their success is not assured. To turn the nascent EV market into a mainstream phenomenon over the coming years, continued investments are needed for improving EVs’ performance and costs, incentivizing consumers and manufacturers, expanding accessible charging infrastructure, and reducing barriers to low-cost home charging.

#### ( ) Flex fuel infrastructure solves – it’s the fastest and most durable way to *flatten* transportation-related emissions – that’s key

Hulsey ‘7

[Brett. Energy Analyst for Better Environmental Solutions. Citing the Union of Concerned Scientists and the Environmental Protection Agency. “Ethanol: A Convenient Solution to the ‘Inconvenient Truth’” December 2007, http://www.ethanol.org/pdf/contentmgmt/Ethanol\_a\_Convenient\_Solution\_to\_the\_Inconvenient\_Truth\_report.pdf]

Numerous environmental organizations support more ethanol and biofuel use to help reduce global warming and reduce other pollutants. ¶ The EPA estimates that transportation fuels ¶ are one of the largest and fastest growing sources of greenhouse gases and other air ¶ pollutants. In fact, the EPA’s recent study, ¶ A Wedge Analysis of the U.S. Transportation Sector, states: ¶ “The U.S. transportation sector represents approximately 10% of all energy-related ¶ greenhouse gas emissions worldwide. Over the next 50 years, rising numbers and use of ¶ vehicles could swell greenhouse gas emissions from U.S. transportation to 80% above ¶ current levels…There are three general approaches for reducing greenhouse gases in the ¶ transportation sector: 1) adopting advanced vehicle technologies, 2) switching to low-¶ greenhouse gas fuels, and 3) reducing vehicle miles traveled.” (Emphasis added). ¶ EPA analyzed a series of wedge scenarios that reduce CO2 from 2010 to 2050 to achieve ¶ stable atmospheric CO2 levels by 2050. Each wedge represents 5 billion metric tons of CO2 ¶ emissions reduced between now and 2050. Figure 2 below shows nine wedges (45 B MT ¶ CO2) are needed to stabilize at 2006 levels; more would be needed to reduce CO2 below ¶ 2006 levels. ¶ The report found: “EPA also analyzed other stand-alone changes to the transportation ¶ sector that would reduce greenhouse gas emissions. Some of these changes involved ¶ switching to low greenhouse gas fuels while others reduced vehicle miles traveled (VMT). ¶ For fuels, the analysis revealed that substituting 60 billion gallons of ethanol for gasoline by 2050 (25% from corn ethanol and 75% from cellulosic ethanol and no changes in vehicle technology) would achieve 1.4 wedges (7.0 B MT CO2). An alternative case, involving 90 billion gallons of ethanol, would achieve 2.3 wedges (11.5 BMT CO2)”5 (Emphasis added). ¶ EPA explored different vehicle scenarios like the Hybrid Electric Vehicle Focus with 50-¶ 80% hybrid vehicles and Ethanol Focus with 90 billion gallons ethanol. Figure 3 shows hybrid vehicles at 50% market share, plug-in hybrids at 30%, FFVs and optimized FFVs at 15% share and E10 at 30 billion gallons of ethanol. Hybrid vehicles achieve 1.9 wedges and biofuels achieve 1.4. Note the quick response (shown in yellow) from ethanol and the ¶ duration of those emissions reductions in both Figures 3 and 4.¶ Figure 4 below shows the ethanol focus that includes E10 in all fuel, 45% flex fuel vehicles and widespread E85 distribution, 20% hybrid electric vehicles, 35% advanced diesel and gasoline vehicles, and 90 billion gallons of ethanol use. Biofuels achieve 4 wedges and ¶ advanced engines and hybrids achieve 1 wedge.¶ You can also see from the diagrams, the ethanol focus (yellow wedges) makes the quickest greenhouse gas emissions reductions and some of the largest. EPA did not model moderate ethanol blends of E20-30, but this would certainly add quicker, increased GHG reductions. Given the statements of car company leaders below regarding support for ethanol, the ¶ Ethanol Focus seems like a practical and immediately implementable way to reduce ¶ greenhouse gases and improve fleet performance. ¶ ¶ EPA’s Conclusions ¶ ¶ The EPA report concluded: “Overall, the analysis showed that with aggressive combined ¶ improvements in vehicle technologies, fuels, and vehicle miles traveled, the future ¶ contribution of U.S. transportation to accumulated greenhouse gasses in the atmosphere ¶ could be reduced or flattened. It also suggested the following additional conclusions: ¶ ¶ • By themselves, individual approaches incorporating vehicle technologies, fuels, or ¶ transportation demand management (TDM) approaches could moderately reduce, ¶ but not flatten, the nine transportation-related wedges from now until 2050. ¶ “Systems approaches” that combine all three approaches, however, could yield the ¶ 4.3 wedges (21.5 B MT CO2) needed to flatten passenger vehicle emissions and even up to all nine wedges (45 B MT CO2) under aggressive scenarios… ¶ ¶ • Near-term vehicle technologies can have as much of an impact in terms of ¶ GHG reductions as future, longer-term technologies because their reductions begin to accrue sooner. To achieve the most wedges, however, the reductions achievable only though longer-term technologies are needed. Nearly all the approaches discussed also reduce petroleum use, which would have benefits beyond GHG reductions. For example, achieving five wedges could result in saving 7 to 8 million barrels of petroleum per day in 2050.” Emphasis added. ¶ To achieve the 30-90 billion gallons of ethanol consumption EPA estimates are needed for ¶ GHG control, E20 is one of the best likely near term technology options. The strategy of ¶ selling more E85 fuel and vehicles like Brazil does is promising as there are a growing ¶ number of E85 vehicles and stations, but there are challenges to expanding ethanol ¶ consumption with E85. For more, see below. E20 is a cost effective near term strategy that ¶ should be expanded. ¶ ¶ The Natural Resource Defense Council (NRDC) states in Move ¶ over Gasoline, Here Comes Biofuels that, “Combined with better ¶ vehicle efficiency and smart-growth urban planning, biofuels ¶ could virtually eliminate our demand for gasoline by 2050.” ¶ “This is not hypothetical technology of the future. Biofuels are available now, ready to ¶ compete in the market with fossil fuels. The biofuels industry relies on real-world ¶ technologies that are improving by leaps and bounds every day. With technological advances that we could deploy over the next 10 years, biofuels could bring staggering economic and environmental benefits: ¶ ¶ • Biofuels can slash global ¶ warming pollution. By ¶ 2050, biofuels -- especially ¶ cellulosic biofuels -- could ¶ reduce our greenhouse gas ¶ emissions by 1.7 billion tons ¶ per year. That's equal to ¶ more than 80 percent of ¶ current transportation-¶ related emissions. ¶ • Biofuels can be cost ¶ competitive with gasoline ¶ and diesel. Economists ¶ estimate that by 2015, we ¶ could produce biofuels for ¶ sale at prices equal to, or ¶ lower than, average gas and ¶ diesel prices.”6 ¶ NRDC’s wedge analysis shows biofuels, combined with more efficiency and smarter growth, can reduce our oil usage and emissions significantly. The Union of Concerned Scientists’ 2007 report, Biofuels: An Important Part of a Low-Carbon Diet, found: ¶ “To reduce transportation-related emissions—responsible for nearly 40 percent of the ¶ United States' total global warming pollution—we need more efficient vehicles, fewer miles driven, and lower-carbon fuels (i.e., fuels that generate significantly less heat-trapping gases per unit of energy delivered than today's petroleum-based gasoline and diesel). Hydrogen, electricity, and biofuels (fuels produced from plants) all have the potential— if produced in a sustainable manner—to not only reduce transportation-related ¶ emissions but also promote economic and energy security by curbing our country's growing oil dependence.”7 Emphasis added. ¶ The Energy Foundation’s 2006 report, The New Harvest, highlights the potential for savings with biofuels and more efficiency. The report calls for a national partnership of agricultural and energy interests and a bipartisan political strategy to unite and solidify a rapidly growing Ag-Energy sector. ¶ The report answers questions that have been raised about renewable energy - questions ¶ about efficiency, the ability to grow food and fuel at the same time and the amount of fossil fuel needed to produce ethanol. It concludes that new technologies and new ethanol-¶ compatible crops such as switchgrass that the President mentioned in his 2006 State of the Union speech can make Ag Energy a win-win-win for America’ energy security, rural ¶ economy and the environment if policies are put into place soon.8

### 1AC Solvency

#### Solvency:

#### ( ) Advanced flex-fuel capabilities are technologically ready now, but lack of infrastructure has undercut market viability – this is the vital barrier

Zubrin ‘7

[Robert. Senior Fellow at the Foundation for Defense of Democracies. “Achieving Energy Victory” The New Atlantis, Fall 2007 [www.thenewatlantis.com/publications/achieving-energy-victory](http://www.thenewatlantis.com/publications/achieving-energy-victory) ]

So what’s stopping FFV legislation from becoming reality in the United States? There have been a few half-hearted attempts in Congress in recent years, but in the absence of any significant support from the president, these bills have gone nowhere. And why doesn’t the White House support FFVs? In March 2006, I discussed this proposal with John H. Marburger III, the president’s science advisor. He asked me a number of detailed questions about the FFV proposal, which I answered. I then asked him, “So why not implement the plan? If the president introduced a bill calling for a flex-fuel mandate, he’d get bipartisan support and the bill would pass. It would be a real accomplishment for the administration and for American energy independence.” Marburger answered: “We don’t believe in mandates.” I subsequently met for two hours with one of Marburger’s senior staffers. While finding the idea of moving to FFVs interesting, he objected to the concept because it would cost the American auto industry a total of $150 million to make the necessary conversion. This is less than the United States spends on foreign oil every five hours. Unlike other energy security proposals that call for strict conservation regimes or high gas taxes that would damage the economy, or that depend upon technological pipe dreams like the hydrogen car, a switch to FFVs is eminently practicable. And even though it depends on a government mandate to get the ball rolling, it is ultimately a market-based proposal: instead of subsidies or taxes, it relies on the creativity and hard work of individuals and corporations to open new markets; it will end the market-distorting machinations of the OPEC cartel by exposing it to competition from farmers and others around the world. Only in this way can we destroy the vertical monopoly which will otherwise continue to give the Islamists the ability to loot humanity through endless, unconstrained price hikes. But instead of taking the necessary bold first step, the administration apparently prefers—as Energy Secretary Samuel W. Bodman III has put it—“working on ... the car manufacturers to undertake the manufacture” of FFVs voluntarily. “It’s just a matter of getting them to commit.” Feeble attempts at persuasion aren’t sufficient. The time has come for action. We must take ourselves—and the rest of the world—off the petroleum standard. Only in this way can we transfer control of the future from those who take their wealth, pre-made, from the ground, to those who make their wealth through hard work, skill, and creativity (and thus build free societies). If we adopt a policy of deliberately growing the alcohol economy, we can make OPEC’s oil unnecessary. We will then be in a position to dictate terms to the terror bankers. In a game of chess, the struggle ends not with the taking of the enemy king, but with his entrapment. If we could engineer a liberation from oil, the enemy would be rendered helpless, and one way or another, the oil-for-terror game will be finished. Call it checkmate. Call it victory.

#### ( ) Establishing infrastructure for an alcohol economy creates market demand and goes global

Zubrin ‘6

[Robert. Senior Fellow at the Foundation for Defense of Democracies. “An Energy Revolution” The American Enterprise, March 2006. [www.taemag.com/issues/articleid.18976/article\_detail.asp](http://www.taemag.com/issues/articleid.18976/article_detail.asp)]

To liberate ourselves from the threat of foreign economic domination, undercut the financiers of terror, and give ourselves the free hand necessary to deal with Middle Eastern extremists, we must devalue their resources and increase the value of our own. We can do this by taking the world off the petroleum standard and putting it on an alcohol standard. This may sound like a huge and impossible task, but with gasoline prices well over $2 per gallon, the means to accomplish it are now at hand. Congress could make an enormous step toward American energy independence within a decade or so if it would simply pass a law stating that all new cars sold in the U.S.A. must be flexible-fuel vehicles capable of burning any combination of gasoline and alcohol. The alcohols so employed could be either methanol or ethanol. The largest producers of both ethanol and methanol are all in the western hemisphere, with the United States having by far the greatest production potential for both. Ethanol is made from agricultural products. Methanol can also be made from biomass, as well as from natural gas or coal. American coal reserves alone are sufficient to power every car in the country on methanol for more than 500 years. Ethanol can currently be produced for about $1.50 per gallon, and methanol is selling for $0.90 per gallon. With gasoline having roughly doubled in price recently, and with little likelihood of a substantial price retreat in the future, high alcohol-to-gasoline fuel mixtures are suddenly practical. Cars capable of burning such fuel are no futuristic dream. This year, Detroit will offer some two dozen models of standard cars with a flex-fuel option available for purchase. The engineering difference is in one sensor and a computer chip that controls the fuel-air mixture, and the employment of a corrosion-resistant fuel system. The difference in price from standard units ranges from $100 to $800. Flexible-fuel vehicles (FFVs) offer consumers little advantage right now, because the high-alcohol fuels which they could employ are not generally available for purchase. This is because there are so few such vehicles that it doesn’t pay gas station owners to dedicate a pump to cater to them. Were FFVs made the standard, however, the fuel they need would quickly be made available everywhere. If all cars sold in the U.S. had to be flexible-fueled, foreign manufacturers would also mass-produce such units, creating a large market in Europe and Asia as well as the U.S. for methanol and ethanol—much of which would be produced in America. Instead of being the world’s largest fuel importer, the United States could become the world’s largest fuel exporter. A large portion of the money now going to Arabs and Iranians would instead go to the U.S.A. and Canada, with much of the rest going to Brazil and other tropical agricultural nations. This would reverse our trade deficit, improve conditions in the Third World, and cause a global shift in world economic power in favor of the West.

# FFV Backlines

## Inherency

#### ( ) Flex fuel infrastructure is woefully under-developed – only 1.5% percent of stations

Bevill ’11

(Kris Bevill, editor of Ethanol Producer Magazine, March 9, 2011, “Infrastructure, FFV expansions needed now, RFA study finds”, http://www.ethanolproducer.com/articles/7558/infrastructure-ffv-expansions-needed-now-rfa-study-finds)

Regarding blender pump and E85 filling stations, the study made clear the inadequate number of current stations and immediate need for infrastructure expansion. It was noted that the EPA has determined that 25 percent of service stations should offer E85 in order to provide FFV drivers with reasonable access to the fuel. The study found that there are approximately 162,000 service stations in the U.S. About 2,200 of those stations offer E85, representing a miniscule 1.5 percent of total service stations. Unless infrastructure is expanded quickly, the study determined that the number of FFVs with reasonable access to E85 will continue to diminish as more FFVs are produced beginning next year.

#### ( ) We’re 10,000 pumps short

Burns ’10

(Stephen Burns, reporter for ICIS, Trusted market intelligence for the global chemical and energy industries, “US needs 10,000 more E85 pumps to support ethanol FFVs-GM”, 16 February 2010, http://www.icis.com/Articles/2010/02/16/9334922/us-needs-10000-more-e85-pumps-to-support-ethanol-ffvs.html)

The US needs its service stations to add another 10,000 pumps capable of delivering the 85% ethanol blend known as E85 to gain public support for the biofuel, officials at car maker General Motors (GM) said on Monday.¶ GM has recently directly helped get 350 additional E85 pumps installed, said Tom Stephens, GM's vice chairman for global product operations.¶ "But it's not enough, not nearly enough," Stephens told a press conference ahead of the National Ethanol Conference in Orlando, Florida.¶ GM officials estimated there are just 2,200 E85 pumps in the nation's 160,000 service stations.¶ Two-thirds of the those pumps are concentrated in 10 states around the midwest corn belt, but only 19% of the flexible-fuel vehicles (FFVs) capable of using E85 are located in those states.¶ Some 90% of FFV owners do not have an E85 retail outlet in their postal code, and nearly half do not have one even in their county – meaning a long drive would be necessary just to refuel.¶ The US ethanol industry has struggled for years with the chicken-and-egg problem of persuading motorists and service-station owners to simultaneously create and supply a market for E85.¶ The challenge is particularly hard away from the ethanol-producing states in the corn belt.¶ The GM officials said the company worked to create a "biofuels corridor" on interstate highway 65, which runs 866 miles (1,397 km) south from Illinois to Alabama.¶ Motorists travelling that route are now never more than 75 miles – or around one-quarter of a tank of fuel – from an E85 pump.¶ But the officials acknowledged that such distances would still be problematic for potential FFV buyers, saying that ideally an FFV owner should live within 2 miles of a service station with an E85 pump.¶ The National Ethanol Conference is sponsored by the Renewable Fuels Association (RFA) and formally begins on Tuesday.

#### ( ) Status quo ethanol infrastructure is insufficient – blend wall

Tyner et al ‘10

Wallace E. Tyner et al, Frank J. Dooley, and Daniela Viteri, Professor in the Department of Agricultural. Economics, Purdue University, December 17, 2010 “Alternative Pathways for Fulfilling the RFS Mandate” http://ajae.oxfordjournals.org/content/93/2/465.short

Total national consumption of gasoline in the United States has been about 140 billion gallons in 2010 and is expected to fall over time due to increasing fuel economy standards (Tyner and Viteri 2010). Thus, at present, if every drop of gasoline were blended as E10, the maximum ethanol that could be absorbed would be 14 billion gallons. In reality, 10% cannot be blended in all regions and seasons. Most experts consider an average blend of 9% to be the effective maximum, which amounts to about 12.6 billion gallons (Tyner et al. 2008). U.S. ethanol production capacity already exceeds this level. Thus, our ability to consume ethanol has reached a limit called the blend wall.This physical constraint is the biggest issue facing the U.S. ethanol industry today. If the current blending limit of 10% is maintained, the ethanol industry cannot grow; indeed, it cannot even operate its existing productive capacity of over 13 billion gallons. That partially explains why about 2 billion gallons of capacity was shut down during much of 2009, and over 1 billion gallons of capacity remains inoperative. It also explains why ethanol prices during much of 2009 were driven mainly by corn instead of gasoline, as it had been previously. The basic economics of the blend wall are depicted in figure 1. Moving from left to right down the demand curve, once the blend wall is reached, the price plummets from the market equilibrium (with subsidy) at P\* to the intersection of the supply curve and the blend wall PBW. Ethanol becomes priced on a breakeven basis with corn. That was the situation in the first three quarters of 2009. Markets picked up in the fourth quarter, as more ethanol can be blended in winter months than summer months due to summer evaporative emissions constraints. However, in spring 2010, ethanol pricing returned to breakeven with corn. Given the fact that gasoline demand is expected to contract due to higher fuel economy standards, the blend wall becomes a severe constraint to future ethanol growth and a barrier to achieving the legislative mandates of the EISA. At present we face two opposing realities: first, the RFS requirements for production of more biofuels each year to 2022; and second, a physical blend wall that does not permit ethanol consumption to grow at all beyond present levels. An ethanol industry support and lobby group called Growth Energy petitioned the EPA to increase the blending limit from 10% to 15%. The EPA has indicated it will rule during the fall of 2010 whether this limit can be increased to 15% after additional vehicle tests are completed. But even increasing the blending limit to 15% will only buy some time (about four years) so long as ethanol remains the primary biofuel.

#### ( ) Not enough flex fuel infrastructure – generates consumer anxiety

Nichols ’03

(Roberta J. Nichols, Ford Motor Company, January-February 2003, “The Methanol Story: A Sustainable Fuel for the Future”, http://werbos.com/Rnichols.pdf)

Introduction of the FCV in the near term favours¶ use of the methanol reformer. Like the dedicated¶ methanol ICE vehicle, it is estimated that 10 per cent¶ of the refueling stations should have methanol¶ refueling pumps in order for the customer to feel¶ comfortable with owning an FCV that uses methanol¶ to store the hydrogen. This would require a major¶ investment by the oil industry. Extensive material¶ changes would be required in the existing gasoline¶ distribution system, in order to accommodate the¶ methanol. But the gasoline technology/system,¶ including the pipeline, could be used, since methanol¶ is a liquid. Also, a desirable synergy would exist,¶ because of the hundreds of thousands of methanol capable¶ vehicles already in the field, with more in¶ line. Eventually, this scenario would get us back to¶ the high-perfomance, high-efficiency, dedicated¶ methanol vehicle.¶ The most desirable solution for the FCV in¶ terms of the most efficiency and least pollution is¶ direct hydrogen storage. Unfortunately, this option¶ would also require the most infrastructure changes¶ with substantiala .~sociated costs. In order to avoid¶ installation of a hydrogen pipeline system throughout¶ the country, one scenario proposed is to use steam¶ methane reformers in the refueling station to produce¶ the hydrogen on-site. The methane would get there¶ via the existing natural gas pipelines. While less¶ costly than a whole new system, each site would cost¶ about ten times more than installation of a methanol¶ pump.¶ In the long run the direct methanol fuel cell¶ (DMFC) shows a lot of promise. In this case, no¶ refom1eris needed.T he methanoli s injected directly¶ into the cell, where the methanol reacts to form¶ electrochemical energy and carbon dioxide. This¶ technology is under development at many research¶ laboratories9, but it lags several years behind the¶ methanol steam reformer FCV. Daimler-Benz,¶ however, recently announced that they have a DMFC¶ in a vehicle that can actually drive down the road.¶ This is a major breakthrough for this technology, and¶ greatly enhances the synergies of methanol as a¶ transportation fuel.

## Climate Change Solvency

#### ( ) Ethanol solves for CO2 emissions

Sandalow ‘8

David Sandalow Assistant Secretary for Policy and International Affairs at the United States Department of Energy 2008 Ending Oil Dependence Protecting National Security, the Environment and the Economy http://a.abcnews.go.com/images/Politics/PB\_Energy\_Sandalow.pdf

Oil is one of Earth’s principal reservoirs of carbon. When oil is burned, this carbon is transformed into carbon dioxide (CO2), which stays in the atmosphere—trapping heat— for more than a century. Today, oil accounts for 42 percent of the world’s energyrelated CO2 emissions (more than coal). Total emissions from oil use are climbing sharply in the United States and around the world. Oil is also a major cause of urban smog and, as a result, of asthma and heart disease. Oil spills have contaminated land and water supplies and damaged marine ecosystems worldwide. When it comes to fighting global warming, not all ways of reducing oil dependence are created equal. Technologies that improve fuel efficiency are best, since all existing fuels produce at least some heat-trapping gases. Ethanol made from cellulose or sugar is a substantial improvement over oil. Ethanol made from corn also helps, though only slightly, since growing corn typically involves substantial fossil fuel inputs. pportunity 08: A Project of the Brookings Institution Ending Oil Dependence 6 Life-cycle emissions of heat-trapping gases from corn-based ethanol are slightly lower than those from oil. Replacing oil with electricity using plug-in hybrid vehicles is also an improvement. The amount of improvement depends on how the electricity is generated. However, even when a plug-in vehicle uses electricity from a conventional pulverized coal plant, emissions of heat-trapping gases are less than from a similar vehicle using an internal combustion engine. The worst fuel from a global warming standpoint—considerably worse than oil—is liquefied coal. Although the global warming impacts of liquefied coal could be partially mitigated if carbon were sequestered at production facilities, the resulting fuel is still rich in carbon. At present there is no way to use liquid coal so that, on a life-cycle basis, it produces fewer heat-trapping gases than oil.

#### ( ) Biofuels are viable and solve for oil shocks and emissions, Brazil proves

Robert B Matthews assistant professor of business administration at Sam Houston State University August 2011 International Business & Economics Research Journal http://www.journals.cluteonline.com/index.php/IBER/article/view/ 5379/5464

As noted above, Brazil gets 50% of its “gasoline” and over 40% of its motor fuels from Biofuels. An equivalent ratio here would mean somewhere between 5 and 6 million barrels per day from Biofuels. That level is clearly achievable, with relatively inexpensive modifications to automobiles to enable flex fuel operations. The US currently gets about 1 million barrels a day from corn ethanol, and further growth expectations for that market are limited. The quickest possibility of a material impact probably lies with sugarcane ethanol from Latin America. Estimates are that as much as 10% of world gasoline usage could be replaced with sugar cane ethanol using current technology (Goldemberg, 2007). Ron Soligo has estimated the potential for sugar cane ethanol from Latin America to be 2.5 to 3 million barrels per day, depending on amount of land dedicated and yields obtained (Soligo and Jaffe, 2008). If the trade sanctions with Cuba were lifted, Juan Tomás Sanchez of the Association for the Study of the Cuban Economy estimates that Cuba alone could supply up to 3.2 billion gallons of ethanol annually (200,000 barrels/day, or 1% of total U.S. energy consumption), while Cuba expert Jorge Hernandez Fonseca projects a more modest production figure around 2 billion gallons per year (Elledge, 2009). The difficulty arises because the current sanctions make the acquisition of accurate information more difficult. Since Cuban sugar production has declined from 44 million tons/year in 1950 to 11 million tons/year today (Zuurbier, 2008), significant upside potential is obvious. These impacts are substantially larger than any other steps under consideration, except perhaps the “drill here, drill now” option. We would still be importing, but it would be from countries that are closer and have more in common than areas in the Middle East and elsewhere in the third world. The existence of a new cash crop in Latin America could dramatically improve their economies, reducing the pressure from illegal immigration, and could also provide farmers with an alternative to marijuana, cocaine, and other plants that are the source of many drugs currently being smuggled into the U.S. Moreover, the ability to use ethanol as a substitute for gasoline would introduce at least some elasticity into the gasoline consumption model, thereby limiting the exposure to oil price shocks in the future. The EPA estimates that use of sugar cane ethanol could reduce greenhouse gas (GHG) emissions by 61%, compared to 21% for corn ethanol (EPA, 2011). Additional ethanol supplies could be obtained from domestic sugar cane and sugar beets. Estimating the potential production from these sources is difficult, but perhaps another 500,000 barrels per day would be possible. That would mean a total of 4 million barrels per day from ethanol, slightly less than the 40% number, but a significant reduction in oil consumption. Additionally, this would enable the installation of significant ethanol infrastructure now, to be in place already when more exotic forms of ethanol, like cellulosic, become commercially viable. Incurring those costs now would actually reduce the commercial viability threshold for the exotic sources of ethanol, as they become available.

## Oil Solvency

#### ( ) A government mandate for flex-fuel vehicles is necessary to reverse oil dependence

Luft ‘8

[Dr. Gal. Exec Dir of the Institute for the Analysis of Global Security. “Sovereign Wealth Funds, Oil, and the New World Economic Order” – Testimony before the House Committee on Foreign Affairs, FDCH, May 2008. Ln]

During the first term of the next president, some 68 million new cars will roll onto America’s roads. In China, the world’s fastest growing auto market, sales of new cars will surpass those in the United States as early as 2015, and in India millions of $3,000 Tata Nano cars will soon begin to flood the bustling streets of Calcutta and Mumbai. Most of these cars will have a street life of roughly 15 years and (barring action by those countries’ leadership) almost all of them will be able to run on nothing but petroleum, locking our future to OPEC and its whims for decades to come. In the words of the International Energy Agency: “We are ending up with 95 percent of the world relying for its economic well being on decisions made by five or six countries in the Middle East.” Avoiding such an outcome should be a top priority for the next administration. Unfortunately, despite the broad agreement by both presidential candidates on the urgent need to reduce petroleum dependence, they both focus on solutions that are politically contentious (like domestic drilling and increasing mandatory fuel efficiency standards) and by and large tactical rather than strategic. The reality is that neither efforts to expand petroleum supply nor those to crimp petroleum demand will be enough to materially address America’s strategic vulnerability. Such solutions do not address the roots of our energy vulnerability: oil’s monopoly in the global transportation sector—almost all of the world’s cars, trucks, ships and planes can run on nothing but petroleum—and the stranglehold of OPEC over the consuming nations’ economies. This cartel, which owns 78 percent of global reserves, produces today about as much oil as it did thirty years, despite the fact that the global economy and non-OPEC production have doubled over the same period. Policies that perpetuate the petroleum standard, doing nothing to address the lack of transportation fuel choice, would therefore guarantee a worsening future dependence on the oil cartel as the relative share of non-OPEC oil reserves and production further shrinks. The new president should therefore declare a strategic goal to break the petroleum standard and replace it with an Open Fuel Standard. This would require that every automobile sold in the United States (and, by extension, throughout the world, since no automaker would give up on the U.S. market) must be able to run on non-petroleum fuels in addition to gasoline. Flexible fuel cars (which cost automakers $100 extra to make and can run on any combination of alcohol and gasoline), electric cars and plug-in hybrids cars (which enable us to use made-in-America electricity) are only some of the solutions at hand. Only through competition at the pump (and the socket) we can drive down the price of oil, reduce its strategic value and curb the transfer of wealth from oil importing countries to OPEC. To bring those solutions to the marketplace in mass would require some presidential signatures, and like everything in life there is some cost involved. But christening more aircraft carriers than would otherwise be needed isn’t cheap either.

#### ( ) Only government support of fueling infrastructure c an break OPEC’s monopoly

Korin ‘8

[Anne. Director of the Institute for the Analysis of Global Security. “Rising Oil Prices, Declining National Security” Testimony before the House Committee on Foreign Affairs, FDCH, 5/22/8 ln]

Every year that passes without Congressional action to ensure that new cars sold in America are flex fuel vehicles is another year in which 17 million gasoline-only cars start their 17-year life on U.S. roads, further binding us to foreign oil. On the grounds of national security and in the interest of stemming the hemorrhaging of our economy, Congress should take swift action to require that new vehicles sold in the United States are flexible fuel vehicles. Such an Open Fuel Standard would level the playing field and promote free competition among diverse energy suppliers. Choosing not to embrace an Open Fuel Standard, is choosing to preserve oil’s monopoly in the transportation sector, and with it OPEC’s growing stranglehold over the global economy.

#### ( ) The plan is a fast and durable way to generate fuel competition – it collapses oil

Gaffney ‘8

[Frank, founder, president, and CEO of The Center for Security Policy, "'Unavoidable' Choices?," Washington Times, http://frontpagemag.com/Articles/Read.aspx?GUID=DA7067E2-F985-47AE-AB90-63251208978C)

We also must do something meaningful and effective about what President Bush has rightly called "our addiction to oil."¶ Fortunately, there is a **practical, near-term and low-cost** **way** to begin dramatically reducing our dependence on oil imported from places that wish us ill: "**fuel competition**." This alternative to our present, near-exclusive reliance on a commodity controlled by a cartel can be achieved by creating an infrastructure that will permit our transportation sector (where we use most of our imported oil and use it most profligately) to use instead "Freedom Fuels" — namely, **ethanol and methanol that we can produce here at home or import cost-effectively from friendly countries.¶ How** can we obtain such an infrastructure? Simple: **By adopting an Open Fuel Standard that requires every new car sold in America to have** not only seat-belts and air bags but **Flexible Fuel Vehicle** (FFV) **capability**. An FFV can use ethanol or methanol or gasoline (or some combination) thanks to a chip and some plastic fittings in the fuel system. Today, these cost a trivial $100 per car. When in three years time, 50 million American cars have this feature (and another 50 million to 100 million overseas), **the marginal additional cost will probably be zero**.¶ Not surprisingly, excitement is beginning to develop all over the country as more and more Americans discover the technology is available, here and now (there already are 6 million FFVs on our highways). They are empowered by the opportunity FFVs present to do something real about our vital transportation sector's strategically and economically reckless reliance on oil. Best of all, this is not a big government program deciding which of the various alcohol fuels from sources as diverse as algae, kudzu, coal and trash will be "winners" or "losers." Fuel competition means market forces, not bureaucrats, will decide.¶ **With the exception of a few vocal libertarians** (whose opposition in this instance to competition and market-based decision-making seems inexplicable, not to say bizarre), **the idea of fuel competition seems to be one upon which we can all agree**.¶ If we wish to avoid in our own land the unsavory fate of enslaved nonbelievers ("dhimmis") under Shariah, **we had better hope the adoption of the Open Fuel Standard is recognized as "unavoidable" — and soon.**

## Fueling Infrastructure Key

#### ( ) The tech is there – creation of 12,000 more refueling stations for FFV’s is key to make them commercially viable

Woodall ’10

(Bernie Woodall, Reuters, “Corrects spelling of GM executive's name to "Stephens" on every reference, corrects gallon-to-liter conversion rate”, Feb 16, 2010, http://www.reuters.com/article/2010/02/16/us-gm-ethanol-idUSTRE61F1OQ20100216)

Half of GM's vehicle lineup will be able to run on a mix of 15 percent gasoline and 85 percent ethanol, called E85, by the 2012 model year, said Stephens, GM's vice chairman for global product operations.¶ "GM is spending about $100 million a year adding flex-fuel capability to our vehicles. We can't afford to leave this capital stranded," Stephens said in a speech on Tuesday at the Renewable Fuels Association conference.¶ A copy of the speech was provided to reporters on Monday.¶ Adding the capability to run on E85 costs adds as much as $70 to the production cost of each vehicle, Stephens said.¶ GM has produced 4 million of the 7.5 million flex-fuel vehicles on U.S. roads now, said Coleman Jones, GM biofuel implementation manager.¶ Stephens said GM has worked with the National Governor's Association and ethanol producers and dispensers to add 350 more ethanol-blend pumps in the United States. He said GM would welcome federal government assistance to finance expansion of that network, but he offered no specifics on how that would work.¶ "Today there's 2,200 (ethanol fuel stations) that are out there but that's not enough," said Stephens.¶ "Two-thirds of the pumps are concentrated in 10 states and those 10 states have only about 19 percent of the flex-fuel vehicles that we have on the road," said Stephens. "That's a big problem for us."¶ Those 10 states are all in the Midwest, heart of corn production in the United States. Corn is the dominant source of U.S.-produced ethanol.¶ Stephens said there are about 160,000 U.S. gasoline stations, and there need to be 12,000 or more ethanol stations "to have ethanol fuel available for every one of our customers within about 2 miles of where they live. So, we've got some work to do there to get the additional 10,000 pumps in."¶ Ethanol-gasoline blends emit less polluting carbon dioxide than conventional gasoline and are mainly produced domestically.¶ Energy legislation passed by the U.S. Congress in 2007 set binding targets for fuel blending each year. Ethanol use is to rise to about 20.5 billion gallons by 2015 and 35 billion gallons by 2022 from 4 billion gallons in 2006 and almost 13 billion gallons in 2009.¶ One gallon of liquid equals 3.7854 liters.¶ The U.S. Environmental Protection Agency has said that ethanol-gasoline blends must increase the ethanol portion to much higher than the current limit of 10 percent and increase use of other sources of ethanol than corn, such as switchgrass and landfill and farm waste.¶ (Reporting by Bernie Woodall; Editing by Hans Peters)

#### ( ) Lack of FFV infrastructure has slowed commercial development

Keefe et al. ’8

(Ryan Keefe†,\*, James P. Griffin†, John D. Graham‡, 5 Aug 2008, “The Benefits and Costs of New Fuels and Engines for Light-Duty Vehicles in the United States”, Risk Analysis, Volume 28, Issue 5, pages 1141–1154, October 2008, http://onlinelibrary.wiley.com/doi/10.1111/j.1539-6924.2008.01099.x/full)

A major obstacle to greater use of E85 has been the lack of availability of E85 at refueling stations.(51) Only about 1,000 of the 170,000 fueling stations in the United States, most of them in the Midwest, have E85 pumps for motorists. In 2005, Congress made fueling stations eligible for a tax credit through 2010 that equals up to 30% of the cost of installing E85 refueling stations (with a cap of $30,000). Congress is now considering additional legislation that would force or encourage more E85 pumps at refueling stations.¶ In order to appreciate the public policy interest in ethanol, it is necessary to acknowledge why some politicians support it: they see ethanol as a vehicle to stimulate economic development in the corn states, not just as a measure to promote energy security and protect the environment.(52) A clear indication of this distributional concern is that some of the U.S. demand for ethanol could be met by importing more of it from Brazil, where vast amounts are made from sugarcane at low cost. But Congress has retained a 54 cent per gallon tariff on imported ethanol from countries such as Brazil, despite a request from President Bush to advance consumer interests by removing the tariff.

#### ( ) Infrastructure development is necessary to generate industry momentum

Dolan ’12

(Gregory Dolan, CEO of Methanol Institute, March 7, 2012, Amendment Support Letter, http://www.methanol.org/About-Us/Association-News/MI-OFS-Ammendment-Support-Letter.aspx)

One of the greatest challenges facing technologies that hope to improve the aged transportation industry is the chicken-and-the-egg conundrum of fuel station owners not wanting to install a pump or charging station when so few vehicles are available and automakers claiming that the cars are useless when not enough refueling stations exist. When alternative vehicles are put on the road, fueling station owners are incentivized to install pumps and chargers to meet the growing demand for these fuels – and putting vehicles in consumers’ hands is the first part of that puzzle.¶ Ford and other Detroit automakers pioneered methanol FFV technology in the United States over 20 years ago and put thousands of these vehicles on the roads before abruptly closing the door on these efforts due to a quick decline in gasoline costs – a scenario Americans have suffered through numerous times when innovation is cut short because OPEC allows prices to fall for a few months.¶ General Motors Vice Chairman Tom Stephens said it best in a keynote presentation: while in fact a paltry 4% of vehicles on the road today are flex fuel vehicles, 90% of FFV owners do not have an E85 pump in their zip code and more than 50% do not have a pump anywhere in their county. Automakers would like to see more alternative fueling stations deployed too, but they are not willing to produce more alternative fueling vehicles unless they are allotted a larger CAFE Standards loophole so they can avoid increasing vehicle efficiency. More specifically, automakers should actually be asked to live up to their promise to Congress to produce 50% of their vehicles as FFVs by 2012 – a promise they will fall woefully short of because it is not being enforced; a promise made to Members of Congress while they sought an immense government bailout.¶

#### ( ) Infrastructure is key to generate market saturation for FFVs

Cook ’10

(Chantal Cook, Capital News Service, “State needs more E85 pumps”, February 26, 2010, http://capitalnewsservice.wordpress.com/2010/02/26/state-needs-more-e85-pumps/)

For ethanol to become the fuel of the future, it has to start at the pump.¶ General Motors Vice Chair, Tom Stephens said more ethanol gas pumps are needed to keep supplying flexible fuel vehicles for drivers.¶ Stephens noted that the majority of flex fuels, which use E85, are in populous regions on the East and West coasts, but the majority of E85 pumps are in the Midwest. E85 is 85 percent ethanol and 15 percent gasoline.¶ Around 90 percent of all registered drivers who own flexible fuel cars don’t have ethanol pumps in their ZIP code and half of them don’t have ethanol pumps in their county, he said.¶ In Michigan, 99 E85 fueling locations were reported as of October 2009.¶ Tom Welch, of the U.S. Department of Energy, agrees that more ethanol pumps are needed around the country.¶ “The supply needs to catch up with the demand,” Welch said© 2010, Capital News Service, Michigan State University School of Journalism. Not to be reproduced without permission.

#### ( ) Lack of infrastructure is the biggest barrier to adoption of bio fuels

Kocoloski et al ‘10

[Matt Kocoloski et al W. Michael Griffin H. Scott Matthews, Department of Engineering and Public Policy Carnegie Mellon 15 October 2010 Impacts of facility size and location decisions on ethanol production cost http://www.sciencedirect.com/science/article/pii/S0301421510006646]

However, there are some obstacles cellulosic ethanol must overcome before it can gain widespread use. One of the primary obstacles involves the infrastructure required to produce and distribute it on a large scale. Cellulosic ethanol refineries are capital intensive, with large facilities (having capacities greater than 50 Mgal/year) expected to have a capital cost of $5–6 per gallon capacity in the short-term (Hamelinck et al., 2005), falling to around $3 per gallon capacity for a mature industry ( [Aden and Ruth, 2002] and [Wooley and Ruth, 1999]). These capital cost requirements are significantly larger than those for corn ethanol, estimated to be $1–3 per gallon for new construction and around $0.2–1 per gallon for capacity expansion ( [Shapouri and Gallagher, 2005] and [McAloon and Taylor, 2000]). These capital costs make it imperative that facility investment and location decisions be made wisely, because suboptimal investment decisions could incur significant costs. Transportation infrastructure, required for shipment of both biomass feedstocks to the refinery and ethanolfrom the refinery, may also present a significant challenge. Ethanol is largely compatible with the current fuel infrastructure, but cannot be transported in petroleum production pipelines due to the presence of water and potential corrosion issues (American Petroleum Institute, 2003). Resulting shipping requirements for national ethanol distribution are estimated to be greater than comparable requirements for petroleum (Morrow et al., 2006a), though distribution costs could be reduced through regional ethanol distribution (Wakeley et al., 2009). Furthermore, transporting the feedstocks required to produce 10 billion gallons ofethanol annually (meeting less than 5% of annual fuel demand, by energy) would require the addition of roughly 5000 trucks to road networks already experiencing congestion problems, or roughly 3500 rail cars to already stressed rail networks. Thus, infrastructure requirements may prove to be significant obstacles to cellulosic ethanol development and production. This study examines the importance of cellulosic ethanol refinery investment decisions, addressing the impacts of both facility size and location on the overall cost of cellulosic ethanol. Larger facilities tend to increase transportation costs, since they need to draw feedstocks from a wider area and transport ethanol to more distant locations, but they also take advantage of economies of scale, decreasing the per-gallon capital costs of facilities. These tradeoffs have been studied previously ( [Aden and Ruth, 2002], [Gallagher and Brubaker, 2005] and [Nguyen and Prince, 1996]), but for individual plants without considering ethanol transportation cost. Facility location has been previously modeled using sequential plant-siting algorithms ([Aden and Ruth, 2002], [Noon and Daly, 1996] and [Sheehan and Aden, 2003]), but there may be benefits to coordinating facility location prior to construction. Furthermore, there may be social, political, or other factors influencing individual private facility placement decisions that drive up the production cost of the entire system, and the potential costs of those influences are studied here. A mixed-integer programming model is developed to optimize cellulosic ethanol infrastructure investments for single and multi-state regions. Cellulosic feedstock availability varies significantly throughout the United States, suggesting that regional fuel policies may have some advantages over a homogeneous national level policy and that regional modeling of biofuel production and distribution can help inform and shape those policies. By identifying facility placement strategies that decrease total cost, and quantifying those benefits, this study can help inform policy decisions regarding the implications of cellulosic ethanoluse.

#### ( ) Lack of AFV stations is the biggest barrier to adoption, government agencies prove

Sevgi Erdoğan , and Elise Miller-Hooks Department of Civil and Environmental Engineering, University of Maryland September 9 2011 A Green Vehicle Routing Problem http://www.sciencedirect.com/science/article/pii/S1366554511001062

The US currently has energy policies in place with the aim of reducing fossil-fuel use so as to reduce GHG emissions, break dependency on foreign oil, increase homeland security and support renewable energy use (e.g. the [Energy Policy Act, 1992], [EPAct, 2005], [EO 13423, 2007] and [Energy Independence and Security Act, 2007]). These policies have led to the creation of regulations, mandates, tax incentives, etc. that motivate or require companies and agencies to use AFVs. In fact, federal agencies with a fleet of 20 motor vehicles or more are required to reduce petroleum consumption by a minimum of 2% per year through the end of fiscal year 2015 from the 2005 baseline usage. These agencies are required by executive order toincrease their alternative fuel use by 10% per year relative to the previous year (EO 13423, 2007). This executive order replaced an earlier order (EO 13149, 2000) requiring a 20% reduction in petroleum use by 2005 in comparison to base year 1999. The replacement was needed, because no EPAct-covered agency could meet the reduction goal due to insufficient alternative fueling infrastructure. Federal fleets are also required to maximize use of diesel with biodiesel blends (B20) by replacing medium- and heavy-duty gasoline vehicles with diesel vehicles that can use such biodiesel blends. This requirement applies to agencies at locations where there is sufficient B20 infrastructure (current or planned). In addition, the US DOE sponsors a program called Clean Cities (US DOE, 2011a) with over 100 local coalitions to support reduction in petroleum use in the transportation sector. Agencies consider numerous factors in the selection of a particular vehicle type, including fuel availability and geographic distribution of fueling stations in the service area, vehicle driving range, vehicle and fuelcost, fuel efficiency, and fleet maintenance costs. The lack of a national infrastructure for refueling AFVs presents a significant obstacle to alternative fuel technology adoption by companies and agencies seeking to transition from traditional gasoline-powered vehicle fleets to AFV fleets (Melaina and Bremson, 2008). In fact, approximately 98% of the fuel used in the federal government’s 138,000 AFV fleet (of which, 92.8% in 2008 are flex-fuel vehicles that can run on gasoline or ethanol-based E85 fuel) continues to be conventional gasoline as a result of a lack of opportunity for refueling using the alternative fuel for which the vehicles were designed (US DOE, 2010). Moreover, existing alternative fueling stations (AFSs) are distributed unevenly across the country and within specific regions. Additional operational challenges exist as a result of the reduced driving range of most AFVs.

#### ( ) Refueling station expansion is key

Zhao and Melaina ‘6

[Jimin Zhao and Marc W. Melaina School of Natural Resources and Environment, University of Michigan and Institute of Transportation Studies, University of California Davis 2006 “Transition to hydrogen-based transportation in China: Lessons learned from alternative fuel vehicle programs in the United States and China” http://www.sciencedirect.com/science/article/pii/S0301421505003459]

The limited number of refueling stations for alternative fuels has been a major obstacle to the global advancement of AFVs. An entire refueling infrastructure and auto-manufacturing system dedicated to gasoline vehicles has dominated the industry for nearly a century. While refueling stations for gasoline and diesel are densely distributed throughout most of the UnitedStates, the number of refueling stations for AFVs is sparse. In early 2005, the number of alternative refueling stations reported by the DOE totaled approximately 5000, with 63 percent being LPG stations, 16 percent natural gas, 12 percent electric and 4 percent ethanol (EERE, 2005). These numbers compare poorly to the roughly 160,000–170,000 conventional gasoline refueling stations scattered across the country.12 Owners of AFVs, therefore, are often faced with inconvenient local refueling and limited driving ranges for long-distance trips. These same inconveniences can also be expected in China, where 80,000 gasoline stations serve a total of 24 million vehicles, resulting in a station-to-vehicle ratio roughly five times that found in theUnitedStates.13 The situation may be even worse in China, due to less attention to and the high cost of alternative fuel infrastructure. When the Clean Vehicle Action program started in 1999, some local governments paid more attention to the conversion of CNG/LPG vehicles and paid little attention to the availability of high-quality gas and the construction of gas stations.14 Some cities found that there were no refueling stations available after they converted their gasoline vehicles to LPG or CNG. As the number of LPG/CNG vehicles increased, more refueling stations were eventually built for LPG and CNG vehicles. A chicken-and-egg situation prevails here. Because of the insufficient number of AFVs in the nation's vehicle fleet, fuel providers are reluctant to provide capital-intensive facilities to refuel them, while consumers are reluctant to buy vehicles for which no refueling infrastructure exists (Sperling, 1988; Melaina, 2003). For example, the cost of natural gas dispensing equipment in the US is about $300,000—significantly more than the cost of refueling equipment for gasoline, ethanol, or methanol (GAO, 2000). The construction of a CNG station in China is also capital intensive, about 3 million yuan ($400,000), due to the high cost of key imported equipment, such as desulfurizing equipment and high-quality compressors for natural gas.

#### ( ) Major companies will create the vehicles if infrastructure exists

Alan Taub VP for Global Research & Development at GM 2012 Energy Quarterly http://journals.cambridge.org/action/displayFulltext?type=6&fid=8511557&jid=MRS&volumeId=37&issueId=03&aid=8511556&fulltextType=XX&fileId=S0883769412000632

Betting that the infrastructure will come as well as advanced biodiesel and bioethanol fuels, we chose to start making our fleet biofuel-compatible and now lead the industry. Our flex-fuel vehicles in Brazil and the United States can run with 100% and with 85% ethanol fuels, respectively. There are some extra challenges in doing that, including engine modifications, owing to both wear of the engine and corrosion issues. At this point, the industry, and GM in particular, is prepared for the move to biofuels. The next question is how do we do it in such a way that the infrastructure and the vehicle fleet move in tandem and do it consistently around the world? We are betting that both the biofuel infrastructure and particularly the development of advanced biodiesel and cellulosic bioethanol will come. And there will be issues around fuel quality that we’ll have to work with the energy suppliers to handle.

## AT//States

#### ( ) Empirically, state action on fuel efficiency fails – the fed is key

UCS ‘4

[The Union of Concerned Scientists. 24 Feb 04. [www.uscusa.org](http://www.uscusa.org)]

If improving fuel economy makes so much sense, why aren't automakers doing it already? Automakers have a history of not incorporating cost effective technologies that benefit consumer safety and the environment until they are required to do so. As a result, government has had to step in to protect consumers by setting safety, fuel economy and emissions standards. One of the most recent in a line of examples is the air-bag that is now required in all new vehicles - automakers resisted this technology even in the face of clear demonstration of its safety benefits and calls from consumers for safer vehicles.

#### ( ) More evidence – only federal action forces automakers to comply

Doyle 2k

[Jack. Director of Corporate Sources. Taken for a Ride, 2000, Pg 452-3]

If there is a lesson in the long and tortured clean-car fight, it is one of countervailing power, and why a government presence and outside pressure are important, indeed essential in moving the auto industry forward. In the US, the Big Three have been quick in recent years to use the "command and control" pejorative to demean government regulation, offering in its place "voluntary initiatives" and "government industry collaboration." Yet the record in this industry, as troubled as it is still, suggests things would be much worse without the deadlines and regulations that have so far been put into law. The outside mandates have helped save the American auto industry from complete economic disaster, pushing it to innovate. "Much as I hate to admit it," said Chrysler's Charlie Heinen, director of vehicle emissions in the late 1970s, "the EPA accelerated the pace at which we studied combustion. The knowledge we've gained is important, whether applied to emission control or fuel economy." Henry Ford II also admitted the law was the spur. "We wouldn't have the kinds of safety built into automobiles that we have unless there had been a federal law. We wouldn't have had the fuel economy unless there had been a federal law, and there would not have been the emission control unless there had been a Federal law."24 Outsiders--ranging from the National Academy of Sciences to journalists who have taken up residence inside one or more of the automakers for periods of time--have said the same thing: laws and regulations have, on balance, been a good thing for Detroit. "[P]ractically every recent move by US automakers to adopt advanced features--lightweight metals, high-strength plastics, electronic ignition management devices--can be traced to the influence of government regulations," concluded Massachusetts Institute of Technology analysts C. Kenneth Orski, Alan Altshuler, and Daniel Roos.

#### ( ) The counterplan causes auto-maker uncertainty – patchwork regulations ensure they cannot solve our market transition internal link

Welch ‘2

[David. Staffer for Bloomberg BusinessWeek. “Clean Air Standards: An End Run around Washington” Bloomberg Business Week 5/19/2 ln]

Detroit was blindsided. Expecting an assault of environmental legislation from Washington this spring, the auto industry dispatched troops of lobbyists to the banks of the Potomac to make a stand, successfully defeating a push for stricter national fuel-economy standards. But the real threat came from the other coast. After environmental lobbyists worked their own contacts in California, the state senate approved a bill on May 2 that would force auto makers to sell cleaner, more fuel-efficient cars in the state by 2008. "I was elated," says Sierra Club Executive Director Carl Pope. "This was such a sharp contrast from how Congress has reacted to environmental legislation." The California battle isn't over yet: The state assembly still needs to approve a final version of the measure, and Governor Gray Davis hasn't indicated whether he'll sign it. But if--as expected--the environmental lobby wins this skirmish, it may ultimately prove just as significant as a victory in Washington would have. Why? California is the only state that can create clean-air standards, since its laws predate federal regulations. But other states have the option of adopting California's rules. So the environmentalists plan to take the same legislation to like-minded Northeastern states and then deeper into the heartland, ultimately targeting key states such as Texas and Florida. "We have accepted the fact that environmental leadership is not coming from Washington," Pope says. "We will focus on consumers and the states." It's a strategy that could work--and that has Detroit hopping mad. After defeating the federal measure that would have required auto makers to boost fuel efficiency in March, the industry thought it had wrapped up the issue. Now, though, Detroit may have to wrestle with the environmentalists in state capitals. In the past, California's clean-air and low-emissions laws have gotten a warm reception in New York and New England, where legislators have adopted California's existing limits on carbon monoxide, smog-causing nitrous oxide, and soot from cars. "Our biggest fear is that this becomes the battle we already fought and won at the federal level," says Gregory J. Dana, vice-president of environmental affairs for the Alliance of Automobile Manufacturers in Washington. That's likely to happen, which could ultimately bring the battle right back to Washington. Since the auto industry doesn't want the stricter California standards adopted state by state, it might agree to somewhat tougher federal fuel economy and emissions laws. Says one General Motors Corp. insider: "We can't have 50 different states telling us how to build cars. That would be chaos." And that's exactly what the environmental lobby is counting on.

#### ( ) Federal action is popular with automakers and doesn’t link to politics – state action does

Abuelsamid ‘8

[Samuel. Auto Industry News Analyst for AOL. “Ford’s Mark Fields wants more Flex-Fuel, Less California Regulations” 4/30/8 www.autobloggreen.com]

Ford's President of the Americas, Mark Fields, wants the company to build more E85 capable flex-fuel vehicles but he doesn't want to have to deal with state level fuel economy or carbon dioxide regulations. The former should be no surprise as every car and truck so equipped gets a credit of 1.2mpg towards its mileage rating. Fields also wants to see mileage mandates done at a national rather than at the state level. Like other car-makers, Ford's issue is apparently not so much with having to meet whatever mandate is enacted. They just don't want to do the paperwork and testing repeatedly for potentially dozens of states. Fields hasn't said where Ford stands relative to meeting the new CAFE rules but it's a safe bet that new Ford products will probably be coming with wider tracks and longer wheelbases to increase their footprint. As a result they will have a lower mileage standard to meet. Ford's upcoming EcoBoost engines will also be getting flex-fuel capability to help meet the new rules.

#### ( ) State action causes the auto industry to resist the plan

DeShazo and Freeman ‘7

[J. Prof of the Lewis Center for Public Affairs at UCLA. And Jody – Prof Environmental Law at Harvard. “Timing and Form of Federal Regulation: The Case of Climate Change” The Univ of Pennsylvania Law Review, 2007 ln]

The current set of state initiatives is likely to unnerve industry. This is because of the apparent seriousness of a few states about reducing emissions, the targeting of products like fuels and automobiles, the complexity of the state initiatives when considered cumulatively, and the uncertainty about potential state efforts to come. As described above, n116 a few states have actually established GHG reduction targets and delegated real authority to the implementing agencies to regulate both the electricity and transportation sectors. Affected industries may also be impressed by the sheer range of policy approaches adopted by the states. Within the electricity sector, [\*1531] states aspire to regulate the mix of energy generation and total utility emissions, as well as the design of new and retrofitted power plants. n117 Within the transportation sector, California seeks to regulate the fuel content and emissions technologies of automobiles, with other states poised to follow suit. n118 Across both sectors, a number of states seek to induce firms to participate in new types of markets such as trading carbon and renewable energy credits. n119 Firms operating in multiple states may well find that the states are adopting different approaches to achieve the same objective, making compliance confusing and potentially costly. Even within a given state's program, there are often uncertainties about how implementation will operate. These include matters such as which offsets will be acceptable to state oversight agencies, what the timetables for compliance will be, when utilities will be permitted to participate in either carbon or renewable energy credit trading, and what prices will be in these markets, among other things. This makes it difficult to plan for new plant construction, plant expansions and retrofits, product expansion into new consumer markets, and compliance in current markets. To date, firms within the transportation sector have fared relatively better than those in the electricity sector, but they are appropriately concerned about what states might do in the future. This sector contributes nearly one-third of domestic GHG emissions. Although California is the only state that has attempted to regulate both tailpipe emissions and fuel content, there are signs that other states are not far behind. n120 In sum, the nature and variety of the state initiatives, whether intentionally or not, have created substantial uncertainty in a context in which firms must make long-term capital investments, and have raised the prospect of costly product differentiation because of heterogeneous schemes. These are precisely the circumstances under which, consistent with DPT, we would expect industry anxiety to be at its peak.

#### ( ) This is offense for the aff – federal action inspires a regime of regulatory *certainty*

DeShazo and Freeman ‘7

[J. Prof of the Lewis Center for Public Affairs at UCLA. And Jody – Prof Environmental Law at Harvard. “Timing and Form of Federal Regulation: The Case of Climate Change” The Univ of Pennsylvania Law Review, 2007 ln]

Industry pressure for a federal standard may also mount when regulatory uncertainty, induced or exacerbated by inconsistent state activity, produces significant costs, even in the absence of direct product regulation. n25 This is more likely to be the case when firms are preparing [\*1510] to make substantial long-term capital investments in the context of confusion about the short-term regulatory playing field. n26 This uncertainty is likely to be especially pronounced when it arises simultaneously at the state, national, and international levels. With so much in flux and so much at stake, both domestic and multinational firms will want clarity sooner rather than later. States can increase regulatory uncertainty in this way either by taking action alone or by joining together with other states in regional compacts. Moreover, because states will be responding to somewhat different interest group configurations within their own jurisdictions, there is a high likelihood that different states will adopt different regulatory approaches. This practically ensures inconsistency and helps drive industry to Congress. At the same time, some states are likely to be more important than others in provoking this reaction. Historically, California seems to have been especially influential in prompting industry demand for federal uniformity, perhaps because of the state's disproportionate market power n27 and history of engaging in product regulation targeting automobiles. n28 We emphasize that both of the precipitating factors discussed so far - product regulation specifically and regulatory uncertainty generally - are factors that states can affect through their initial decision to regulate and through their choice of which regulatory approaches to adopt. Moreover, states presumably can build additional demand for federal regulation by motivating the industries that benefit from state regulation (e.g., substitute products industries n29) to appeal to Congress [\*1511] for additional financial transfers. Firms that are in a position to benefit from regulation always can be expected to lobby for rents; state regulation could prime them to do so at the federal level. Such firms might seek federal action either to lock in or to build on gains achieved through state regulation. This is likely to happen in at least three circumstances: (1) when federal regulation can deliver more of the same kinds of benefits; (2) when federal regulation can lock in benefits gained at the state level; and (3) when some of the anticipated benefits of the state initiatives are at least partly contingent on federal regulation. n30 There is strong empirical evidence to support the predictions of DPT. n31 First, many environmental statutes do in fact feature federal ceilings and preemption clauses that prohibit states from adopting different standards. n32 The evidence suggests that a surge in state regulation [\*1512] frequently precedes industry demand for federal regulation, n33 and that even relatively few states can trigger a defensive industry response. n34 The history of the auto industry's reaction to state-level regulation provides perhaps the best evidence for the defensive preemption thesis. n35 Congress passed the Motor Vehicle Pollution Control Act of 1965 at least partially in response to industry fears about stringent regulation in California - which had already set state emissions standards - and a handful of other states that were close behind. As previously noted, the automobile industry had become extremely concerned about the possibility of complying with disparate state standards. n36 So, while publicly opposing federal air pollution legislation, the industry privately supported federal standards that would preempt the states n37 and pushed for more explicit preemption provisions in the 1967 Air Quality Act. n38 Ever since, Congress has consistently sought to calm the automobile industry's anxiety about state-level regulation that could require different cars for different markets. n39 For example, Congress preempted [\*1513] states from setting fuel economy standards in the Energy Policy and Conservation Act of 1975, reserving that power to the National Highway Traffic Safety Administration. n40 Having lost the battle to prevent California from retaining the power to exceed federal standards, the auto industry sought to limit any remaining potential for disparate state regulation. To do this the industry has appealed not to Congress but to the courts: the auto companies have consistently sought to block other states from adopting standards that are not "identical" to California's, on the ground that disparate standards would force the automakers to produce a "third car" in addition to the two (one federal, one Californian) that the Act already permits. n41

# \*\*\*Oil Advantage Backlines

## Low Oil Prices Good

#### ( ) Prices already below $100/barrel

Smith 7-23

[Grant. Staffer for Bloomberg Business Week. “Oil Drops Most in a Month as European Debt Turmoil Intensifies” Bloomberg, 7/23/12 ln]

Oil plunged the most in a month in New York amid renewed concern that Europe is failing to resolve its sovereign debt crisis.¶ Futures for September delivery tumbled as much as 4.2 percent as the euro dropped to an 11-year low against the yen and the cost of insuring Spanish debt surged to a record. International creditors meet in Athens tomorrow as concern grows that Greece may not meet its bailout targets. Spain’s stock- market regulator banned trades to “constitute or increase net short positions on shares.”¶ “The continuing saga of the euro, and in particular the travails of Spain and fears that this will soon be played out in France and Italy, is driving today’s sell-off,” said Christopher Bellew, senior broker at Jefferies Bache Ltd. in London, who predicts further price losses may be limited.¶ Crude for September delivery fell as much as $3.82 to $88.01 a barrel in electronic trading on the New York Mercantile Exchange and was at $88.24 at 1:46 p.m. London time. Today’s 4.2 percent drop is its biggest intraday loss since June 21. Prices are 11 percent lower this year.

#### ( ) Low oil prices pressure Iran and Venezuela

 SAMUEL R. AVRO, Founder & Sr. Editor of Consumer Energy Report, JAN 18, 2009

“CIA: Low Oil Prices Place Pressure on Iran, Venezuela”

<http://www.consumerenergyreport.com/2009/01/18/cia-low-oil-prices-place-pressure-on-iran-venezuela/>

Major oil producers such as Iran and Venezuela will come under extreme economic pressure if the current low prices in the crude oil market remain for a while, says CIA Director Michael Hayden. Hayden believes that crude oil prices in the $40 range could eventually bring out the disgust of the Iranian public against the current regime which may then lead to destabilization and perhaps a halt to their nuclear program. The regime of Hugo Chavez in Venezuela, a fierce ally of Iran and a U.S. foe in its own right, will also come under pressure if the current oil prices hold. “It removes a buffer that will cause the natural stressors in Iranian society to become more pronounced,” he said. Due to the oil woes, Ahmadinejad’s power may face “real challenges here, when you combine it with inflation and the fact that they’re having an upcoming presidential election.” Separately, the Iranian Oil Minister himself declared that his country predicts that oil prices will hover at the $40 mark in 2009. “In the opinion of the Oil Ministry, taking into account predictions by various international institutes, the anticipated oil price in the year 2009 will be around $40,” Oil Minister Gholamhossein Nozari said. He said that the government was told by his ministry to set the price of oil at that amount in its upcoming 2009-2010 budget. Recent protests in Venezuela against the Chavez regime have been dealt with harshly. Chavez ordered his police to use tear-gas to break up an anti-government protest in Caracas on Saturday. “Interior Ministry, spray them with gas and dissolve any disturbance. We cannot begin showing weakness as a government,” Chavez said. Venezuelans will vote next month on a proposed change to the constitution that would allow Chavez to seek re-election when his term ends in four years. The upcoming vote has seen opponents of the regime take to the streets in an effort to have their voices heard. Most times, as was the case on Saturday, they’re silenced by the police with force. Chavez has come crawling back to the major U.S. oil companies, practically begging them to re-invest in his country’s oil deposits. The oil companies were originally forced out by Chavez in a bid to nationalize his country’s oil and to strike down the “U.S. Empire”. With oil prices falling 70% from its record high set in July, and Venezuelan output on the decline, he is now asking for those same companies to invest their money with him. Venezuela has an estimated 235 billion barrels of “recoverable” crude reserves — even more than that of Saudi Arabia.

#### ( ) Low oil prices hurt Venezuelan government

AP, Associated Press – Sat, Jun 9, 2012

“Chavez: Venezuela concerned about lower oil prices”

<http://finance.yahoo.com/news/chavez-venezuela-concerned-lower-oil-002010940.html>

CARACAS, Venezuela (AP) -- Venezuelan President Hugo Chavez says his government is concerned some fellow OPEC member countries are violating their quotas by producing too much oil. Chavez says Venezuelan Oil Minister Rafael Ramirez will bring up those concerns at next week's OPEC meeting in Austria. Chavez didn't name any countries he thinks are exceeding production quotas. But Saudi Arabia, for one, has been pumping more oil to offset supply losses from Iran. The price of U.S. benchmark crude ended the week at $84.10 a barrel in New York, near its lowest level since October. Chavez says OPEC members should maintain what he calls a "fair level" of oil prices. He says that should be about $100 a barrel. Chavez's socialist government relies heavily on the country's oil earnings to pay for public programs.

#### ( ) High oil prices cause Venezuelan economic independence – low oil prices cause bankruptcy

Jasmina Kelemen March 16, 2011 “Low gas prices plague Venezuela” <http://articles.marketwatch.com/2011-03-16/industries/30810691_1_gasoline-prices-price-hike-venezuela>

CARACAS — As US officials consider tapping the country’s strategic oil reserves to lower gasoline prices, analysts say a price hike is what Venezuela needs to wean itself from a consumer addiction that threatens to bankrupt this oil-driven economy. “It’s criminal how cheap [gasoline] is,” said Gonzalo Ibarra as a gas station attendant fills up his shiny silver Mercedes Benz for less than a dollar. “I pay more for the tip than the gas.” The 64-year old lawyer is in no need of a government handout but as a wealthy car owner is one of the biggest beneficiaries of a gasoline subsidy that’s costing the state’s economy at least $1.5 billion in revenue even as it struggles to recover after two consecutive years of loss. Mr. Ibarra is unusual in that he says he would welcome a price hike but doesn’t believe President Hugo Chavez, who is facing an election next year, could pull off such a feat in a nation where cheap gasoline is considered a birthright. “It’s a very delicate matter.” http://articles.marketwatch.com/images/pixel.gif Gasoline in Venezuela costs about 12 cents a gallon, well below the $4 a gallon or more paid in most of the industrialized world. Chavez was no doubt weighing all of these factors when he took to the airwaves recently to lecture the nation over gasoline usage. “Every time you fill up your gasoline tank, you’re filling it up with the cheapest in the world; and the government is subsidizing over 90 percent of what it really costs,” Chávez said in a television address to the nation. “We must begin to reduce gasoline consumption.”

#### ( ) Low Oil prices lead to Russian economic growth RTT News 3/7/2012 Low Oil Prices Key To Russia's Growth: Capital Economics

<http://www.rttnews.com/1835939/low-oil-prices-key-to-russia-s-growth-capital-economics.aspx>

(RTTNews) - Lower oil prices can boost Russia's growth in a meaningful way in the coming years, as the revenue from oil exports has been allowing the government to abstain from engaging in policy reforms, Capital Economics Emerging Markets Economist Liza Ermolenko said Tuesday. The firm estimates that if oil prices drop to around $85 per barrel by the year-end as expected, it would improve Russia's medium term growth outlook. The consequent fall in export revenues may result in the budget deficit widening to 4.5 percent of GDP and the current account balance slipping to a deficit of 1 percent of GDP this year from last year's 5 percent surplus. Under such circumstances, the government would be forced to take up reforms aimed at wider economic growth, Ermolenko wrote. Russia's growth has been hampered during the past decade as benefits of higher oil prices made governments hesitant to engage in political and economic reforms. Such benefits also created an illusion of good government policies, and concealed shortfalls in Russia's growth model and its ailing public [finances](http://www.rttnews.com/1835939/low-oil-prices-key-to-russia-s-growth-capital-economics.aspx). In the 1970s, when benefits of a sharp increase in oil prices prevented the government from taking up reforms performance of all sectors other than the oil industry, most importantly agriculture, steadily deteriorated throughout the decade. Ermolenko observed that all major economic reforms in the past took place when oil price was hovering around $30 per barrel, but the government's appetite for reform usually receded when the price rose again. High oil prices have held back any meaningful change in policy and dashed the hopes for a shift to a new investment-led growth model, the economist added.

#### ( ) Venezuela’s economy is oil dependent – low oil prices will collapse it

Benedict Mander, Financial times Venezuela and Caribbean correspondent, July 15, 2012

“Venezuela more prone to oil price jitters”

<http://www.ft.com/cms/s/0/415985c2-7a88-11e1-8ae6-00144feab49a.html#axzz212YUoZRk>

There is little that Hugo Chávez, Venezuela’s notoriously long-winded president, talks about more than how his “Bolivarian revolution” has won back the country’s independence from the “Yankee empire”. “We must recognise that we are the new liberators and builders of the new fatherland,” the former tank commander told soldiers at a military parade this month. But the Opec nation remains more dependent than ever on something less easy for the fiery socialist leader to demonise – oil. With fewer than 100 days to go until the October 7 presidential election, the issue of Venezuela’s growing “oil dependency” and the government’s record of economic mismanagement has come to the fore as recent polls show Mr Chávez in a statistical tie with opposition leader [Henrique Capriles Radonski](http://blogs.ft.com/the-world/2012/07/latin-america-in-praise-of-henry/). “There is no question about it. Venezuela is not only more dependent on oil, but it is more dependent on the price of oil, as production has not increased,” says Jorge Piñon, a research fellow at the University of Texas. The rise in oil prices since Mr Chávez came to power in 1998 has been a boon in many ways, allowing him to bolster his popularity by splurging oil revenues on social programmes, in to which state-owned oil company PDVSA funnelled some $53bn between 2006 and 2010. The problem, however, is that PDVSA has neglected to invest in its core business, causing production to decline: it spent just $1bn in exploration activities over the same period. Venezuela produced 2.72m barrels a day in 2011, according to BP’s annual statistical review, versus 3.48m bpd in 1998 when Mr Chávez was first elected. This has made the economy more dependent on oil prices staying high. “Oil prices are the Achilles heel of the Venezuelan economy,” added Mr Piñon. Venezuelan oil prices fell to a low of $86.17 a barrel last month, after peaking at $116.85 a barrel in March. Despite Mr Chávez’s wishful prediction recently that oil prices should stabilise at around $100, fears that prices will continue to slide have triggered concerns about Venezuela’s $340bn economy, which relies on oil for 95 per cent of export earnings. London-based Capital Economics calculates that if Brent oil prices fall to $85 a barrel, as they expect, the decline in Venezuela’s oil revenues would be equivalent to 2.5 per cent of gross domestic product. This is unlikely to hinder [Mr Chávez’s pre-electoral spending binge](http://blogs.ft.com/beyond-brics/2012/07/11/chavez-stepping-up-the-handouts/) that is already well under way. Analysts are increasingly concerned that the populist leader is sweeping the problem under the carpet. “Venezuela is going to need a meaningful adjustment next year, which will first involve devaluing the currency,” says Boris Segura, an analyst at Nomura Securities. He adds that spending will also have to be cut back significantly, and fewer dollars allotted for imports, possibly aggravating shortages of basic goods. Paradoxically, one import that could be squeezed is oil products. Lack of investment by PDVSA has led to a decline in refining activities, and [Venezuela imports 40,000 barrels per day of oil products, including petrol, from the US](http://blogs.ft.com/beyond-brics/2012/07/11/venezuela-us-fuel-import-junkie/), versus a previous high of 32,000 bpd in 2011, according to data from the US Energy Information Administration. Given that petrol retails locally at 9 cents a gallon, or around $5 a barrel, but costs around $200 at international prices, Venezuela is losing some $2.5bn a year on the trade, points out Juan Cristóbal Nagel, a Venezuelan economist and blogger. Still, analysts point out that should the government need to prevent unpopular problems like shortages from worsening, it can always resort to borrowing more from countries like China, in exchange for future oil deliveries, and the government can also issue more debt. José Guerra, an economic adviser for the opposition, warns that the government is ill-prepared for a fall in oil prices, and argues that the economy would be better managed by the opposition, because it understands markets better. “This government only knows of one way to solve the problem: printing money and getting into debt,” said Mr Guerra. “Venezuela is in an extremely vulnerable situation,” he warns, calculating that for every dollar that oil prices fall, the government forgoes some $800m in revenues each year. Such concerns seem to have taken their toll on Mr Chávez’s electoral standing. In a poll by Consultores 21 taken between June 15 and June 26, Mr Chávez had 45.9 per cent support against 45.8 per cent for Mr Capriles, although other polls give the president a double-digit lead. Still, Mr Chávez is not the first Venezuelan president to fail to alleviate the country’s heavy reliance on “the devil’s excrement”, as Juan Pablo Pérez Alfonso, former Venezuelan oil minister and Opec founder, called oil when he predicted it would bring his nation ruin.

#### ( ) High oil prices contribute to recession

James Hamilton; Professor of Political Science and Economics, PhD, Harvard University B.A. Summa Cum Laude, Harvard University, social entrepreneur, creator of Talent Dynamics Profiling system for corporations, Wealth Dynamics profiling system for entrepreneurs, Wealth Spectrum system, founder of Phi Dynamics and co-founder of XL Nation and XL Group; 4-25-09 <http://www.econbrowser.com/archives/2009/04/oil_shocks_and_1.html>

Here I provide some more background on the relation between oil price increases and economic recessions. When I first began working on my Ph.D. dissertation in 1980, I was intrigued by the fact that the oil embargo of 1973-74 and the collapse in Iranian oil production after the revolution in 1978 were both followed by global recessions. But when I called attention to the fact there had been a sharp increase in the price of oil prior to 6 of the 7 postwar U.S. recessions up to that point, the general response was one of skepticism. By the time I was presenting evidence of this relation at various seminars in 1981-82, the Iran-Iraq War had produced yet another shock to world oil markets and the NBER declared that the U.S. experienced a new recession immediately on the heels of the previous downturn, meaning that the evidence had now become that 7 out of 8 recessions had followed oil price increases. That research was subsequently published in the Journal of Political Economy in 1983 and the Energy Journal in 1985. My ideas about how this relationship might be explained by disruptive changes in the composition of spending appeared in the Journal of Political Economy in 1988. We received some more evidence on this relationship when Saddam Hussein invaded Kuwait in August 1990, causing oil prices once again to double and coinciding with the 9th postwar recession. The price of oil also shot up before the 2001 recession. Add in the conjunction of the oil shock of 2007-08 with our current economic pickle, and my count is now up to 10 out of 11. For the record, my position has never been that oil prices were the sole cause of all of these recessions. But the evidence persuaded me that oil must have been a contributing factor in at least some postwar recessions. Given my long interest in this area, the Brookings Institution approached me about the possibility of writing a paper on the causes and consequences of the oil shock of 2007-08. In that paper I compared what happened last year with what we'd seen in the many previous episodes. I presented those findings at a Brookings conference earlier this month, and described some of the results for Econbrowser readers here and here. One of the things I did in that paper was to examine a number of different models of the effects of oil prices on the economy that had been developed for earlier data, and look at what those models would have predicted to happen in 2007-08. My conclusion was that most of those models held up pretty well. Using any of the estimates surveyed, the oil shock of 2007-08 was big enough to have made a material negative contribution to real GDP over the period 2007:Q4 to 2008:Q3, and the details of what happened over that period are quite consistent with the predictions. The reason that I think this is an interesting finding is that this period-- 2007:Q4 to 2008:Q3-- was when the U.S. entered recession #11. The fourth quarter of 2008 saw a very dramatic deterioration in all the economic indicators, but if you focus just on the first 12 months of the recession-- 2007:Q4 to 2008:Q3-- things wouldn't have had to be much better before most analysts would have said that the economy was not even in a recession prior to 2008:Q4. For example, real GDP actually grew by 0.7% between 2007:Q3 and 2008:Q3. Dave Cohen argues that the GDP figures are too optimistic, and I agree. But whatever your preferred measure might be, it wouldn't take much to nudge 2007:Q4-2008:Q3 into a range that's not usually associated with recessions. For example, gross domestic income on average fell by -0.45% over 2007:Q4-2008:Q3. My paper calculated that using any of the models surveyed this would have been a positive number if there had not been the contractionary effects of the oil shock. Alternatively, a 12-month drop in total employment is sometimes used as another indicator of whether the economy is in a recession. We crossed that threshold in the summer of 2008. But if we had not shed 150,000 jobs in auto manufacturing-- job losses that I think were pretty clearly tied directly to the oil price shock-- employment growth would still have been positive going into the fall of 2008. Comparison of the effects on auto industry employment of the oil shocks of 1990 and 2007-08. Graph shows cumulative change in the number of workers employed in motor vehicles and parts manufacturing in months subsequent to July 1990 (red) and July 2007 (blue). Why does it matter whether, in the absence of the oil shock, the experience over 2007:Q4-2008:Q3 might have been a bit better in terms of such measures as GDP or employment? My answer is that the drops in overall spending that were caused by higher oil prices proved to be the knockout punch for an economy that was already wobbly. Whatever your preferred culprit might be for our current difficulties-- loan default rates, falling house prices, debt burdens, or pessimistic sentiment-- that measure would have had a more favorable value going into the fall of 2008 if we had experienced more favorable fundamentals in terms of income and jobs over 2007:Q4-2008:Q3. And there's no question that more favorable fundamentals are exactly what we would have had if the price of oil had never gone over $100 a barrel. The fact that the biggest drop in output didn't occur until well after the oil price went up, and resulted not from the oil price itself but instead from the interaction with other factors and the dynamic forces unleashed when the overall level of economic activity began to decline, is also exactly the same pattern we saw in each of the previous recessions. Was the oil shock of 2007-08 the sole cause of the recession? Certainly not. But did it make a material contribution? In my opinion, the answer unquestionably is yes.

#### ( ) Low oil prices aid the economy

Fox News, 5-17-12 http://www.foxnews.com/us/2012/05/17/lower-oil-prices-ease-load-on-consumers-and-obama/

What only weeks ago was seen as a serious threat to the economic recovery could now turn into a stimulus everyone can love. Oil and gasoline prices are sinking, giving relief to businesses and consumers who a few weeks ago seemed about to face the highest fuel prices ever. President Barack Obama's re-election prospects could also benefit, especially if prices keep falling as some analysts expect. A majority of Americans disapproved of Obama's handling of gas prices in an AP-GfK poll early this month. But that was before the full effect of the recent drop had reached drivers. The average U.S. retail gasoline price has dropped 21 cents a gallon to $3.73 since hitting a 2012 peak of $3.94 on April 6. The economy could gain, too. Consumers who spend less on fuel have more to spend on other purchases, from autos and furniture to appliances and vacations, which could help drive economic output and job growth. The price drop will likely boost consumer confidence. It also comes at a timely moment: Ahead of the Memorial Day weekend, a busy one for travel and entertainment spending. "It's extra money in the wallets of most American consumers, and that's going to help," said James Hamilton, an economist at the University of California, San Diego who studies oil prices. Lower oil prices also mean cheaper diesel and jet fuel for shippers and airlines. Crude oil, which is used to make gasoline, is at a seven-month low of $92.81 a barrel. It's down nearly 13 percent since May 1. Behind the steady drop are larger fuel stockpiles, easing fears about Iran and expectations of lower demand as the global economy slows. The average national gasoline price is expected to fall as low as $3.50 a gallon this summer. It could even dip near $3 in some states. The national average is being propped up by refinery problems in California that have lifted prices well above the national average there, according to Tom Kloza, chief oil analyst at the Oil Price Information Service. A 50-cent drop in the gasoline price would save consumers roughly $70 billion over a year. Earlier this year, oil and gasoline prices were jumping from already high levels. Global demand was rising. And production outages were reducing supplies. Tensions between Iran and the West over Iran's nuclear ambitions raised fears that output from the world's third-biggest exporter would plunge. The price of U.S. benchmark oil rose to about $110 a barrel from $96 in the first three weeks of February. The price for international oil, used to make most of the gasoline in the United States, spiked even higher: to $126 per barrel from $110 over roughly the same period. Gasoline prices in the U.S. appeared on track to soar past $4 a gallon nationwide. Confidence among U.S. consumers, already suffering from high unemployment and scant wage growth, would have likely worsened. "People were prepared emotionally for $4.50 or $5 gasoline, so there's a sense of relief," Kloza says. No one is yet overflowing with glee over current prices. So far this year, gasoline has averaged $3.67 a gallon nationwide. If sustained all year, that would be the highest annual average ever. John Heimlich, chief economist at Airlines for America, a trade group, is among those who aren't ready to cheer. Jet fuel prices dipped below $3 per gallon for the first time in months Tuesday, he said. "I need more than one day below $3," Heimlich said. "I need weeks and weeks and weeks." John Tillman, who runs Certified Carpet Care in Wesley Chapel, Fla., spends $4,000 a month on fuel for his vans that crisscross the state, visiting restaurants and other clients. He says gasoline prices are still way too high and he thinks the government should do more to protect small businesses from high fuel prices. But he'll take any drop he can get. "It's helped some," he said. Hamilton and other economists say high unemployment and a weak job market are more important to the health of the U.S. economy than gasoline prices. Still, voters tend to blame presidents for high fuel prices, even if there's little a president can do to influence them. It's less clear that voters give a president credit when gasoline prices fall. Michael Dimock, associate director at the Pew Research Center, suspects that voters won't exactly thank Obama for $3.75 a gallon gasoline. Still, it dulls a weapon that his presumptive Republican challenger, Mitt Romney, would like to use to unseat the president. And Obama can look forward to further help this fall. After Labor Day, refiners can begin using cheaper ingredients to make gasoline because wintertime clean air rules are less stringent. That should push gasoline prices lower between Labor Day and Election Day, barring hurricanes that can disrupt supplies or other global events, says Kloza. "History will be working on behalf of the Democrats," he said.

#### ( ) SQuo has low oil prices, low natural gas prices, low coal prices and demand, and slight rise in energy costs

U.S. EIA; 7-10-12; http://www.eia.gov/forecasts/steo/report/prices.cfm

Beginning in this month's Outlook, EIA is providing a forecast of Brent crude oil spot prices (see Brent Crude Oil Spot Price Added to Forecast). After WTI and Brent fell to year-to-date lows of $78 per barrel and $89 per barrel, respectively, on June 21, 2012, oil prices rose following news of a possible Euro-zone agreement regarding debt issues that have clouded the European and global economic outlooks. EIA projects the price of Brent crude oil to average $106 per barrel in 2012 and $98 per barrel in 2013. The WTI price forecast has been lowered by $4 per barrel from last month's Outlook to $93 per barrel in 2012 and by $9 per barrel to $89 per barrel in 2013 (West Texas Intermediate Crude Oil Price Chart). Energy price forecasts are highly uncertain (Market Prices and Uncertainty Report). WTI futures for October 2012 delivery during the 5-day period ending July 5, 2012 averaged $85 per barrel. Implied volatility averaged 33 percent, establishing the lower and upper limits of the 95-percent confidence interval for the market's expectations of monthly average WTI prices in October 2012 at $64 per barrel and $114 per barrel, respectively. Last year at this time, WTI for October 2011 delivery averaged $98 per barrel and implied volatility averaged 28 percent. The corresponding lower and upper limits of the 95-percent confidence interval were $76 per barrel and $125 per barrel. After a sharp increase in gasoline prices earlier this year, reaching a monthly average of $3.90 per gallon in April 2012, gasoline prices have fallen for the second consecutive month, averaging $3.54 per gallon in June 2012. Due to the sharp decline in crude oil prices throughout May and June, EIA expects regular gasoline retail prices to average $3.39 per gallon during the third quarter of 2012, compared with $3.51 per gallon in last month's Outlook, and $3.63 per gallon during the same period last year. EIA projects that crude oil prices will remain near their current lower levels through 2013, resulting in regular gasoline retail prices averaging $3.49 per gallon in 2012 and $3.28 per gallon in 2013. EIA expects that on-highway diesel fuel retail prices, which averaged $3.84 per gallon in 2011, will average $3.79 per gallon in 2012, down 11 cents per gallon from last month's Outlook. In 2013, diesel fuel retail prices are projected to decline another 21 cents to an average of $3.58 per gallon (U.S. Diesel Fuel and Crude Oil Prices Chart). Natural gas spot prices averaged $2.47 per MMBtu at the Henry Hub in June 2012, up $0.04 per MMBtu from the May average. Prices remain at historically low levels; the June 2012 price averaged 46 percent less than the June 2011 price. Abundant supplies and lack of demand during the warm winter contributed to the current low prices. EIA expects the Henry Hub natural gas price will average $2.58 per MMBtu in 2012, with modest monthly increases through the rest of the year. EIA expects 2013 prices will average $3.22 per MMBtu (U.S. Natural Gas Prices Chart). Natural gas futures prices for October 2012 delivery (for the 5-day period ending July 5, 2012) averaged $2.90 per MMBtu, and the average implied volatility based on options and futures prices was 55 percent (Market Prices and Uncertainty Report). Current options and futures prices imply that market participants place the lower and upper bounds for the 95-percent confidence interval for October 2012 contracts at $1.74 per MMBtu and $4.82 per MMBtu, respectively. At this time last year, the October 2011 natural gas futures contract averaged $4.33 per MMBtu and implied volatility averaged 35 percent. The corresponding lower and upper limits of the 95-percent confidence interval were $3.12 per MMBtu and $6.00 per MMBtu. Delivered coal prices to the electric power industry had increased steadily over the last 10 years and this trend continued in 2011, with an average delivered coal price of $2.40 per MMBtu (a 6-percent increase from 2010). However, EIA expects the decline in demand for coal, combined with the large coal inventories, will put downward pressure on coal prices and contribute to the shut-in of higher-cost production. EIA forecasts the average delivered coal price in 2012 will be 0.4 percent lower than the 2011 average price. EIA predicts the 2013 average delivered coal price to be $2.33 per MMBtu, or nearly 3 percent ($0.06) lower than the 2012 price. U.S. Electricity Retail Prices EIA expects the average U.S. residential electricity price to rise from an average of 11.79 cents per kilowatthour in 2011 to 12.03 cents per kilowatthour this year, an increase of 2.0 percent (U.S. Residential Electricity Prices Chart). The forecast cost of natural gas delivered to the electric power sector is about 30 percent lower in 2012 compared with the previous year, which should slow the growth in retail electricity rates. EIA projects U.S. residential retail electricity prices to rise by only 0.2 percent in 2013, which would be the slowest growth rate in nominal prices in 10 years.

#### ( ) Low oil prices caused by china slowdown lower prices to American gas pumps

Ronald D. White; business staff writer at Los Angeles Times reporter, assistant editor, editorial writer The Washington Post

Williams College; June 04, 2012 <http://articles.latimes.com/2012/jun/04/business/la-fi-mo-oil-low-20120604>

U.S. oil prices fell as low as $81.21 a barrel Monday -- the weakest level since Oct. 6, 2011 -- as evidence of a slowdown in the Chinese economy last month added to fears of a sputtering global recovery. Crude oil prices later recovered to $83.08 a barrel on the New York Mercantile Exchange, but were still down 15 cents so far from their previous closing price. In London, oil prices on the ICE Futures Europe Exchange were down $1.07 cents to $97.37 a barrel. The biggest reason for another down day so far, analysts said, was China's non-manufacturing purchasing managers index, which fell last month and suggested another slowdown in economic activity, said Phil Flynn, senior market analyst for Price Futures Group Inc. in Chicago. Flynn said that "oil could fall below $80 a barrel by the end of this week" if the commodities markets lose confidence in the ability of world leaders to deal with a number of problems, such as the weak banking sector and debt in Europe. There was some good news in the numbers as pump prices for retail gasoline continued to fall in California and across much of the rest of the U.S. The average price for a gallon of regular gasoline in California was $4.221 a gallon, down 6.2 cents since last week. That's according to the AAA Fuel Gauge Report, which uses credit card receipts collected daily from more than 100,000 retail outlets across the U.S. Nationally, the average price for a gallon of regular gasoline fell to $3.585, down 5.6 cents since last week. "An impressive decline in average gasoline prices will now be extended as the West Coast begins to see lower prices in the days ahead," said Patrick DeHaan, senior petroleum analyst from GasBuddy.com. "Motorists will continue to see prices sliding east of the Rockies." GasBuddy.com tracks the highest and lowest fuel prices listed at more than 140,000 service stations in the U.S. and Canada.

# \*\*\*Warming Advantage Backlines

## Warming’s Bad

#### ( ) Warming’s anthropogenic and causes extinction – emission cuts solve

Costello ‘11

[Anthony, Institute for Global Health, University College London, Mark Maslin, Department of Geography, University College London, Hugh Montgomery, Institute for Human Health and Performance, University College London, Anne M. Johnson, Institute for Global Health, University College London, Paul Ekins, Energy Institute, University College London [“Global health and climate change: moving from denial and catastrophic fatalism to positive action” May 2011 vol. 369 no. 1942 1866-1882 Philosophical Transactions of the Royal Society]

Advocacy about the health consequences will ensure that climate change is a high priority. The United Nations Convention on Climate Change was set up in 1992 to ensure that nations worked together to minimize the adverse effects, but McMichael and Neira noted that, in preparation for the Copenhagen conference in December 2009, only four of 47 nations mentioned human health as a consideration [1]. With business as usual, global warming caused by rising greenhouse gas (GHG) emissions will threaten mass populations through increased transmission of some infections, heat stress, food and water insecurity, increased deaths from more frequent and extreme climate events, threats to shelter and security, and through population migration [2]. On the one hand it is necessary in the media to counter climate change sceptics and denialists, but on the other it is also important not to allow climate catastrophists, who tell us it is all too late, to deflect us from pragmatic and positive action. Catastrophic scenarios are possible in the longer term, and effective action will be formidably difficult, but evidence suggests that we do have the tools, the time and the resources to bring about the changes needed for climate stability. 2. Climate change evidence and denial Given the current body of evidence, it is surprising that global warming and its causal relationship with atmospheric GHG pollution is disputed any more than the relationship between acquired immune deficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection, or lung cancer and cigarette smoking. The basic principles that determine the Earth’s temperature are, of course, relatively simple. Some of the short-wave solar radiation that strikes the Earth is reflected back into space and some is absorbed by the land and emitted as long-wave radiation (heat). Some of the long-wave radiation is trapped in the atmosphere by ‘greenhouse gases’, which include water vapour, carbon dioxide and methane. Without GHGs the Earth would be on average 33◦C colder. Over the last 150 years, since the Industrial Revolution, humans have been adding more carbon dioxide and methane into the atmosphere. The result is that the Earth’s atmosphere, ocean and land are indeed warming—due to increased atmospheric ‘greenhouse gas’ concentrations [3]. Gleick et al. [4], from the US National Academy of Sciences, wrote a letter to Science stating ‘There is compelling, comprehensive, and consistent objective evidence that humans are changing the climate in ways that threaten our societies and the ecosystems on which we depend’. The most recent report by the Intergovernmental Panel on Climate Change (IPCC) [5], amounting to nearly 3000 pages of detailed review and analysis of published research, also declares that the scientific uncertainties of global warming are essentially resolved. This report states that there is clear evidence for a 0.75◦C rise in global temperatures and 22 cm rise in sea level during the twentieth century. The IPCC synthesis also predicts that global temperatures could rise further by between 1.1◦C and 6.4◦C by 2100, and sea level could rise by between 28 and 79 cm, or more if the melting of Greenland and Antarctica accelerates. In addition, weather patterns will become less predictable and the occurrence of extreme climate events, such as storms, floods, heat waves and droughts, will increase. There is also strong evidence for ocean acidification driven by more carbon dioxide dissolving in the oceans [6]. Given the current failure of international negotiations to address carbon emission reductions, and that atmospheric warming lags behind rises in CO2 concentration, there is concern that global surface temperature will rise above the supposedly ‘safe limit’ of 2◦C within this century. Each doubling of atmospheric carbon dioxide concentration alone is expected to produce 1.9–4.5◦C of warming at equilibrium [7]. Of course, climate modelling is an extremely complex process, and uncertainty with projections relating to future emissions trajectories means that the time scale and magnitude of future climate change cannot be predicted with certainty [8]. These uncertainties are magnified when future climate predictions are used to estimate potential impacts. For example, the environmental impacts of climate change are also uncertain, but could underestimate such impacts because they detrimentally interact with habitat loss, pollution and loss of biodiversity due to other causes. There is also the additional problem that switching from biome to biome may not be directly reversible. For example, rainforest recycles a huge amount of water so it can survive a significant amount of aridification before it burns and is replaced by savannah. But the region then has to get much wetter before rainforest can return, as there is greatly reduced water cycling in savannah [9]. In the policy arena, further uncertainty surrounds the desire for international agreements on emission cuts, and the possible routes to such agreement and implementation. The feasible speed of technological innovation in carbon capture and provision of renewable/low-carbon energy resources is also uncertain. Denying the causes or the current weight of evidence for anthropogenic climate change is irrational, just as the existence of ‘uncertainties’ should not be used to deny the need for proportionate action, when such uncertainties could underestimate the risks and impact of climate change. There is no reason for inaction and there are many ways we can use our current knowledge of climate change to improve health provision for current and future generations. 3. Catastrophism At the other end of the scale are doom-mongers who predict catastrophic population collapse and the end of civilization. In the early nineteenth century, the French palaeontologist Georges Cuvier first addressed catastrophism and explained patterns of extinction observed in the fossil record through catastrophic natural events [10]. We know now of five major extinctions: the Ordovician–Silurian extinction (439 million years ago), the Late Devonian extinction (about 364 million years ago), the Permian–Triassic extinction (about 251 million years ago), the End Triassic extinction (roughly 199 million to 214 million years ago) and the Cretaceous– Tertiary extinction (about 65 million years ago). These mass extinctions were caused by a combination of plate tectonics, supervolcanism and asteroid impacts. The understanding of the mass extinctions led Gould & Eldredge [11] to update Darwin’s theory of evolution with their own theory of punctuated equilibrium. Many scientists have suggested that the current human-induced extinction rates could be as fast as those during these mass extinctions [12,13]. For example, one study predicted that 58 per cent of species may be committed to extinction by 2050 due to climate change alone [14], though this paper has been criticized [15,16]. Some people have even suggested that human extinction may not be a remote risk [17–19]. Sherwood & Huber [7] point to continued heating effects that could make the world largely uninhabitable by humans and mammals within 300 years. Peak heat stress, quantified by the wet-bulb temperature (used because it reflects both the ambient temperature and relative humidity of the site), is surprisingly similar across diverse climates and never exceeds 31◦C. They suggest that if it rose to 35◦C, which never happens now but would at a warming of 7◦C, hyperthermia in humans and other mammals would occur as dissipation of metabolic heat becomes impossible, therefore making many environments uninhabitable.

#### ( ) It’s the only existential threat

Doebbler ‘11

[Curtis, International Human Rights Lawyer. Two threats to our existence. Ahram Weekly. July 2011. <http://weekly.ahram.org.eg/2011/1055/envrnmnt.htm>]

Climate change is widely acknowledged to be the greatest threat facing humanity. It will lead to small island states disappearing from the face of the earth, serious global threats to our food and water supplies, and ultimately the death of hundreds of millions of the poorest people in the world over the course of this century. No other threat -- including war, nuclear disasters, rogue regimes, terrorism, or the fiscal irresponsibility of governments -- is reliably predicted to cause so much harm to so many people on earth, and indeed to the earth itself. The International Panel on Climate Change, which won the Nobel Prize for its evaluation of thousands of research studies to provide us accurate information on climate change, has predicted that under the current scenario of "business-as-usual", temperatures could rise by as much as 10 degrees Celsius in some parts of the world. This would have horrendous consequences for the most vulnerable people in the world. Consequences that the past spokesman of 136 developing countries, Lumumba Diaping, described as the equivalent of sending hundreds of millions of Africans to the furnace. Yet for more than two decades, states have failed to take adequate action to either prevent climate change or to deal with its consequences. A major reason for this is that many wealthy industrialised countries view climate change as at worst an inconvenience, or at best even a potential market condition from which they can profit at the expense of developing countries. Indeed, history has shown them that because of their significantly higher levels of population they have grown rich and been able to enslave, exploit and marginalise their neighbours in developing countries. They continue in this vein.

#### ( ) Warming causes extinction

Sify ‘10

[Sydney newspaper citing Ove Hoegh-Guldberg, professor at University of Queensland and Director of the Global Change Institute, and John Bruno, associate professor of Marine Science at UNC (Sify News, “Could unbridled climate changes lead to human extinction?”, <http://www.sify.com/news/could-unbridled-climate-changes-lead-to-human-extinction-news-international-kgtrOhdaahc.html>]

The findings of the comprehensive report: 'The impact of climate change on the world's marine ecosystems' emerged from a synthesis of recent research on the world's oceans, carried out by two of the world's leading marine scientists. One of the authors of the report is Ove Hoegh-Guldberg, professor at The University of Queensland and the director of its Global Change Institute (GCI). 'We may see sudden, unexpected changes that have serious ramifications for the overall well-being of humans, including the capacity of the planet to support people. This is further evidence that we are well on the way to the next great extinction event,' says Hoegh-Guldberg. 'The findings have enormous implications for mankind, particularly if the trend continues. The earth's ocean, which produces half of the oxygen we breathe and absorbs 30 per cent of human-generated carbon dioxide, is equivalent to its heart and lungs. This study shows worrying signs of ill-health. It's as if the earth has been smoking two packs of cigarettes a day!,' he added. 'We are entering a period in which the ocean services upon which humanity depends are undergoing massive change and in some cases beginning to fail', he added. The 'fundamental and comprehensive' changes to marine life identified in the report include rapidly warming and acidifying oceans, changes in water circulation and expansion of dead zones within the ocean depths. These are driving major changes in marine ecosystems: less abundant coral reefs, sea grasses and mangroves (important fish nurseries); fewer, smaller fish; a breakdown in food chains; changes in the distribution of marine life; and more frequent diseases and pests among marine organisms. Study co-author John F Bruno, associate professor in marine science at The University of North Carolina, says greenhouse gas emissions are modifying many physical and geochemical aspects of the planet's oceans, in ways 'unprecedented in nearly a million years'. 'This is causing fundamental and comprehensive changes to the way marine ecosystems function,' Bruno warned, according to a GCI release. These findings were published in Science.

#### ( ) Four degree rise in warming causes extinction

Tickell ‘8

[Oliver, Climate Researcher, The Guardian, “On a planet 4C hotter, all we can prepare for is extinction”, 8/11http://www.guardian.co.uk/commentisfree/2008/aug/11/climatechange]

We need to get prepared for four degrees of global warming, Bob Watson told the Guardian last week. At first sight this looks like wise counsel from the climate science adviser to Defra. But the idea that we could adapt to a 4C rise is absurd and dangerous. Global warming on this scale wouldbe a catastrophe that would mean, in the immortal words that Chief Seattle probably never spoke, "the end of living and the beginning of survival" for humankind. Or perhaps the beginning of our extinction**.** The collapse of the polar ice caps would become inevitable, bringing long-term sea level rises of 70-80 metres. All the world's coastal plains would be lost,complete with ports, cities, transport and industrial infrastructure, and much of the world's most productive farmland**.** The world's geography would be transformed much as it was at the end of the last ice age, when sea levels rose by about 120 metres to create the Channel, the North Sea and Cardigan Bay out of dry land. Weather would become extreme and unpredictable, with more frequent and severe droughts, floods and hurricanes. The Earth's carrying capacity would be hugely reduced. Billions would undoubtedly die**.** Watson's call was supported by the government's former chief scientific adviser, Sir David King, who warned that "if we get to a four-degree rise it is quite possible that we would begin to see a runaway increase". This is a remarkable understatement.The climate system is already experiencing significant feedbacks**,** notably the summer melting of the Arctic sea ice. The more the ice melts, the more sunshine is absorbed by the sea, and the more the Arctic warms. And as the Arctic warms, the release of billions of tonnes of methane– a greenhouse gas 70 times stronger than carbon dioxide over 20 years – captured under melting permafrost is already under way**.** To see how far this process could go, look 55.5m years to the Palaeocene-Eocene Thermal Maximum, when a global temperature increase of 6C coincided with the release of about 5,000 gigatonnes of carbon into the atmosphere, both as CO2 and as methane from bogs and seabed sediments. Lush subtropical forests grew in polar regions, and sea levels rose to 100m higher than today. It appears that an initial warming pulse triggered other warming processes. Many scientists warn that this historical event may be analogous to the present: the warming caused by human emissions could propel us towards a similar hothouse Earth**.**

## Warming’s Real

#### ( ) Warming’s real, human-induced, and disastrous – the *most credible science* is on our side

Somerville ‘11

[Richard Somerville, Distinguished Professor Emeritus and Research Professor at Scripps Institution of Oceanography at the University of California, San Diego, Coordinating Lead Author in Working Group I for the 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 3-8-2011, “CLIMATE SCIENCE AND EPA'S GREENHOUSE GAS REGULATIONS,” CQ Congressional Testimony, Lexis]

1n early 2007, at the time of the publication of WG1 of AR4, the mainstream global community of climate scientists already understood from the most recent research that the latest observations of climate change were disquieting. In the words of a research paper published at the same time as the release of AR4 WG1, a paper for which I am a co-author, "observational data underscore the concerns about global climate change. Previous projections, as summarized by IPCC, have **not exaggerated** but may in some respects even have **underestimated the change**" (Rahmstorf et al. 2007). Now, in 2011, more recent research and newer observations have demonstrated that climate change continues to occur, and in several aspects the magnitude and rapidity of observed changes frequently **exceed the estimates of earlier projections**, including those of AR4. In addition, the case for attributing much observed recent climate change to human activities is **even stronger now** than at the time of AR4. Several recent examples, drawn from many aspects of climate science, but especially emphasizing atmospheric phenomena, support this conclusion. These include temperature, atmospheric moisture content, precipitation, and other aspects of the hydrological cycle. Motivated by the rapid progress in research, a recent scientific synthesis, The Copenhagen Diagnosis (Allison et al. 2009), has assessed recent climate research findings, including: -- Measurements show that the Greenland and Antarctic ice-sheets are losing mass and contributing to sea level rise. -- Arctic sea-ice has melted far beyond the expectations of climate models. -- Global sea level rise may attain or exceed 1 meter by 2100, with a rise of up to 2 meters considered possible. -- In 2008, global carbon dioxide emissions from fossil fuels were about 40% higher than those in 1990. -- At today's global emissions rates, if these rates were to be sustained unchanged, after only about 20 more years, the world will no **longer have a reasonable chance** of **limiting warming** to less than 2 degrees Celsius, or 3.6 degrees Fahrenheit, above 19th-century pre-industrial temperature levels, This is a much- discussed goal for a maximum allowable degree of climate change, and this aspirational target has now been formally adopted by the European Union and is supported by many other countries, as expressed, for example, in statements by both the G-8 and G-20 groups of nations. The Copenhagen Diagnosis also cites research supporting the position that, in order to have a reasonable likelihood of avoiding the risk of **dangerous climate disruption**, defined by this 2 degree Celsius (or 3.6 degree Fahrenheit) limit, global emissions of greenhouse gases such as carbon dioxide must peak and then start to **decline rapidly** within the next five to ten years, reaching near zero well within this century.

#### ( ) The Greenhouse Effect proves that warming is real and unnatural

Braganza ‘11

[Karl, Manager, Climate Monitor at the Bureau of Meteorology in Australia, The Bureau presently operates under the authority of the Meteorology Act 1955, which requires it to report on the state of the atmosphere and oceans in support of Australia's social, economic, cultural and environmental goals. His salary is not funded from any external sources or dependent on specially funded government climate change projects. Karl Braganza does not consult to, own shares in or receive funding from any company or organisation that would benefit from this article, and has no relevant affiliations “The greenhouse effect is real: here’s why

,” http://theconversation.edu.au/the-greenhouse-effect-is-real-heres-why-1515]

In public discussions of climate change, the full range and weight of evidence underpinning the current science can be difficult to find. A good example of this is the role of observations of the climate system over the past one hundred years or more. In the current public discourse, the focus has been mostly on changes in global mean temperature. It would be easy to form the opinion that everything we know about climate change is based upon the observed rise in global temperatures and observed increase in carbon dioxide emissions since the industrial revolution. In other words, one could have the mistaken impression that the entirety of climate science is based upon a single correlation study. In reality, the correlation between global mean temperature and carbon dioxide over the 20th century forms an important, **but very small part of the evidence for a human role in climate change.** Our assessment of the future risk from the continued build up of greenhouse gases in the atmosphere is even less informed by 20th century changes in global mean temperature. For example, our understanding of the greenhouse effect – the link between greenhouse gas concentrations and global surface air temperature – **is based primarily on our fundamental understanding of mathematics, physics, astronomy and chemistry.** **Much of this science is textbook material that is at least a century old and does not rely on the recent climate record**. For example, it is a scientific fact that Venus, the planet most similar to Earth in our solar system, experiences surface temperatures of nearly 500 degrees Celsius due to its atmosphere being heavily laden with greenhouse gases. Back on Earth, that fundamental understanding of the physics of radiation, combined with our understanding of climate change from the geological record, clearly demonstrates that increasing greenhouse gas concentrations will inevitably drive global warming. The observations we have taken since the start of 20th century have confirmed our fundamental understanding of the climate system. While the climate system is very complex, observations have shown that our formulation of the physics of the atmosphere and oceans is largely correct, and ever improving. Most importantly, the observations have confirmed that human activities, in particular a 40% increase in atmospheric carbon dioxide concentrations since the late 19th century, have had a discernible and significant impact on the climate system already. In the field known as detection and attribution of climate change, scientists use indicators known as of climate change. These fingerprints show the entire climate system has changed in ways that are consistent with increasing greenhouse gases and an enhanced greenhouse effect. They also show that recent, long term changes are inconsistent with a range of natural causes. A warming world is obviously the most profound piece of evidence. Here in Australia, the decade ending in 2010 has easily been the warmest since record keeping began, and continues a trend of each decade being warmer than the previous, that extends back 70 years. Globally, significant warming and other changes have been observed across a range of different indicators and through a number of different recording instruments, and a consistent picture has now emerged. Scientists have observed increases in continental temperatures and increases in the temperature of the lower atmosphere. In the oceans, we have seen increases in sea-surface temperatures as well as increases in deep-ocean heat content. That increased heat has expanded the volume of the oceans and has been recorded as a rise in sea-level. Scientists have also observed decreases in sea-ice, a general retreat of glaciers and decreases in snow cover. Changes in atmospheric pressure and rainfall have also occurred in patterns that we would expect due to increased greenhouse gases. There is also emerging evidence that some, though not all, types of extreme weather have become more frequent around the planet. These changes are again consistent with our expectations for increasing atmospheric carbon dioxide. Patterns of temperature change that are uniquely associated with the enhanced greenhouse effect, and which have been observed in the real world include: greater warming in polar regions than tropical regions greater warming over the continents than the oceans greater warming of night time temperatures than daytime temperatures greater warming in winter compared with summer a pattern of cooling in the high atmosphere (stratosphere) with simultaneous warming in the lower atmosphere (troposphere). By way of brief explanation, if the warming over the 20th century were due to some deep ocean process, we would not expect to see continents warming more rapidly than the oceans, or the oceans warming from the top down. For increases in solar radiation, we would expect to see warming of the stratosphere rather than the observed cooling trend. Similarly, greater global warming at night and during winter is more typical of increased greenhouse gases, rather than an increase in solar radiation. There is a range of other observations that show the enhanced greenhouse effect is real. The additional carbon dioxide in the atmosphere has been identified through its isotopic signature as being fossil fuel in origin. The increased carbon dioxide absorbed by the oceans is being recorded as a measured decrease in ocean alkalinity. Satellite measurements of outgoing long-wave radiation from the planet reveal increased absorption of energy in the spectral bands corresponding to carbon dioxide, exactly as expected from fundamental physics. It is important to remember that the enhanced greenhouse effect is not the only factor acting on the climate system. In the short term, the influence of greenhouse gases can be obscured by other competing forces. These include other anthropogenic factors such as increased industrial aerosols and ozone depletion, as well as natural changes in solar radiation and volcanic aerosols, and the cycle of El Niño and La Niña events. By choosing a range of indicators, by averaging over decades rather than years, and by looking at the pattern of change through the entire climate system, scientists are able to clearly discern the fingerprint of human-induced change. The climate of Earth is now a closely monitored thing; from instruments in space, in the deep ocean, in the atmosphere and across the surface of both land and sea. It’s now practically certain that increasing greenhouse gases have already warmed the climate system. That continued rapid increases in greenhouse gases will cause rapid future warming is irrefutable.