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Offshore Fossil Fuel Exploration and Development: A Review Of Some Concerns

By John Droz, Jr.*

Environmental activists have expressed strong opposition to all U.S. fossil fuels — offshore and onshore... *Every* energy source has benefits and liabilities. The only sensible way to determine what our best energy choices are, is to do a *comprehensive* and *objective* assessment of ALL the **pros** and **cons** of each option. Only then are we able to make an informed, science-based decision. This document is a contribution towards such an assessment.

This paper presents some different perspectives about assertions made in the U.S. offshore fossil fuel debate.

This paper presents some different perspectives about several assertions made by [NGOs](#) in the offshore fossil fuel debate. The focus is on North Carolina, which is [estimated](#) to have the largest offshore natural gas and oil reserves on the East Coast. We begin by outlining the main NGO concerns, and then follow that with a brief discussion of each item...

1. **Seismic surveying will result in serious ecological damage.** No, similar seismic surveys have resulted in no consequential environmental problems.
2. **An oil spill is inevitable.** For several reasons, an oil spill is extremely unlikely.
3. **Offshore drilling puts the vital coastal tourism industry at risk.** Offshore wind energy is a much greater threat to coastal tourism.
4. **More jobs will come from offshore wind energy than from offshore fossil fuels.** This is not likely to be true, but it is an irrelevant argument anyway.
5. **Professional NC fishermen oppose coastal fossil fuel exploration and development.** The NC Fisheries Association has officially endorsed offshore fossil fuel development.
6. **There isn't enough oil and natural gas off the NC coast to justify the risk and the expense.** No one knows the true economics, which is why a seismic survey is needed.
7. **Drilling would result in some of the NC coast looking like Louisiana or Galveston, Texas.** Considerable federal, state and local regulations mean that would never happen.
8. **Revenue-sharing with the coastal States has not been approved.** It is very likely that such revenue-sharing will be approved by the Trump administration.
9. **Any oil and gas we discover will probably be exported anyway.** Some resources will undoubtedly be exported, and that's good for our economy and our national security.
10. **We have better U.S. energies available to us.** If we exclude all the energy options the NGOs have blackballed (e.g. nuclear), there are no better choices left.
11. **We don't need fossil fuels as we can live on 100% renewable energy sources.** This is a 100% impossible scenario for multiple technical and economic reasons.
12. **To effectively combat climate change, fossil fuels need to stay in the ground.** This makes little sense as the NGOs' energy plans do not truly combat climate change anyway.

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Part of the reason that our politics seems so tough right now (and facts and science and argument do not seem to be winning the day all the time), is because we're hardwired not to always think clearly when we are scared.

— [Barack Obama](#)

SOME BACKGROUND: In January of 2015, the Obama Administration's Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM) issued a proposed 5-Year (2017-2022) Oil and Gas Leasing Program that included waters off the coast of the Mid and South-Atlantic Region (offshore Virginia, North and South Carolina, and Georgia). Revenue-sharing (of potential lease-payments, rents and royalties) with the States was **not** part of the proposal for the Atlantic area. After public hearings, BOEM subsequently removed the Atlantic area from the draft leasing plan. Just before leaving office, the Obama Administration denied permits for seismic surveying in the Atlantic area.

Rather than wait for the next 5-year plan (2023-2028), the Trump Administration proposed replacing the 2017-2022 plan with a modified 2019-2024 plan. On January 4, 2018, the DOI announced the next steps for developing the National OCS Leasing Program. The Draft Proposed Program “includes 47 potential lease sales in 25 of the 26 planning areas (19 off the coast of Alaska, 7 in the Pacific Region, 12 in the Gulf of Mexico, and 9 in the Atlantic Region).” The new Administration also reversed the decision concerning seismic surveying, putting the earlier applications to conduct these surveys back into play. As the National Ocean Industries Association's (NOIA) [statement of support](#) conveys quite well, it is important to understand that the current process is **extremely** cautious...

This is the second step in a multi-year process that will determine a future **leasing** schedule, **NOT** a future **drilling** schedule. The process involves several rounds of public participation and several layers of environmental review. Once the leasing program is finalized (many months from now), future decisions on possible drilling must undergo their own series of public and environmental reviews. Similarly, any future efforts to actually produce offshore oil and natural gas will be subject to yet another round of reviews.

Given these developments, now is a good time to step back and critique some of the common concerns put forward by the opponents of oil and natural gas exploration in the Atlantic (like Oceana and the Sierra Club). This paper is being prepared with the hope that a constructive, informed discussion of these issues will lead to better public understanding, and ultimately to better public policy outcomes.

The following is an assessment of commonly-voiced NGO themes periodically expressed at public hearings about Atlantic offshore oil and natural gas exploration and development.

1 - Seismic surveying will result in serious ecological damage. The opponents of offshore fossil fuel exploration try to demonize a [seismic survey](#) by calling it seismic “air gun blasting.” It's unfortunate that this technical matter has been mis-presented to the public this way, as it makes having a rational discussion about its pros and cons, very difficult.

One fact is that a comprehensive Atlantic Coast geological seismic survey has not been done in almost 40 years. Seismic survey technology has advanced significantly during that time. Because it has been so long since a survey was done, we have little understanding of the natural gas or oil resources off the U.S. Atlantic seaboard. *We need better information so that our positions and critical public policy decisions are based on the best available facts.*

Opponents claim seismic surveys pose grave threats to marine mammals, fish stocks, and especially to the endangered North Atlantic Right Whale. However, the current plight of the right whale and other endangered ocean species can not be blamed on the fossil fuel industry, as that industry has not existed off the U.S. East Coast in decades. On the contrary, the Right Whale got its name [because](#) it was the “right” whale to kill for its blubber, which could be rendered into whale oil and other products. The advent of the fossil fuel industry actually saved whales from extinction by allowing substitution of kerosene and other petroleum products for whale oil, etc.

[NOAA's National Marine Fisheries Service](#) (NMFS) says the main threats to endangered marine species are: collisions with commercial and recreational vessels, entanglements in commercial and recreational fishing lines and nets, and ingestion or entanglement in garbage (primarily plastic). Most of these things are related to the tourism or fishing industries. *Where are the Resolutions and public protests about those proven environmental impacts?*

NMFS made this [2014 statement](#) about the environmental impact of seismic surveys: “To date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to air-gun pulses, even in the case of large air-gun arrays.” BOEM’s chief environmental officer issued a [2014 report stating](#): “*To date, there has been no documented scientific evidence of noise from air-guns used in geological and geophysical seismic activities adversely affecting marine animal populations or coastal communities.*” Note that both of these conclusions came during President Barack Obama’s environmentally-friendly terms.

The [Lamont-Doherty Earth Observatory](#) (the top U.S. academic seismic authority) recently conducted a NC seismic survey (e.g. re plate tectonics, etc). It covered a much wider area (2± to 200± miles from the NC coast vs. 10± to 50± miles for fossil fuel exploration for the entire NC coast: see [here](#), p 4-6). Both seismic surveys are done with the same type of ships and equipment, with minor technical differences. Interestingly the academic geological surveys send stronger signals **deeper** into the ocean bed, as natural gas and oil reserves are shallower. This National Science Foundation (NSF) [study](#) discusses the environmental impact of the Lamont-Doherty seismic survey. NSF concluded this seismic survey caused no consequential harm to the NC ocean’s eco-system... Lastly if seismic surveys are so environmentally problematic, where are the NGOs objections to the seismic surveys needed to site offshore wind turbines?

2 - An oil spill is inevitable. As one writer put it, “if you drill, you’re going to spill.” This perspective is a classic example of a well-known logical fallacy: if “X” happens, then “Y” is certain to follow. However, correlation is not the same as causation. Those who oppose offshore fossil fuels assume right from the beginning that the worst outcome (a BP Horizon type of accident), is inevitable. In reality, consequential oil spills resulting from drilling accidents are exceedingly rare. Offshore exploration and development can be done safely and is being done safely all over the globe. A spill is **not** inevitable.

The BP Horizon accident was an unfortunate anomaly. The accident cost BP \$65± billion in fines, restitution, and compensation, making it clear that an offshore accident today could mean financial ruin, even for the largest companies. None of these successful businesses wants to go bankrupt, so everyone involved (companies, equipment manufacturers, regulatory agencies, academic researchers, etc.) have become more risk averse than ever before. Extensive and unprecedented consultation among all these stakeholder groups over the past six years (including NGOs) unleashed an extensive analysis and evaluation of the causes of the BP accident, and a comprehensive review of all dimensions of the offshore program (from industry standards and best practices to design requirements and operational procedures for critical equipment).

This analysis and evaluation resulted in a relatively recent **major** overhaul of U.S. offshore drilling regulations. The Obama Administration DOI 2016 press release accompanying the implementation of its new well-control regulations [states](#):

“...the final rule addresses the full range of systems and equipment related to well control operations, with a focus on blowout preventer requirements, well design, well control casing, cementing, real-time monitoring and subsea containment. The measures are designed to improve equipment reliability, especially for blowout preventers and blowout containment technologies. The rule requires operability of equipment through rigorous testing and provides for the continuous oversight of operations, all with the goal of improving the reliability of equipment and systems to protect workers’ lives and the environment from the potentially devastating effects of blowouts and offshore oil spills.”

The Trump Administration is working with industry experts to ensure that these changes further increase safety (e.g. [here](#)). Life is about managing risks, as there are risks in every human endeavor. For example, tens of thousands of U.S. citizens die every year in traffic accidents, yet we still drive our vehicles. Accidents are not inevitable and the risks can be managed. The number of oil spills from all sources, and the volumes of oil involved, have fallen considerably, decade by decade in the past 30 years, in spite of the 40 million barrels per day increase in world oil output and consumption that occurred over the same time. As a result of new rules and regulations, and the financial penalties facing those involved, offshore drilling is unquestionably safer today than ever before, especially in the U.S..

3 - Offshore drilling puts the vital coastal tourism industry at risk. This claim ignores many realities: the extremely low likelihood of a consequential oil leak ever happening, that the rigs would be 40± miles off the coast, that the ocean currents would not be bringing any oil spill to shore, and more. Further, a recent [study by NCSU](#) specifically asked NC coastal visitors two questions: **a)** are you in favor of wind energy [*most said YES*], and **b)** would you do the same vacation in a NC coastal community where wind turbines were visible [*80%± said NO*]. If drilling opponents are sincere about their concern for the NC coastal tourism business, where is their organized and vocal opposition to wind turbines being visible off the NC coast?

4 - More jobs will come from offshore wind energy than from offshore fossil fuels. The discussion surrounding the number of jobs, the types of jobs, and the location of jobs likely to be created by offshore fossil fuel development, ranges from confusing to silly. To begin with, we don’t choose our energy supplies by the number of jobs they create! Instead, our energy options are selected based on **reliability, actual cost to ratepayers, true cost to taxpayers, proximity to demand centers, dispatchability**, etc.

Even if we did focus on jobs, we would be better off choosing the energy options that require the *least amount of labor per BTU*, because they are also likely to be the least expensive and most efficient. This [study](#) concluded that it takes 7± wind energy workers to produce the same amount of electricity that 1 fossil fuel worker can produce. That said, the political attraction of job creation is understandable, and we know that many politicians live and die by economic indicators. Kissing babies and promising jobs are two political tactics that never go out of style.

Opponents of drilling have disputed fossil fuel industry employment claims as speculative - yet they accept the job claims of wind energy lobbyists at face value. Here’s how the numbers likely compare: a [projection](#) for NC jobs resulting from offshore wind energy is 20,000±. The latest [projection](#) for NC jobs from offshore fossil fuels is 55,000±.

Until we have a better understanding of the reserves off our coast, we can't be certain about its job creation. It all depends on where a seismic survey shows oil and natural gas resources located, and the quantities that can be economically recovered with current technologies.

Exploration and development of fossil fuels, if and when it goes forward, will create many high-paying jobs in the legal, accounting, engineering, environmental, and regulatory and compliance fields. NC's solid manufacturing base, which already supplies many sophisticated components to the fossil fuel industry, would see more activity, and our world-class research institutions put us in a good position to benefit from offshore development. (Here are some [videos](#) for sample career possibilities.) A good parallel is what has happened further up the Atlantic coast, in Canada. See this detailed [economic study](#) about the broad and substantial economic benefits experienced there. For more information see "[North Carolina Offshore Oil and Gas Roadmap](#)," prepared by the NC Energy Policy Council, December, 2016.

5 - Professional NC fishermen oppose coastal fossil fuel exploration and development. This is a misunderstanding. The [North Carolina Fisheries Association](#) (NCFA) recently brought this issue to their board again (as it had been discussed before). Although on most issues they almost always have dissenting votes, in this case the 17 member board *unanimously* supported NC offshore fossil fuel exploration and development. Here is their [official position statement](#) about offshore fossil fuels. This is a [story](#) about their position and the NC Governor's statement.

What is undeniable is that fishermen have been overwhelmingly opposed to offshore wind turbines (e.g. see [here](#) and [here](#)). There have been several studies (e.g. [here](#) and [here](#)) that have documented the environmental impact from turbine construction (e.g. significant sounds resulting from pile driving enormous bases, hundreds of feet into the ocean floor). Additionally there have been many reports of whale beachings and deaths that have been attributed to the infrasound generated by these 700± foot tall industrial structures (e.g. see [here](#) and [here](#)).

6 - There isn't enough oil and natural gas off the NC coast to justify the risk and the expense. Drilling opponents say the old U.S. Geological Survey (USGS) estimates the amounts of fossil fuel reserves in the mid-Atlantic are so small that they won't matter, so it's not worth the trouble, risk and expense to go after them. That assertion ignores two studies, by independent academic experts (both PhDs), that both came to the opposite conclusion. This [article](#) says:

"Mike Walden, an economist at North Carolina State University, did a cost-benefit analysis of offshore energy exploration. University of Wyoming economist Timothy Considine also did a [detailed analysis](#). Both looked at estimates of offshore energy reserves, a range of estimates for future market prices, and the potential effects of oil spills or other problems.

"While using **different** methodologies, Walden and Considine came up with similar results, as Walden explains in his recent [book](#) (and [here](#)). The scenario Walden described as most likely suggested that offshore drilling would boost North Carolina's gross domestic product by \$1.9 billion a year, its permanent employment by about 17,000 jobs, and annual government revenues by \$116 million. In Considine's mid-range scenario, his growth projections were \$1 billion in GDP, about 15,000 jobs, and \$171 million in revenues. *{Ed note: in their economic figures, Considine assumed State revenue-sharing, while Walden did not.}*

"What about the environmental risks? Using standard assumptions and historical probabilities, the two scholars came up with projections denominated as dollars of GDP. Walden put the potential cost of spills at \$83 million a year. Considine computed a broader range of potential environmental costs, including emissions, at \$92 million a year."

The truth of the matter is we don't know exactly what reserves are there. There haven't been any NC offshore energy surveys for 40± years, and the technical advances in seismic surveying for oil and natural gas resources achieved since then (e.g. high resolution 3D) have never been applied in this region. Let the companies that take the economic risks make the economic decision whether or not to walk away. All indications are that the economics do make sense. This 2018 [report](#) estimates that there will be some **\$260 Billion** in economic benefits to Atlantic Coast states to develop their fossil fuel reserves — and North Carolina is far and away the big winner.

Given the long lead times required to lease, explore, develop and license production from new fields, it is extremely important that we have a better understanding of the scale of the resources off our coast. The earliest anything would be likely to be produced will be beyond 2030, and who knows what the market will be like then? If there aren't any commercial deposits in the Atlantic OCS, policy makers and the industry need to know that so they can focus their attention and resources on other options. A new seismic survey would put the uncertainty to rest.

7 - Drilling would result in some of the NC coast looking like Louisiana or Galveston, TX. Opponents of drilling play this card several ways. On the one hand they claim that we may lose our beautiful beaches, clean water, wildlife habitats, and pristine environment to unbridled industrialization. On the other hand, the very same people often argue about the job creation benefits of industrialization. They can't have it both ways. As in several of the examples before, the truth is somewhere between these extremes. A lot depends on what resources are out there, how much is out there, and where it is, but there are many other forces at work that will also have an impact.

For multiple reasons, Texas/Louisiana type of oil and gas infrastructure is highly unlikely to be constructed along the NC coast. Much of NC's shoreline is comprised of state, local and national parks, wetlands, areas of environmental concern, wildlife sanctuaries, and critical habitats. There is also unlikely to be any suitable tracts of NC coastal land for this type of industrialization. Further, the land that is available is simply too expensive for this type of use.

Additionally, we now have an exceptional amount of federal, state, and local government regulations in place addressing all aspects of development. Many of the commercial projects we take for granted (like the Morehead City port, marinas and channels, and a multitude of ocean front structures), probably could not be built today. Just consider the recent fight over the Titan America cement plant in Wilmington, or the time it took to get agreement on a replacement for the Bonner Bridge (OBX). Our governing bodies currently have sufficient authority to protect our communities from the kinds of development that a majority of residents don't want to see.

Above all, we should not be worried about over-industrialization because these companies aren't stupid. Why enter a prolonged legal battle through an ever-changing forest of regulations and public opposition to build something not needed? Our oil demand has been below 2005 levels and it is expected to remain that way in the coming years. Outside of a few small specialty units, the U.S. hasn't built a large scale new refinery since 1977. We have more than enough refining capacity to meet our needs. If something changes, it's cheaper and easier to invest in the modernization of our existing refineries. If we discover natural gas, it could be processed offshore and shipped as LNG to markets, or it could be brought ashore by pipelines that would be buried out of sight. See again, the "[North Carolina Offshore Oil and Gas Roadmap](#)".

8 - Revenue-sharing with the coastal States has not been approved. The [basics](#) are that the Submerged Lands Act of 1953 provides states with the rights to the natural resources (and associated revenues) of submerged lands within three nautical miles of their coasts. (For Florida’s western coast, this jurisdiction extends nine miles.) Beyond states’ jurisdiction, submerged lands are administered by the federal government for 200± nautical miles, in accordance with accepted international law. These lands are commonly referred to as the Outer Continental Shelf (OCS). BOEM is the federal agency responsible for this territory.

Drilling opponents say that to make the potential issues with offshore drilling worth considering, affected states should get a “revenue-sharing” deal with the federal government. Such sharing would be of income from potential lease-payments, as well as rents and royalties for any offshore fossil fuel leases.

In the prior administration’s plan, there was **no revenue-sharing** between the federal government and the States, as a part of the proposal for the Atlantic area. The issue of revenue-sharing between the Federal Government and States (outside of the Gulf of Mexico) remains to be decided. However, the political reality is that President Trump is [amenable](#) to revenue-sharing of offshore fossil fuel development with affected coastal states, so this is likely a non-issue. See this [good discussion](#). This [presentation](#) and this [article](#) are both instructive. Note: no revenue sharing has been approved for offshore wind energy, so where is the NGOs’ objection?

9 - Any oil and gas we discover will probably be exported anyway. The U.S. became a net exporter of some petroleum products (diesel, gasoline, jet fuel, etc.) a few years ago, and Congress recently repealed the long-standing ban on exports of crude oil. However, the U.S. is still a net importer of crude oil and petroleum products taken together. Exports and imports of crude oil and petroleum products help us balance the changes in consumer demand for products that take place seasonally and over time. They also help us match different crude oil stream’s physical characteristics with various refinery configurations to maximize output of higher-value products. Crude oil produced 50± miles off our coast probably would be pumped directly into tankers and sent to refineries here or abroad, and that is a good thing.

The product created from a given economic activity doesn’t have to be consumed where it’s produced in order for it to provide benefits. This is like saying that all the fish caught in NC waters have to be eaten here in NC in order for us to benefit from fishing, or that all the phosphate mined in Aurora (NC) has to be used in Aurora for that community to benefit from that mining. This is a red herring, as it simply is not true. Oil, and natural gas (*via* Liquefied Natural Gas: LNG), are internationally-traded commodities whose prices are determined in a global marketplace. An increase in supply anywhere will affect supplies and prices everywhere.

The shale revolution has made it possible for the U.S. to become a net exporter of oil and natural gas, which provides many strategic benefits for us and our allies. U.S. exports of natural gas are lessening Europe’s dependence on [Russian gas imports](#). This recent [typical story](#) is about severe LNG shortages in Europe. **Half** of Britain’s imported LNG now comes from [Russia](#)!

In other words, NC offshore gas production would help our **national security**, as it would limit Russia’s earnings from selling LNG (to Europe [and even the U.S.](#)!). That income often funds Russian agendas at odds with our own objectives. This [report](#) makes clear the geo-political power of U. S. gas resources. This perspective is supported by this 2018 [Congressional Report](#) which documents that Russia is meddling in our energy markets — with the [same objective as the NGOs have](#): *to discourage the U.S. from developing its valuable fossil fuel resources.*

10-We have better U.S. energies available to us. We may indeed have better energy options available to us, however, the same NGOs that oppose offshore fossil fuel exploration and development, also strongly oppose: nuclear, hydroelectric, coal, gas fracking. What's left? Wind and solar. Regarding electricity generation, it takes considerable imagination and chutzpah to call these unreliable, dilute, expensive options “better” than conventional sources (e.g. natural gas).

To try to justify this illogical conclusion, the NGOs say that we need to include the *external* costs of fossil fuels. Of course, they never apply this criteria to wind and solar, as the external costs of those are significant. Additionally it only makes sense to consider externalities, if we are *objectively* and *comprehensively* looking at the **benefits and liabilities** of each of our energy options. Any such comparison would conclude that fossil fuels have a superior NET externality — which is why the NGOs never do such an analysis. So if the NGOs involved here are believed to have energy competence, then no, we do not have better U.S. energy options available.

11-We don't need fossil fuels as we can live on 100% renewable energy sources. This is one of the silliest of the arguments. This type of claim is made to take advantage of the fact that most citizens are technically challenged - i.e. they simply don't understand electric grid realities.

For example, there is no such thing as wind energy by itself. Due to its unrelenting, unpredictable and uncontrolled output, wind energy must be permanently paired with a balancing conventional fuel source, which almost always is Gas (i.e. natural gas). So, what actually exists in the real world is a Wind+Gas package. In other words, the more wind we have, the more Gas we need to balance it. A similar situation exists for solar power.

The [Buck Rogers](#) claim that this renewable energy balancing will done by batteries, is too fanciful to take seriously. The discovery, development, manufacture, and deployment of economical large-scale batteries to bring about 100% renewables is not even in the foreseeable future. Even ardent supporters of renewable energy (like Bill Gates) recognize the limitations of today's renewable technologies. [Gates](#) likened trying to run a modern economy on 100% renewable energy to “trying to put a man on the moon by stacking ladders one on top of another.”

In addition to the intermittency of renewables, another real-world problem is their diluteness. In other words, it takes an enormous number of wind turbines to even roughly approximate the average output of a single gas well. For example (see [here](#)), to match the energy output of the proposed NC offshore [Manteo Prospect](#) gas facility, it would take 7700 offshore wind turbines — covering an area the size of the state of Rhode Island! The environmental, commercial fishing, shipping, military, etc. impacts of such an enormous wind project, would be extraordinary. (As just one example, these turbines would interfere with radar for commercial airline traffic, as well as for military operations: see [here](#).)

Another reality-check fact is that offshore wind energy is four to five times the cost of conventional energy. Countries with the highest percentage of renewables, also have the highest cost for electricity. For example, Denmark has a lot of wind turbines (onshore and off) and the cost of residential electricity there is about 36¢/KWH. The U.S. average residential cost is about 12¢/KWH. How is it good for our citizens or our economy – our families, farms, factories, hospitals, schools and all businesses – to increase our cost of electricity by three times?

According to the U.S. Energy Information Administration all renewables together currently provide about 5% of our country's Total Primary Energy Requirements (TPER). Wind and solar alone, provide less than 3% of the U.S. TPER, and less than 1% of global TPER.

Speculation that expensive, uncontrolled renewable energy will completely replace low-cost, reliable fossil fuel energy sources, is simply wishful thinking, and without scientific basis. The only reason wind and solar have become even a small part of the energy mix, is because of the effectiveness of an intensive lobbying campaign to influence political policies (e.g. to get tax dollars for products that are not cost effective on their own). Despite their political support, wind and solar will continue to be relatively minor players for the foreseeable future.

12-To effectively combat climate change, oil and gas need to stay in the ground. Opponents of drilling claim we can contribute to the Paris Accord's goal (limiting the earth's temperature rise to no more than 2° C), by not using the fossil fuel resources off our coast. However, leaving these resources in the ground that wouldn't have been produced for another 15± years anyway, clearly won't have any near-term effects on climate change. Additionally, leaving these resources in the ground will not affect the U.S. demand, so the oil and gas we consume will come from other sources.

Once again, in making their anti-fossil fuel case, the drilling opponents are leaving out important information. For example, a detailed [study](#) was done at MIT to simulate some of the consequences of getting just 10% (a far cry from 100%) of our TPER from wind energy. The startling conclusion is: “using a three-dimensional climate model suggested that a large deployment of wind turbines over land to meet about 10% of predicted world energy needs in 2100 could lead to a **significant temperature increase** in the lower atmosphere over the installed regions.” In other words, large-scale deployment of industrial wind turbines could **increase** climate temperatures!

Another claim frequently made, is that we need more wind energy so that we can get rid of coal. (This is primarily heard from the Sierra Club which has been paid \$80 million to conduct its anti-coal campaign: see [here](#) and [here](#).) The problem is that no quantity of wind turbines can ever replace even a single coal facility, as coal is typically a base-load source (i.e. one that generates a constant amount of electricity 24/7/365). Due to its unpredictable and uncontrolled output, wind energy can never provide base-load electricity. What can replace coal is a Wind +Gas package — *but that means continued fossil fuel dependence*.

An eye-opening pertinent [study](#) (confirmed [here](#) and [here](#)) compared the [CO2](#) from the Wind +Gas package that actually exists on the grid, to the CO2 from just Gas by itself. Due to some technical realities (like the fact that there are two different types of Gas generators), **Gas by itself resulted in lower CO2 than Wind+Gas!** In other words, if the objective is to reduce CO2 (and help with Climate Change), we should be using **more Gas**, and **less Wind!**

Another consideration rarely heard from fossil fuel opponents is the use of [Enhanced Gas Recovery](#) (EGR). This technique amounts to injecting CO2 into the ocean subsurface, to force out the gas. This offshore energy CO2 sequestration would *help* with climate change.

In another climate change perspective, keeping Atlantic oil and gas in the ground could raise prices and suppress demand for these fuels. The higher natural gas prices would inhibit the use of this clean-burning bridge fuel, and limit its ability to substitute for coal and reduce CO2 emissions. This would unquestionably be the case in Europe, where Russian supplied natural gas is priced at 5± times what we pay. This high cost limits Europe's ability to substitute clean-burning natural gas for coal, which means that more global CO2 could be saved if we developed and exported our offshore natural gas to Europe.

Despite the religious opposition of certain environmental organizations to fossil fuels, the fact is that the global percentage of fossil fuel use has [NOT decreased](#) over the past **forty** (40±) years. Additionally, the official projections for the next **twenty-five** (25±) years are that the global percentage of fossil fuel use [will INCREASE](#). Based on this reality, and the other careful explanations provided in this document, it's clear that we should embrace careful and cautious exploration and development of our offshore fossil fuel energy resources.

Some Conclusions:

- a) Offshore wind energy is a much worse choice than is offshore natural gas.
- b) When the NGO concerns about offshore fossil fuel exploration and development are carefully and objectively examined, the evidence indicates that they are weak.
- c) When the NGO concerns about offshore fossil fuel exploration and development are compared to their position on each of the same items regarding offshore wind energy, there are significant discrepancies. This inconsistency erodes their credibility.
- d) On the other hand when the NGO concerns about offshore fossil fuel exploration and development are compared to the position of the Russians regarding U.S. energy policy, there is almost perfect alignment. This uniformity supports the contention that the NGO offshore fossil fuel concerns are primarily political in nature.
- e) Strategically, DOI would be well-advised to change their current OCS Leasing Plan from Natural Gas and Oil to just Natural Gas.

Some sample U.S. offshore drilling articles and reports:

- [BOEM Environmental Assessment of the OCS Oil and Gas Leasing Program](#)
- [Offshore Resources: Digging Up The Facts](#)
- [OCS Leasing Benefits](#)
- [Sound and Marine Seismic Surveys](#)
- [Interview re Seismic Testing](#)
- [Offshore Access to Oil and Natural Gas Resources](#)

Some sample NC offshore drilling articles and reports:

- [NC DENR Presentation about Offshore Wind and Fossil Fuels](#) (2016)
- [Offshore Energy Primer](#) (one page)
- [Pine Knoll Shores Talk](#) (Rudi Rudolph)
- [Differences Between Friends and Foes of Offshore Drilling](#)
- [Drilling Opponents Pack Raleigh Meeting](#) (also see sidebar article)

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This paper is a significant expansion of the excellent [offshore energy report](#) originally done by John Brodman. He was a former (retired) Deputy Assistant Secretary for International Energy Policy at the U.S. Department of Energy, and former member of the [NC Energy Policy Council](#). Special thanks also to the many people who took the time to review this paper.