

Offshore Drilling in the South Atlantic: *Too Little, Too Late*

An SELC Position Paper Fall, 2008

With the recent volatility in the price of gasoline and the lifting of the longtime ban on offshore drilling on the Outer Continental Shelf off the Atlantic, Pacific, and eastern Gulf coasts, efforts to begin drilling for oil and natural gas in the Atlantic Ocean have commenced. In fact, on November 13, 2008, the Minerals Management Service, the federal agency that regulates drilling, initiated the process for drilling for oil and gas in a 2.9-million-acre area off the coast of Virginia.

SELC opposes offshore drilling in the Atlantic Ocean.¹ The environmental costs are great, and the quantity of recoverable oil and natural gas resources is small in light of the nation's overall energy and fuel demands. Further, according to the Bush Administration, oil and gas resources would not be available for ten years and are unlikely to affect the price of gasoline or our reliance on foreign sources of oil.

A rush to drill in our oceans is not the solution. There are far better ways to lower fuel costs and reduce dependency on fossil fuels, such as lowering demand through efficiency measures, developing alternative fuels and cars that will run on them, and increasing transportation options and decreasing our dependence on single-occupancy vehicles.

- According to the Minerals Management Service, the entire Atlantic Coast would likely yield 3.8 billion barrels of crude oil.² If all of this oil were refined into petroleum products, such as gasoline, it would be tapped out in only six months at current rates of U.S. consumption.³
- According to the Energy Information Agency, the entire Atlantic Coast would likely yield 36.99 trillion cubic feet of natural gas.⁴ If all of this gas were extracted and processed, it would be exhausted in 18 months.⁵
- Opening up the Atlantic, Pacific and eastern Gulf regions to oil and gas drilling would have no impact on domestic crude oil and natural gas production or prices before 2030, and any impacts on oil prices are expected to be “insignificant,” according to the federal government.⁶

Background

For more than 26 years, a federal ban had been in place that restricted drilling for oil and gas off the Atlantic and Pacific coasts and in parts of the Gulf of Mexico. This ban comprised two parts: 1) a congressional moratorium on new leases on the Outer Continental Shelf (OCS) renewed each year since 1982 as part of the appropriations process; and 2) an executive order issued by President George H. W. Bush in 1990 that

withdrew areas under congressional ban from oil and gas leasing through the year 2000. President Bill Clinton extended the withdrawal through 2012; yet, in June 2008, President George W. Bush lifted the executive withdrawal and called on Congress to lift its moratorium.⁷

In response, the U.S. House of Representatives passed legislation in September 2008 to lift the congressional moratorium, allowing exploration and drilling more than 100 miles from the coast, and giving states the option of allowing drilling between 50 and 100 miles off their shores. A bipartisan group of 20 senators outlined their own plan that targeted areas off the coasts of Virginia, North Carolina, South Carolina, and Georgia for drilling as little as 25 miles from shore, but the Senate delayed action on this proposal. Without consensus action from Congress, the moratorium expired on September 30, 2008. Some members of Congress vowed to revisit the issue after the election, and with a new incoming administration, it remains to be seen if President Obama will issue another executive order or if the congressional moratorium will be renewed in full, in part, or at all.⁸

Meanwhile, if new drilling is allowed to take place on the OCS, the U.S. Department of the Interior will be required to prepare and carry out what is known as a “five-year program,” which includes a schedule of oil and gas lease sales indicating the size, timing, and location of proposed leasing activity that the Secretary of the Interior determines will best meet national energy needs for the five year period following its approval. In anticipation of the expiration of the drilling ban, the Secretary of the Interior has initiated the process for drilling in a 2.9-million-acre area off the coast of Virginia and begun the steps for developing a new five-year program.⁹

Offshore Drilling Is Not the Solution

First, offshore drilling off the coast of the Southeast will not yield enough oil or natural gas to justify the significant environmental impacts that would result. According to the Minerals Management Service, the entire Atlantic Coast would likely yield 3.8 billion barrels of crude oil.¹⁰ If all of this oil were found, recovered, and refined into petroleum products, such as gasoline, it would be tapped out in only six months at current rates of U.S. consumption.¹¹

Further, the Minerals Management Service reported that in 2007 the U.S. consumed approximately 23.054 trillion cubic feet of natural gas, and the Energy Information Agency provides a range of estimates with a mean estimate for natural gas reserves off the entire Atlantic coast of 36.99 trillion cubic feet.¹² If all of this natural gas were found, recovered, and refined, it would last approximately 18 months at current rates of U.S. consumption.¹³ Further, substantial quantities of gas deposits in the Atlantic are frozen in methane beds at the edge of the OCS, and current technology does not allow for the recovery of natural gas from these deposits.¹⁴

Second, more domestic drilling does not translate into lower gasoline prices. According to the Energy Information Administration, because oil prices are determined

on the international market, effects on average prices are expected to be “insignificant,”¹⁵ and opening up the Atlantic, Pacific, and eastern Gulf regions would not have any impact on domestic crude oil and natural gas production or prices before 2030. Even with the congressional moratorium expiring on September 30, 2008, leasing could not begin sooner than 2012, and production could not begin until about 2017.¹⁶

Third, oil and gas companies, which already have access to substantial oil and natural gas resources, should focus on evaluating and developing these available resources before seeking to drill on new areas of the OCS. The majority of OCS oil and natural gas resources are already open for leasing, yet a fraction of the total acreage of leased areas on the OCS are under production. Of all expected OCS oil and gas resources, 79 percent of oil and 82 percent of natural gas resources are in areas currently open for leasing, yet just 10.5 million of the 44 million acres leased offshore are currently under production.¹⁷

Onshore, about 13 million acres of the 47.5 million acres of federal lands currently under lease are in production.¹⁸ Combined, oil and gas companies hold leases to nearly 68 million acres of federal land and waters that are not under production for oil and gas.¹⁹ In addition, companies have stockpiled nearly 10,000 permits that could be used to increase production. The Bureau of Land Management has issued 28,776 permits to drill on public land since 2004, yet only 18,954 wells have been drilled.²⁰ These resources, which are already available, must be evaluated and pursued before new offshore areas are opened. Importantly, this evaluation should balance the extent to which production in specific areas will contribute to overall energy with fuel supplies and the environmental impacts of exploration and production activities in these areas.

Offshore Drilling Would Bring Significant Impacts to the Coastal Environment and Economy in the Southeast

Drilling in the Atlantic Ocean for oil and natural gas would damage marine ecosystems, cause the loss of coastal wetlands, and increase air pollution. These impacts would, in turn, undermine the tourist economy in coastal states, as well as the commercial and recreational fishing industries.

As part of the exploratory phase of oil and gas development, companies use “air guns” to send thousands of powerful blasts of seismic waves into the ocean to reveal the location of oil and gas resources. These blasts reverberate throughout the ocean and inflict substantial injury to marine mammals and fish, which are sensitive to and rely on sound for almost all important aspects of their life.²¹ Noise from seismic survey devices can be deadly to whales and has led to mass stranding of whales and other marine mammals.²² In addition, seismic air guns have been shown to damage fish species, with resulting decreases in commercial fishing catch rates.²³

Once offshore drilling rigs become operational, they routinely discharge damaging wastes into the ocean. According to the Minerals Management Service, a single well over the course of its operational life generates an average of 180,000 gallons

of “drilling muds” and “cuttings,” which are typically dumped untreated into surrounding waters.²⁴ The agency also estimates that each platform discharges hundreds of thousands of gallons of “produced waters” daily.²⁵ Both drilling muds and produced waters contain toxic pollutants, such as mercury, lead, chromium, barium, arsenic, cadmium, and polycyclic aromatic hydrocarbons that can accumulate in the marine food web.²⁶ At high concentrations, these pollutants kill marine life. At lower concentrations, they cause birth defects, impaired growth, and other negative outcomes. The dumping of polluted muds also results in turbidity and smothers sea life on the ocean floor.²⁷

In addition, each drilling platform releases 50 tons of nitrogen oxides, twelve tons of carbon monoxide, nine tons of sulfur dioxide, and 39 tons of volatile organic compounds per year.²⁸ These compounds are the basic ingredients of smog, haze, and other air pollution.

Further environmental degradation occurs as a result of accidental oil spills, which cause irreversible damage to marine environments and can devastate coastal economies. Oil, which is extremely toxic to marine life, spreads on water at a rate of one half a football field per second.²⁹ According to the National Academy of Sciences, current cleanup methods can remove only a small fraction of oil spilled in marine waters.³⁰ Even with improvements in technology, spills from tanker ships and pipelines continue to occur, often going undiscovered for long periods of time. The South Atlantic coast, like the Gulf of Mexico, is vulnerable to hurricanes and storms, which have played a large part in causing spills from platforms in the Gulf.³¹ During Hurricanes Katrina and Rita, 435,330 gallons of oil spilled from platforms and drilling rigs, and 306,054 gallons of oil leaked from 457 pipelines that were damaged.³² In addition, eight million gallons of petroleum products spilled from onshore facilities.³³ Combined, the spilled and leaked oil amounted to almost as much as the 11 million gallons spilled by the Exxon Valdez in Alaska’s Prince William Sound in 1989.³⁴

When spills do occur in the Atlantic, ocean currents can cause a spill off one state’s coast to wash up on the beaches of others.³⁵ In response to the proposal to drill off the coast of Virginia, scientists have explained that ocean waters off Virginia tend to swirl and loop on each other, out to the edges of the Gulf Stream, and influence ocean trends off Maryland and North Carolina. Because of this mixing action, scientists have argued that the evaluation of the Virginia proposal must include scientific analysis of potential impacts to neighboring states. Although recent congressional proposals (which we may see again after the November elections) to open the OCS off the coasts of Virginia, North Carolina, South Carolina, and Georgia include a requirement that a state “opt in” before drilling can occur off its coast, this will not protect any of the states from the choices that its neighbors make.

Onshore, the refineries, pipelines and other infrastructure associated with offshore drilling cause significant harm to the coastal zone. In general, there are three principal forms of onshore development: supply bases and staging areas for exploration; production facilities, including processing plants (sometimes one for each company that is engaged in production); and facilities to transport oil and gas, such as pipelines (again,

sometimes separate pipelines for each company). This industrialization would dramatically alter large tracks of coastal land in the South Atlantic states, augment the waste and pollution from offshore operations, and cause significant losses of coastal wetlands in a number of different ways.

Pipelines that are needed to transport crude oil and raw natural gas from drilling sites to onshore areas can damage coastal resources. In addition to spills, as described above, the mere construction of pipelines in coastal environments can result in significant impacts. Oil and gas companies working in coastal areas often have to excavate canals through coastal wetlands in order to lay pipelines, resulting in the destruction of approximately six acres of vegetation for each linear mile of pipeline constructed.³⁶ Notably, Louisiana has lost up to 40 square miles of marsh a year for several decades (approximately 80 percent of the nation's annual coastal wetland loss),³⁷ and it has been estimated that a substantial portion of these losses are due to oil and gas production.³⁸ States along the South Atlantic coast, such as South Carolina and Georgia, have abundant and highly productive expanses of salt marshes, and it can be expected that new oil and gas operations in these states would result in significant losses of coastal wetlands.

In addition to impacts related to transport, oil and gas resources must be processed before they are consumed by end-users.³⁹ Crude oil is found in a variety of forms and viscosities and must be refined.⁴⁰ Oil refineries separate crude oil into different marketable components such as gasoline, diesel fuel, lubricating oil, asphalt, propane, and many other forms. The typical refinery, which can occupy as much land as several hundred football fields,⁴¹ includes processing areas, storage facilities, auxiliary buildings, electrical substations, and transportation systems.⁴² According to a report published by the Center for Health and the Global Environment at Harvard Medical School, oil refineries present major health hazards for human communities as well as marine and terrestrial ecosystems.⁴³ According to the study, average sized U.S. refineries release on a daily basis more than an estimated 11,000 gallons of oil into the air and water, including dangerous emissions such as hydrocarbons, sulfur dioxide, carbon monoxide, and particulate solids.⁴⁴ Oil refineries impact surrounding communities and environments in many other ways as well, including the discharge of thermal pollution, which results in significant disruptions to aquatic ecosystems and noise pollution, which poses a significant threat to the health and safety of oil refinery employees.⁴⁵

Similarly, natural gas is often found in deposits that include a mixture of other substances, including fluids, sediment, and hydrocarbons, such as ethane, propane, butane, and pentanes.⁴⁶ Natural gas is processed, like crude oil, in order to separate all of the various hydrocarbons and fluids from the pure natural gas for purposes of producing what is referred to as "pipeline quality" dry natural gas that is ready to be used by consumers.⁴⁷ Some initial processing and separation occurs at the wellhead, but most of the processing of natural gas occurs at a processing plant. Although the specific process used to purify natural gas may differ because raw natural gas from different regions often have varying compositions and requirement for separation,⁴⁸ processing is typically used to remove impurities, such as helium, carbon dioxide, hydrocarbons, moisture, and corrosive and toxic hydrogen sulfide.⁴⁹ The process of separating out these materials

can, like oil, result in the discharge of a range of harmful pollutants, such as sulfur dioxide.

Finally, the environmental impacts of offshore drilling would adversely affect coastal economies, which rely heavily on tourism, commercial fishing, and recreational fishing for jobs and revenue. From Virginia to Georgia, tourism generates \$63.3 billion per year and supports 813,983 jobs.⁵⁰ The South Atlantic coast has \$228,579,000 worth of annual commercial fish landings.⁵¹ Saltwater fishing in this same area accounts for 29,182 jobs and has a total ripple effect on the economies of these states of \$2,689,387,217.⁵² Offshore drilling would damage these industries by causing the loss of fishing grounds; displacement of fishing infrastructure; and decreased catches due to seismic testing, oil spills, and contamination from toxic drilling muds.⁵³

By comparison, the economic benefits to be derived from offshore drilling operations by state and local economies in the Southeast are dubious. As an initial matter, under current law, states do not receive any revenue sharing with the federal government in conjunction with oil and gas operations in the Atlantic Ocean, although Congress could obviously amend these rules should they choose to do so. Further, in terms of job creation, benefits to local communities are relatively short-term in nature and uncertain. In 1989, when Mobil proposed to drill for oil and gas off the coast of North Carolina in an area called the “Manteo Prospect,” the Minerals Management Service estimated that under the best case scenario the number of new jobs directly and indirectly associated with the proposal would peak at 830 and 890 respectively in 1998 before declining to 60 and 70 jobs in 2018.⁵⁴ In making this prediction, it was acknowledged that a portion of these new jobs would be taken by new residents, as opposed to North Carolina residents.⁵⁵ In fact, others who follow the oil and gas industry claim that the notion that offshore oil and gas development creates jobs for local populations is unfounded. To the contrary, they argue past experience shows that offshore drilling translates into little employment opportunities for local residents, with most jobs going to workers in other states who work for drilling manufacturing firms, or, in increasing numbers, to foreign workers.⁵⁶

The U.S. Must Pursue Long-Term, Sustainable Solutions to Our Energy Needs

The United States should pursue long-term, sustainable solutions to the nation’s energy needs, rather than accepting the damaging impacts of offshore drilling. Not only would drilling in new areas of the OCS fail to lead to lower gas prices and result in harmful impacts to the environment and the economy in the South Atlantic region, it would also distract the U.S. from making the changes necessary to shift from a fossil-fuel economy to a clean-energy economy. Instead of resorting to more drilling, the U.S. must take such steps as improving fuel economy standards, promoting vehicle maintenance, developing alternative fuels and vehicles, and building more livable communities with enhanced transportation options to decrease the cost of energy, limit our reliance on unreliable foreign sources of oil, and minimize our impact on the environment.

Corporate Average Fuel Economy (CAFE) standards⁵⁷ should be raised. Greater increases in fuel economy would obviate the need to drill for oil, save money for drivers, and reduce the amount of greenhouse gasses from automobiles. The failure to require timely increases in CAFE standards that are reflective of current technology prevents the U.S. from reducing its reliance on foreign oil. For example, between 1980 and 1985, fuel efficiency standards for cars were raised by 7.5 miles per gallon, yet largely remained the same between 1985 and 2007.⁵⁸ If fuel efficiency had been raised by a mere 0.4 miles per gallon per year over this timeframe, then the 2007 standard would have been more than 32 miles per gallon for the nation's current fleet of automobiles,⁵⁹ and the average car would be 50 percent more efficient, reducing the amount of oil used in this country for gasoline by more than one-third (the equivalent of about 3.3 million barrels of oil per day).⁶⁰ In 2007, Congress finally acted by passing legislation calling for a 35-mile-per-gallon CAFE standard for cars and light trucks by 2020, with "maximum feasible" increases beyond this date.⁶¹ Currently available technology, however, would enable automakers to attain greater improvements in fuel efficiency. According to the Union of Concerned Scientists, a cost-effective average fuel economy standard of 42 miles per gallon could be achieved by 2020 with only a modest increase in hybrid market share, saving millions more barrels of oil than Congress' new standard.⁶² The U.S. should take advantage of current technologies by requiring automakers to meet higher standards.

Other simple steps could be taken immediately that would lower the cost of gas and result in the use of less gasoline. Maintaining appropriate tire inflation could save up to 2.8 billion gallons of gas per year,⁶³ and reducing travel speed could save an additional 50 million gallons annually⁶⁴ – as compared to the 1.4 billion gallons of gasoline that the government estimates new drilling in the Atlantic, Pacific, and eastern Gulf could produce by 2017.⁶⁵ Other gasoline savings measures include regular engine tune ups (15¢ per gallon savings); air filter replacement (up to 37¢ per gallon savings), and use of recommended motor oil (4-7¢ per gallon savings).⁶⁶

In addition, investments in viable alternative fuels and vehicles should be made as opposed to drilling offshore for oil. Alternative fuels are produced from material other than oil and include biodiesel, bioalcohol (ethanol and butanol), hydrogen, non-fossil methane, and biomass sources. In addition to alternative fuels, advanced technology vehicles, including electric vehicles, fuel cell vehicles, hydrogen vehicles, and hybrids must be pursued and developed.

Livable communities that improve mobility options and lessen dependence on single-passenger vehicles should be promoted. Cities and communities should be designed so that people are given the choice of walking, biking, and using transit. To accomplish this goal, transportation funding should be redirected to promote public transportation and alternatives to driving; state and local laws and policies must be amended to forge stronger links between transportation and land use planning to reduce per capita vehicle travel; and freight rail and intercity passenger rail must be adopted as viable alternatives to our continued reliance on single-occupancy vehicles.

Moreover, an increased overall commitment to conservation and the development of renewable sources of energy, including wind, solar, tidal, and geothermal sources, will provide the real path to energy independence and reduced gasoline prices. By taking these measures rather than relying on increased offshore drilling, we will avoid negative impacts on our coastal and marine resources, address global warming by curtailing our greenhouse gas emissions, and help make the transition to a green-energy economy.

¹ This paper focuses on the opening up of new areas in the Atlantic to offshore drilling, and does not address the issue of drilling off the coast of Alabama, which was not protected by the federal ban and where drilling has historically been allowed to proceed under certain conditions. That said, SELC strongly favors investment in efficiency and renewable sources of energy as opposed to continued drilling for oil and natural gas off the coast of Alabama.

² Energy Info. Admin., *Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf*, in ANNUAL ENERGY OUTLOOK 2007 Table 10 (2007), available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.

³ In 2007, the U.S. consumed 20,680,000 barrels of crude oil and petroleum products per day. See Energy Info. Admin., Petroleum Navigator, http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbldpd_a.htm (last visited Sept. 23, 2008).

⁴ MINERALS MGMT. SERV., MINERALS MGMT. SERV., Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf (2006).

⁵ In 2007, the U.S. consumed 23.054 trillion cubic feet of natural gas. Energy Info. Admin., *U.S. Natural Gas Total Consumption (Million Cubic Feet)* at Table 1, available at <http://tonto.eia.doe.gov/dnav/ng/hist/n9140us2A.htm>.

⁶ Energy Info. Admin., *Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf*, in ANNUAL ENERGY OUTLOOK 2007 (2007), available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.

⁷ MINERALS MGMT. SERV., FAST FACTS: OIL AND GAS PRODUCTION ON THE FEDERAL OUTER CONTINENTAL SHELF (2008), <http://www.mms.gov/ooc/PDFs/MMSFastFactsJune.pdf>; Minerals Mgmt. Serv., Frequently Asked Questions: Request for Interest Proposed New 5-Year Outer Continental Shelf Oil and Gas Leasing Program (July 30, 2008), <http://www.mms.gov/5-year/FrequentlyAskedQuestions.htm> (last visited Sept. 23, 2008).

⁸ Paul Kane, *House Democrats to Let Ban on Drilling Expire*, Wash. Post (Sept. 24, 2008), available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/09/23/AR2008092303094.html>.

⁹ Call for Information and Interest/Nominations (Call) and Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS), 73 Fed. Reg 67,201 (Nov. 13, 2008). See also Minerals Mgmt. Serv., Frequently Asked Questions: Request for Interest Proposed New 5-Year Outer Continental Shelf Oil and Gas Leasing Program (July 30, 2008), <http://www.mms.gov/5-year/FrequentlyAskedQuestions.htm> (last visited Sept. 23, 2008).

¹⁰ Energy Info. Admin., *Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf*, in ANNUAL ENERGY OUTLOOK 2007 Table 10 (2007), available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.

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- ¹¹ In 2007, the U.S. consumed 20,680,000 barrels of crude oil and petroleum products per day. See Energy Info. Admin., Petroleum Navigator, http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbbldpd_a.htm (last visited Sept. 23, 2008).
- ¹² MINERALS MGMT. SERV., MINERALS MGMT. SERV., Assessment of Undiscovered Technically Recoverable Oil and Gas Resources of the Nation's Outer Continental Shelf (2006).
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- ¹⁴ The U.S. Department of Energy states on its website that: "future production volumes are speculative because methane production from hydrate has not been documented beyond small-scale field experiments." Methane Hydrate: The Gas Resource of the Future, available at <http://fossil.energy.gov/programs/oilgas/hydrates/> (last visited Dec. 4, 2008).
- ¹⁵ Energy Info. Admin., *Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf*, in ANNUAL ENERGY OUTLOOK 2007 (2007), available at <http://www.eia.doe.gov/oiaf/aeo/otheranalysis/ongr.html>.
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- ¹⁷ MAJORITY STAFF OF H. COMM. ON NATURAL RESOURCES, 101ST CONG., The TRUTH ABOUT AMERICA'S ENERGY: BIG OIL STOCKPILES SUPPLIES AND POCKETS PROFITS 2, 4 (2008), available at http://www.majorityleader.gov/docuploads/truth_about_americas_energy.pdf.
- ¹⁸ *Id.* at 4.
- ¹⁹ *Id.*
- ²⁰ *Id.*
- ²¹ Taking and Importing Marine Mammals, Taking Marine Mammals Incidental to Navy Operations of Surveillance Towed Array Sensor System Low Frequency Active Sonar, 67 Fed. Reg. 46,712, 46,718 (July 16, 2002); Linda S. Weilgart, Assistant Professor and Research Associate, Dalhousie University, The Impact of Ocean Noise Pollution on Marine Biodiversity (Mar. 2008), http://awionline.org/oceans/Noise/IONC/Docs/Weilgart_Biodiversity_2008.pdf; see also Laine Welch, *Seafood Industry Worries About Offshore Oil Leases in Alaska*, ALA. J. OF COMMERCE, Aug. 31, 2008, http://www.alaskajournal.com/stories/083108/hom_20080831018.shtml (last visited Sept. 24, 2008).
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- ²³ R.D. McCauley, J. Fewtrell, & A.N. Popper, *High Intensity Anthropogenic Sound Damages Fish Ears*, J. ACOUST. COC. AM. 113 (2003), available at <http://www.awionline.org/oceans/Noise/IONC/Docs/McCauley.pdf>; Weilgart, *supra* note 12.
- ²⁴ MINERALS MGMT. SERV., No. 2000-077, GULF OF MEX. OCS OIL AND GAS LEASE SALE 181, E. PLANNING AREA DRAFT ENVTL. IMPACT STATEMENT IV-28 (2000).
- ²⁵ *Id.* at IV-32.

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- ²⁶ *Id.* at IV-29 to -30; MINERALS MGMT. SERV., No. 2007-003, OUTER CONT'L SHELF OIL AND GAS LEASING PROGRAM: 2007-2012, FINAL ENVTL. IMPACT STATEMENT IV-280 (2007), available at <http://www.mms.gov/5-year/2007-2012FEIS/Chapter4A-BImpactsProposedAction.pdf>.
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- ³⁵ Scott Harper, *Williamsburg conference goes slowly on offshore drilling*, Virginia Pilot Online (Dec. 4, 2008), available at <http://hamptonroads.com/2008/12/williamsburg-conference-goes-slowly-offshore-drilling>.
- ³⁶ DWIGHT HOLING, COASTAL ALERT: ECOSYSTEMS, ENERGY, AND OFFSHORE OIL DRILLING 30-31 (1990).
- ³⁷ See *Civic Soldier Battles for the Wetlands*, Watermarks, June 2008, <http://www.lacoast.gov/> (last visited Sept. 24 2008).
- ³⁸ LONG-TERM EFFECTS OF OFFSHORE OIL AND GAS DEVELOPMENT 26 (Donald F. Boesch & Nancy N. Rabalais, eds., 1987). It should be noted, however, that the extent of these losses is likely due to a combination of factors (not just oil and gas operations), such as the physical geology of Louisiana's coastline and sediment starvation caused by flood control measures on the Mississippi River.
- ³⁹ Dwight Holing, *Coastal Alert: Ecosystems, Energy, and Offshore Oil Drilling* 44 (1990).
- ⁴⁰ *Id.*

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- ⁴⁴ *Id.* at 5.
- ⁴⁵ *Id.*
- ⁴⁶ Processing Natural Gas, available at http://www.naturalgas.org/naturalgas/processing_ng.asp (last visited Dec. 3 2008).
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- ⁴⁹ Dwight Holing, *Coastal Alert: Ecosystems, Energy, and Offshore Oil Drilling* 45 (1990).
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- ⁵⁴ MINERALS MGMT. SERV., DRAFT ENVIRONMENTAL REPORT ON PROPOSED EXPLORATORY DRILLING OFFSHORE NORTH CAROLINA V-27-34 (1989).
- ⁵⁵ *Id.*
- ⁵⁶ Dwight Holing, *Coastal Alert: Ecosystems, Energy, and Offshore Oil Drilling* 37 (1990).
- ⁵⁷ CAFE standards are the sales weighted average fuel economy, expressed in miles per gallon, of a manufacturer's fleet of passenger cars or light trucks with a gross vehicle weight rating of 8,500 pounds or less, manufactured for sale in the United States, for any given model year. See Nat'l Highway Safety Admin., Vehicles and Equipment, <http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55bfbe582f57529cdba046a0/> (hyperlink to CAFE overview) (last visited Sept. 21, 2008).
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⁶⁰ *Id.*

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