

Media Backgrounder

Coal, Oil, and Nukes vs. a Prosperous, Green America: Greenpeace Debate Backgrounder

Our economy is in trouble. The stock market is spiraling downward, banks and investment firms are failing, families are facing foreclosures in record numbers, many more are watching their home values drop—all while the price of gas, food, and other necessities are going up. At the same time, we face a global warming crisis that both threatens the planet and further strains the economy with the cost of cleaning up after intense storms, hurricanes, wild fires, floods, and droughts.

Fortunately, a new stream of economic studies and analysis show that the next president and Congress have an opportunity to tackle these problems by investing in a green economy and developing a national plan to manage global warming pollution. Yet the oil, coal, and nuclear industries (and their supporters in Washington) have slowed the transition to a clean energy economy by blocking tax incentives for renewable energy and promoting false solutions that study after study show are delivering in time to avoid the most catastrophic impacts of global warming.

This reference guide highlights some key facts about carbon capture and sequestration, offshore drilling, and nuclear energy as well as the vast economic opportunities offered by investing in renewable power solutions to the energy crisis.

1. The Myth of Carbon Capture and Sequestration a.k.a. “Clean Coal”

Until recently, “clean” coal technology referred to the scrubbers used to sweep nitrogen oxide, sulfur dioxide, and other dangerous pollution from coal-fired power plants used to generate about half of the country’s electricity supply. But faced with the threat of limits on carbon dioxide pollution, which scientists say is chiefly responsible for global warming, a consortium of mining, utility and railroad interests have adopted “clean” coal terminology as shorthand for carbon capture and sequestration (CCS).

Coal is the dirtiest of all fossil fuels and coal-fired power plants are the largest single source of global warming pollution in the United States. The nation’s coal fired power plants account for more than one third of CO₂ emissions each year. Meeting the global warming challenge will require dramatic reductions in this pollution.

Corporate interests, Members of Congress, and now both presidential candidates have suggested that CCS may someday be able to safely catch heat-trapping carbon dioxide and bury it underground. However, experimental trials and several recent studies paint a much different picture about the expense, safety, and ability of CCS to help avert a climate catastrophe.

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Technological Barriers

- Despite the need to capture billions of tons of carbon dioxide annually worldwide to slow global warming, CCS has never been demonstrated on a commercial scale at a power plant in the United States or in any other country.
- The Intergovernmental Panel on Climate Change (IPCC) observed that “there have been no applications [of CCS] on a large-scale of several hundred megawatts” and underscored the problem by warning that power plants are the major source of current and projected carbon dioxide emissions.
- The Department of Energy estimates that the first commercial scale CCS-equipped plants would not be operational until 2020—long after the window for meaningful action on global warming has closed, according to scientific consensus. The International Energy Agency agrees, projecting that no more than a handful of CCS plants will in operation *worldwide* by the 2020s.
- Technological challenges aside, a study published in the *International Journal of Greenhouse Gas Control* this month shows that CCS requires so much energy it would increase emissions of smog, soot, and other dangerous pollution by more than 40 percent.

Cost Prohibitive

- CCS experiments have been plagued by budget overruns. The first attempt to demonstrate the technology’s feasibility in the United States was a project in Illinois called FutureGen. After a series of unanticipated technological challenges, the estimated cost jumped from \$1 billion to \$1.8 billion. The Department of Energy abandoned the project in January. No plans exist to restart the project.
- A recent General Accounting Office (GAO) report on 13 similar projects nationwide found that all faced serious delays, major cost overruns or had gone bankrupt at a cost of approximately \$5.2 billion in taxpayer and ratepayer money.
- The Department of Energy estimates CCS would increase the cost of electricity production by 77 percent in new plants and up to 290 percent if existing plants were retrofitted with the technology.

Regulatory and Legal Challenges

- According to the IPCC and the National Academy of Sciences, the lack of a federally enforced limit on carbon dioxide emissions presents a major obstacle to the

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development of CCS. The experts agree that until electric utilities are required to pay for the cost of the pollution, they have little incentive to refine the technology.

- According to key agency officials, the absence of emissions caps has also deterred state and federal agencies from resolving other key technological challenges, such as how sequestered carbon dioxide would be treated under a cap-and trade emissions strategy.
- The EPA issued a proposed rule in July 2008 concerning the sequestration of carbon dioxide. The proposal was issued under the agency's Safe Drinking Water Act authority. However, some issues that fall outside of this authority remain unresolved, such as whether the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act applies to sequestered carbon dioxide and how the Clean Air Act's requirements will apply to existing power plants that install CCS. Additional concerns include liability resulting from leaked carbon dioxide to the surface or aquifers and ownership of the sequestered gas.

References

GAO Report: "CLIMATE CHANGE: Federal Actions Will Greatly Affect the Viability of Carbon Capture and Storage As a Key Mitigation Option:"

<http://www.gao.gov/new.items/d081080.pdf>

"False Hope: why carbon capture and storage won't save the planet":

<http://www.greenpeace.org/international/press/reports/false-hope>

"The Myth of Clean Coal." Yale's Richard Conniff describes the dangers of CCS:

<http://e360.yale.edu/content/feature.msp?id=2014>

LA Times editorial on coal politics. "Coal and votes: Obama and McCain's embrace of coal is mostly about pandering to swing-state voters":

http://www.latimes.com/news/opinion/la-ed-coal7-2008oct07_0,2673112.story

"Carbon Sequestration Frustration":

http://www.sciencenews.org/view/generic/id/35181/title/Carbon_sequestration_frustratio

2. Off-Shore Drilling: A Drop In the Bucket

Both candidates for president have said expanded offshore drilling will be part of their energy plans. However, the evidence shows deepening our dependence on oil offers little relief from soaring energy prices and increases the risk for dangerous and costly spills at a time when neither our economy or environment can least afford it.

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Gas Prices and Off Shore Drilling

- The United States burns 24 percent of the world's oil, yet it only has 3 percent of the world's oil reserves. Even if the country drilled every drop of oil the U.S. has on shore or off its coasts, it will never be able to drill its way to lower oil prices or energy security. The country simply burns more than it could ever drill.
- Offshore oil drilling is not a short-term fix. It will take at least a decade to bring new leases into production. It will be years before exploration will begin and years after that before production will start. If any effect were to be felt on gas prices (most likely only a few pennies per gallon), that effect is decades away, and will be dwarfed by rising global demand.
- Offering up more of the coastline for drilling won't lower gas prices. There is no correlation between increased drilling and lower gas prices. The number of drilling permits more than tripled between 1999 to 2007, yet prices continue to spike.
- Oil prices are set on the global oil market, which means that all oil produced around the world is all sold at the same price. There is no guarantee that the country would even be using the oil that was drilled in the U.S.--it would pay the same rate as the rest of the world.

Oil Spills—Dangerous Consequences

- In 1981, responding to public sentiment, Congress adopted the Outer Continental Shelf (OCS) Moratorium, which prevents the leasing of coastal waters off the Atlantic and Pacific Coasts for oil and gas drilling.
- The moratorium is now lifted and our oceans and the species that call them home will suffer. An increase in offshore drilling will put more of the country's beaches, fish, and marine mammals at risk, as both the exploration and the drilling for oil increase the threat to our valuable coastlines.
- Supercharged storms like Katrina and Rita will continue to pummel coastal areas and oil infrastructure as global warming worsens, meaning more oil spills are inevitable.

According to the official report prepared for the Mineral Management Service by a Norwegian firm:

- Hurricanes Katrina and Rita caused 124 offshore spills for a total of 743,700 gallons. 554,400 gallons were crude oil and condensate from platforms, rigs and pipelines, and 189,000 gallons were refined products from platforms and rigs.

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- Hurricanes Katrina and Rita caused six offshore spills of 42,000 gallons or greater. The largest of these was 152,250 gallons, well over the 100,000 gallon threshold considered a “major spill.”
- Hurricanes Gustav and Ike caused at least three missing oil rigs. One missing rig was owned by Rowan Cos., resulting in a \$60 million claim. The rig, with a carrying value of \$4.5 million, has never been recovered.
- Hurricanes Ike and Gustav closed up to 95 percent of Gulf drilling capacity for more than a month, contributing to a spike in oil prices. With hurricanes increasing in intensity and possibly frequency and severity, offshore oil fields will be subject to even more frequent shut-down due to major storms.

Energy Information Administration, "U.S. Crude Oil, Natural Gas and Natural Gas Liquid Resources, 1999 Annual Report," DOE/EIA-0216 (99) (December 2000).

References

A new investigative report from the House Committee on Natural Resources studied the current system of drilling permits on federal lands and in federal Waters:

http://resourcescommittee.house.gov/images/stories/Documents/truth_about_americas_energy.pdf

Mineral Management Service statistics on Katrina and Rita spills:

<http://www.mms.gov/tarprojectcategories/hurricaneKatrinaRita.htm>

AP: “Rowan says Gulf of Mexico rig missing after Ike”:

http://biz.yahoo.com/ap/080916/rowan_hurricane_update.html?.v=1

4. The Green Economy: More Jobs, Better Pay, Energy Security

The Center for American Progress released a new report by Dr. Robert Pollin and University of Massachusetts Political Economy Research Institute economists. They found that federal green jobs recovery program that spends \$100 billion (a small fraction of the \$700 billion Wall Street bailout) over two years would create 2 million new jobs, with a significant proportion in the construction and manufacturing sectors.

The analysis also shows that investing in the green economy would have a far greater impact on job creation and wages than similar investments in almost any other sectors:

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- Green investment would create four times as many jobs as similar expenditures in the oil industry, twice as many jobs as in the financial sector, and 300,000 more jobs than a similar amount of spending directed toward household consumption.
- Green investment would create approximately triple the number of high-paying jobs (at least \$16 dollars an hour) as spending the same amount of money within the oil industry.
- Green investment is projected to reduce the unemployment rate to 4.4 percent from 5.7 percent (based on U.S. labor market conditions in July 2008).
- Green investment helps lower oil prices. Decreasing energy demand will have greater price effects than modest new domestic supply increases with associated benefits to the economy across all sectors.
- A recent study found that wind turbines in the Great Lakes could produce more than 300,000 MW of energy.
(http://www.landpolicy.msu.edu/modules.php?name=News&op=viewlive&sp_id=71)

Clean Energy is Already Providing Jobs and Power

- Colorado's recent investment in wind power technology demonstrates the viability of large-scale clean energy solutions. Two years ago, when Colorado voters were considering a measure to require 10 percent of their electricity to come from clean sources, Xcel Energy, the state's biggest electric utility fought the initiative tooth and nail. However, after the ballot initiative passed, Xcel installed thousands of megawatts of clean energy, met the requirement eight years ahead of schedule, and quickly agreed to double its goal to 20 percent.
- The same program could easily be duplicated across the country. Enough wind power blows through the Midwest corridor every day to also meet 100 percent of US electricity demand. Similarly, geothermal energy is capable of providing tremendous electricity supplies for America.
- Scientists have shown that enough solar energy hits the earth every 40 minutes to meet 100 percent of the entire world's energy needs for a year. A report released by the energy consulting firm Clean Edge in June showed that solar energy could meet 10 percent of the of the country's electricity needs by 2025.

References

State by state analysis of green investment:

http://www.americanprogress.org/issues/2008/06/green_jobs.html

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“Renewable Power's Growth in Colorado Presages National Debate”:

<http://www.washingtonpost.com/wp-dyn/content/article/2008/08/17/AR2008081702193.html>

More details on taxpayer giveaways to energy companies in the bailout bill:

<http://climateprogress.org/wp-content/uploads/2008/10/enviro-tax-letter.pdf>

New data on how investing in green economy solutions like wind and solar would create about twice the jobs as the Wall Street bailout:

<http://www.thenation.com/doc/20081013/hurowitz>

Nuclear Facts

As presidential punditry on the nuclear industry continues, it is becoming increasingly difficult to separate the facts from fiction. Heralded by the nuclear industry as a solution to the global warming crisis, the media appears to have taken the bait with its repeated references to a so-called ‘nuclear renaissance.’ Unfortunately, such coverage is short on substance and often publicly misleading.

Fact: An increase use of nuclear power will not curb America’s ‘addiction to oil.’

Fact: In 2003, the Congressional Budget Office (CBO) under the directorship of McCain’s own economic advisor, Douglas Holtz-Eakin, indicated that loan guarantees for nuclear plants had a 50 percent chance of defaulting.

Fact: Not only do nuclear plants remain extremely vulnerable to terrorist attack, but nuclear power is one of the most expensive ways to fight global warming and won’t deliver in time to lessen the most severe impacts. Recent cost projections put Areva’s Evolutionary Power Reactor (EPR) at \$6.5 billion.

Fact: Princeton professors Robert Socolow and Stephen Pacala indicate that nuclear energy is a ‘non-starter’ in reference to their well-known ‘wedge’ analysis identifying technologies to mitigate global warming.

Nuclear Power & Oil Addiction

Expanding the use of nuclear power will have little or no impact on the U.S. addiction to foreign oil. Nuclear power plants generate two things: electricity and the knowledge and radioactive materials to produce nuclear weapons. Less than 3 percent of U.S. electricity is generated by oil, thereby diminishing nuclear power’s role in addressing U.S. oil addiction. The U.S. Department of Energy expects that percentage to drop to 1.68% by 2025.

<http://www.greenpeace.org/usa/assets/binaries/lobal-nuclear-energy-partnersh>

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Risk of Terrorist Attack

Although seven years have passed since the attacks of 9/11, America's nuclear power plants remain highly vulnerable to terrorist attack even though U.S. officials acknowledge that the architect of the attacks – Khalid Sheikh Mohammed – originally planned to fly the planes into nuclear facilities in the U.S. Moreover, according to the Congressional Research Service, nuclear power plants are not designed to withstand airliner attack. <http://www.globalsecurity.org/military/library/report/crs/rs21131.pdf>

http://www.washingtonpost.com/wp-dyn/content/article/2008/01/14/AR2008011402576_pf.html

Nuclear Power & Global Warming

In August of 2004, Stephen Pacala and Robert Socolow of Princeton's Carbon Mitigation Initiative published a paper identifying 15 existing technologies that could each prevent one billion tons a year worth of carbon emissions by 2054. At that time, Pacal was asked, "What wedges are the least worth pursuing?"

I personally think nuclear is a non-starter. In the article we were not trying to choose sides, only to point out the mitigation technologies that are already in place. However, I cannot imagine that in this era of concerns about terrorism that we are going to start the production of fissionable material all over the world. It is disingenuous when the Bush administration says that the way to solve this problem is through coal and nuclear....If you try to solve even one wedge of this problem with nuclear, it would require a doubling in the amount of nuclear power deployed. Solving the problem entirely with nuclear means increasing deployment by a factor of 10, and if you calculate how many of these plants would have to be in countries like Sudan and Afghanistan, you are just not going to do it.

http://www.theclimategroup.org/news_and_events/stephen_pacala

Atomic Economics

Unbeknownst to the public, there are many in the financial sector as well as Senator McCain's own economic advisor, Douglas Holtz-Eakin, who have noted the extreme risk in investing in nuclear power. In 2003, when a proposal to have the American taxpayer guarantee loans to nuclear corporations was introduced in the Senate, the non-partisan Congressional Budget Office (CBO) then headed by Holtz-Eakin found that:

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CBO considers the risk of default on such a loan guarantee to be very high—well above 50 percent. The key factor accounting for this risk is that we expect that the plant would be uneconomic to operate because of its high construction costs, relative to other electricity generation sources.
<http://www.cbo.gov/ftpdocs/42xx/doc4206/s14.pdf>

In 2005, Holtz-Eakin also testified before the Senate Budget Committee and stated that:

When the federal government assumes a risk—as it does, for example, when it guarantees a loan—the risk of default has been transferred from the lender to the government (and through the government to taxpayers), but the risk has not been eliminated. Instead, the government, rather than the lender, bears the risk.

(Statement of Douglas Holtz-Eakin Director The Economic Costs of Long-Term Federal Obligations before the Committee on the Budget, United States Senate February 16, 2005 p. 7.)

Moreover, last July, six major U.S. banking institutions including Citigroup, Credit Suisse, Lehman Brothers, Goldman Sachs, Merrill Lynch & Morgan Stanley sent a letter to the Department of Energy (DOE). In it, the bankers told DOE that unless the U.S. taxpayer backed 100 percent of the debt incurred by nuclear corporations that they would have difficulty “accessing capital markets.”

We believe many new nuclear construction projects will have difficulty accessing the capital markets during construction and initial operation without the support of a federal government loan guarantee. Lenders and investors in the fixed income markets will be acutely concerned about a number of political, regulatory and litigation-related risks that are unique to nuclear power, including the possibility of delays in commercial operation of a completed plant or “another Shoreham.” We believe these risks, combined with the higher capital costs and longer construction schedules of nuclear plants as compared to other generation facilities, will make lenders unwilling at present to extend long-term credit to such projects in a form that would be commercially viable.

<http://www.lgprogram.energy.gov/nopr-comments/comment29.pdf>

The U.S. General Accounting Office (GAO) has also weighed in on these loan guarantees to the nuclear industry. The GAO recently found that the Bush Administration’s DOE does not have the oversight in place to adequately manage the loan guarantee program. But rather than address the inadequacies identified by the GAO, the Bush administration has accelerated the loan guarantee program. <http://www.gao.gov/new.items/d08750.pdf>

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Reprocessing Nuclear Waste

Highly radioactive and toxic for millions of years, there is no safe way to dispose of nuclear waste. According to a report by the Institute for Energy and Environmental Research entitled 'Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Climate Change By 2005, over 53,000 metric tons of spent nuclear fuel had been generated and were being stored at 76 reactor sites across the U.S while the proposed storage site at Yucca Mountain remains dubious at best sitting atop 33 fault lines in a state ranking third in the nation for seismic activity.' ”

<http://www.ieer.org/reports/insurmountablerisks/summary.pdf>

<http://www.state.nv.us/nucwaste/yucca/seismo01.htm>

In West Valley, NY, the Nuclear Fuel Services (NFS) operated a commercial reprocessing facility from 1966 to 1972. After a four-year shutdown, NFS determined that it was too expensive to bring the facility up to regulatory standards and so abandoned the site. The Department of Energy (DOE) originally estimated that the cleanup effort at the site could be completed by about 1990. However, in May of 2001, the US General Accounting Office, (GAO) determined that clean up was not nearly complete and would take up to 40 years to finish. GAO calculated that the West Valley cleanup costs would total about \$4.5 billion. <http://www.gao.gov/new.items/d01314.pdf>

In hearings held before the U.S. Congress, even proponents of nuclear power concluded that reprocessing radioactive waste was unsafe and uneconomical:

Matthew Bunn of Harvard University testified that, “a near-term decision to reprocess U.S. commercial spent nuclear fuel would be a serious mistake, with costs and risks far outweighing its potential benefits.” Mr. Bunn, also stated that “reprocessing is far outpacing the use of the resulting plutonium as fuel, with the result that over 240 tons of separated, weapons-usable civilian plutonium now exists in the world, a figure that will soon surpass the amount of plutonium in all the world’s nuclear weapons arsenals combined.”

(Testimony Of Matthew Bunn for The Subcommittee On Energy Committee On Science, United States House Of Representatives June 16, 2005.)

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The French Connection

While some within policy and political circles may point to France as a model in support of promoting new nuclear plants in the United States, their Evolutionary Power Reactor (EPR) has had tremendous cost overruns and is now estimated to cost \$6.5 billion dollars.

Areva, which is building the 1600 MWe Evolutionary Power Reactor (EPR) at the Olkiluoto site in Finland and in Flamanville in France, has run into significant design and build flaws significantly delaying the project.

However, “flawed welds for the reactor’s steel liner, unusable water-coolant pipes and suspect concrete in the foundation already have pushed back the delivery date of the Olkiluoto 3 unit by at least two years.” (Alan Katz, “Nuclear Bid to Rival Coal Chilled by Flaws, Delay in Finland” Bloomberg September 4, 2007.)

Platts Nucleonics Week recently reported that:

The price of a new EPR today is “closer to Eur 4.5 billion” (US \$6.5 billion) than to the original price of Eur 3.2 billion for Olkiluoto-3 in Finland, a senior Areva official said September 2. The official, who did not want to be identified, stressed that he was referring to an EPR “in general” and not to the 1,600-MW Olkiluoto unit, which Areva NP and Siemens are building in Finland under a turnkey contract signed in December 2003 with Teollisuuden Voima Oy. The official acknowledged that with rising costs of material and manpower, the cost of any new reactor was likely to be at least Eur 4.5 billion.

(Areva official says costs for new EPR rising, exceeding \$6.5 billion, Platts Nucleonics Week September 4, 2008 p. 1.)