

## **Drilling by the Numbers, Again:**

The Economic Impact of Gas Exploration Offshore of Mississippi

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## **Introduction**

It's been about six and a half years since Coast residents first stood up and loudly said "No" to the Mississippi Development Authority's attempts to bring gas drilling rigs to state waters adjacent to our protective barrier islands. Lots of unfortunate things have happened in that interval, including Hurricane Katrina, the BP oil spill, and a major economic crisis and recession, but the Coast has weathered them all pretty well. Today, while still not back to pre-Katrina levels of economic success, the Coast is making steady progress towards that goal. And so the MDA seems to think it's a good time to try again to push offshore drilling in state waters along the Coast.

This short exposition is an attempt to provide straightforward answers to some important questions that Mississippi citizens should be asking themselves and their elected representatives *before* they consent to offshore\* drilling. It's presented as four points you should be aware of about this issue. The first point concerns the answer to the question "how much oil and gas are we talking about?" and issues related to the importance of this amount. The second point concerns the answer to the question "what are the likely economic costs and benefits?" The third point touches on issues relevant to drilling which are critically important, but aren't really quantifiable. If you have a good memory and you're already familiar with the drill, so to speak, skip on to point four: "Why Now?" for a discussion of the most important issues relevant to this time around — including a couple of facts that should leave you asking who exactly MDA and your elected representatives are working for.

Technology can do many wonderful things, but it cannot repeal the basic facts of life. There is no free lunch. Please try to keep that in mind whenever someone talks to you about drilling. It's time for us to expect the state to act responsibly for residents' best interests in managing our state's limited natural resources.

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\* I use the term "offshore" here to mean drilling in the Sound, on and under the islands, and south of the islands in state waters — in short, everything south of the mainland belonging to the state.

## **Point 1: How much oil and gas are we talking about?**

### **Oil**

As a matter of clarification, we should note that the MDA and oil and gas companies insist that they are not interested in drilling for oil in state waters, and in fact most experts do not believe oil exists in economically recoverable quantities under state waters. Since most interest in drilling in Mississippi state waters appears to have been generated by successful gas drilling in Alabama waters, we can probably take them at their word — Alabama waters have yielded no oil in any significant quantity. However, we note that if oil should be found, it *will* be pumped, entailing the all associated risks.

### **Natural Gas**

As a result of limited exploration of the Sound dating from the 1970s and 1980s, of general knowledge about the geology of the Gulf and land-based Coastal wells, and of extrapolation from recent natural gas drilling experience in Alabama, we have some idea of what to expect from gas drilling in Mississippi offshore. Though earlier drilling has never found any economically viable reserves in the Sound, an interdepartmental research center at the University of Mississippi called the Mississippi Mineral Resource Institute (MMRI) released an analysis in 2004 estimating potential gas reserves in state waters based on these existing seismic studies and on statistical analysis. This is the same study that precipitated MDA's efforts in 2005 to open state waters for drilling. The 2004 study, though it did not include any exploratory data, did generate some interest among gas producers in 2005 when natural gas prices were historically high.

That study suggested **there may be about 350 billion cubic feet of offshore natural gas in Mississippi**. While we have some reservations about the statistical techniques used in the MMRI study, the number is acceptable as an optimistic estimate. The MDA and gas industry seems to believe it's a reasonable estimate, since this is the basis of the public claims they made in 2005 to promote offshore drilling. In today's debate MDA is quoting this same study's 350 billion cubic feet as the best estimate of the size of the gas reserve.

So how much is 350 billion cubic feet? Let's put that number into more useful terms:

- Many people have been prompted to favor drilling by looking at Alabama's offshore drilling revenues. Alabama's reserve is considered a small one at 6.5 trillion cubic feet. **Mississippi's offshore reserve is less than 1/17th the size of Alabama's small reserve**. Alternatively, Alabama's offshore wells produce more gas than is contained in the whole of the hoped-for Mississippi offshore reserve every two years. The expected Mississippi offshore reserve is truly tiny.
- Here's a better way to look at it: Optimistically about 80% of the reserves should be recoverable, for a total of about 280 billion cubic feet — let's be generous and call it 300 billion on the high side. It would take about 20 years to completely pump the offshore reservoir dry (some of the Alabama offshore wells are already in depletion) — that's a yield of 14 to 15 billion cubic feet per year on average. The U.S. today consumes 25 TRILLION cubic feet of natural gas every year; demand is expected to grow to just over 27 trillion cubic feet by 2035. **That means every year of drilling near our wilderness islands would, on average, only produce enough gas to satisfy US demand for four and a half to five and a half hours**. After 20 years, all the recoverable gas would be gone. And **every cubic foot of natural gas pumped out of state waters over that 20-year period would have been enough to supply the US for only between three and four and a half days**.

That's how much we will have gained in exchange for our wilderness islands — 4 days of gas for the country over about 20 years. This is the choice we are being given.

That's **not enough to perturb the price of natural gas** even a little — and it won't affect the price of oil, period. Perhaps of more significance to Mississippi residents who worry about their country's dependence on foreign energy sources, it's not enough to offset a critical national gas shortage if one existed.

But it gets worse: As discussed more completely under Point 4, something has happened to the American natural gas scene since MDA worked out its drilling plans in 2005. Owing to technological advances in shale gas drilling methods over the last few years, American natural gas reserves and production capabilities have grown at unprecedented rates, leaving nominal gas prices at 10-year lows. And domestic reserves continue to grow, so much that the U.S. Energy Information Agency (charged with keeping track of such things) now predicts that the U.S. will become a net *exporter* of natural gas within a few years. That is, if we drill in the next ten to fifteen years, rather than contributing to America's energy needs, **most of the gas harvested from Mississippi offshore drilling would effectively contribute only to additional exports of natural gas to foreign energy markets.** This runs deeply counter to most Mississippians' beliefs about why they are being asked to risk the barrier islands and their natural heritage.

Of even greater concern is the fact that, twenty or more years down the road when U.S. natural gas reserves begin to falter and the nation is in critical need of domestic supply, Mississippi's offshore reserve will have been long exhausted, needlessly squandered at a time when it produced minimal value to the country and the state. The only way to ensure that Mississippi's reserves are available when the country really needs them is to keep them in the ground until the country's proven domestic reserves dwindle. We don't know when that time will come exactly, but we know it will likely happen 20 to 50 years from now.

So instead of talking about drilling our tiny offshore reserve today for the benefit of the export-driven bottom line of a few gas companies, consider doing something that won't leave your kids and grandkids 100% dependent on foreign sources — something really patriotic: Take Mississippi's offshore reserve and make it off limits to drilling until it is really needed. Then do your part to conserve our current ample gas reserves by using them wisely.

Remember: **If we allow the gas near the islands to be drilled today, it will be gone when we really need it — when even a tiny reserve could make a difference.**

## **Point 2: What are the Economic Costs and Benefits of Drilling?**

Let's look at the benefits for the state claimed by drilling proponents. There being No Free Lunch, next let's consider the costs drilling proponents haven't spoken up about for a more complete picture of the economic value of drilling.

### **Benefits**

We start with the most obvious benefits to the state — dollar value of that 280–300 billion cubic feet of gas to state and local government. Of course the state doesn't get the lion's share of the sales price of the gas; instead the state collects a royalty of 3/16ths of the sale price and severance taxes of 4 mills per 1000 cubic feet. The spot price for natural gas at Henry Hub (a local pricing point for futures contracts) as of January 23, 2012 was \$2.40/Mcf (dollars per thousand cubic feet). That price is the result of an abundance of supply and relatively low demand this winter, and in fact the price does vary a bit in response to market conditions. The futures market suggests that \$4/Mcf is the likely long-term stable price, and we note that the U.S. Energy Information Agency predicts relatively stable consumption and slow demand growth for the next 25 years, and EIA and other experts anticipate the large domestic reserves which have come online in the last few years and driven prices down will continue for the next 10 to 15 years. In other words, we have good reason to believe that the \$4/Mcf figure is a reasonable long-term estimate of price. In fact because production is increasingly weighted toward inland shale production as offshore production declines, price peaks like those caused by Katrina and other Gulf storms are somewhat less likely looking forward. Warmer winters like this one, and continued increase in inland production capacity will still yield periodic gluts like the current one. So the current low price is not likely to be a one-time affair. This gives us a price range of, say, \$2.40 to \$4/Mcf for our estimate of the value of the reserve, which we assume would be exhausted over the course of a 20-year period.

Using these numbers, we get the following estimates for the dollar value to the state for revenues from drilling the offshore reserve:

- Average annual withdrawal of gas over 20-year life of reserve: 14–15 million Mcf (that is, 14-15 billion cubic feet)
- Average dollar value of gas pumped during a year: \$33 million to \$60 million, depending on price
- **Average revenue to state and local governments**, including royalty and severance tax, during 20-year life of reserve: \$6.25 million to \$11.3 million.
- **Total revenue to state and local governments over life of reserve** (280–300 million Mcf), including royalty and severance tax: \$127.1 million to \$226.2 million.

The numbers are a range created by the assumed gas price range (\$2.40 to \$4/Mcf) and the assumed pumped volume range (14 to 15 million Mcf). The numbers are fairly straightforward and can be easily confirmed by anyone with rudimentary math skills.

Incidentally, you may have noticed that these numbers are significantly different from those being trumpeted by MDA in their support of drilling the offshore reserve. MDA is claiming state revenues of \$241 million to \$523 million dollars over the life of the reserve. Why might that be? In response to a public records request, MDA have indicated that they used high and low market numbers between 2005 and 2009. Under the assumption that gas price variations are randomly driven or cyclical without an underlying year-to-year trend, even using 3-year-old pricing might be reasonable. However, the U.S. domestic natural gas market has in the intervening period undergone a dramatic

transformation. Domestic reserves increased 70% between 2005 and 2009. Between 2005 and 2011, shale gas production has increased more than seven-fold. In response to this increase in reserves and production capacity the price of natural gas has trended down significantly since 2008. Assuming the downward trend stops this year, futures markets suggest prices should stabilize around \$4/Mcf later this year; EIA now predicts prices will remain below \$5/Mcf through 2023. Moreover, experts expect the large domestic reserves which have driven the price drop to persist for the next 10 to 15 years, while the EIA predicts only very minor growth in natural gas consumption (less than 10 percent over 20 years). Additionally MDA assumes 100% of the reserve is recoverable, in stark contrast to Alabama's experience.

You may also recall that around 2005 the U.S. was experiencing extremely short reserves, to the extent that the predominant conversation about natural gas in 2005 was about the necessity of building offshore LNG terminals to accommodate the necessary importation of foreign natural gas to meet domestic need. Today, as a result of the incredible growth of domestic reserves in excess of domestic demand, those same LNG terminals are to be used for *export* of domestic oversupply. For these reasons the use of old price data is not only inappropriate but downright misleading. We will discuss this topic a bit more in Point 4.

Before leaving the issue of net benefit of drilling to state revenues, though, let's be thorough. The numbers computed above, \$6.25 to \$11.3 million per year over the twenty-year life of the reserve, do not include the state's costs of doing business. Pro-drilling elected officials, the MDA, and even the DMR have been quick to assure us that they won't let anything bad happen to our islands, our Sound, our Gulf. I assume this means they have a tough environmental enforcement effort planned along with stringent monitoring of accounting, with adequate staff and funding. We'd certainly better hope that strict enforcement is planned, as Alabama's experience is instructive: There at least one oil company attempted to cheat the state out of a several million in royalties and severance, and in another episode a drilling company dumped drilling waste into Mobile Bay in contravention to zero discharge regulations. Only Alabama's aggressive enforcement efforts, making examples of the violators, kept drilling there on track. The pressure will be much greater for drillers on Mississippi's small reserve to cut costs to maintain profitability, and in the absence of serious enforcement, expected revenues should be less and expected environmental damages greater than would otherwise be the case. To avoid regulatory capture (control of regulators by regulatees, as happened in the recent financial crisis) it will not be possible to force the drilling companies to pay directly for their own monitoring; this requires that the state devote permanent employees to the task. Assuming enforcement and monitoring for the entire drilling effort will require a total of 10 to 15 dedicated personnel, we estimate, say, a conservative \$3 million per year toward all government enforcement and monitoring costs associated with offshore drilling, not to mention additional security costs. That brings annual net state and local revenue from drilling — before considering the economic costs associated with drilling — down to about **\$3.25 million to \$8.3 million per year** for the 20-year life of the reserve. Alternatively this reduces the total net revenue to the state from drilling of **\$67.1 million to \$166.2 million over the life of the reserve**.

Before we leave the issue of economic benefits, let's touch on one more question for completeness. Why aren't we talking about the benefits to the Coast? Why aren't even drilling proponents talking about the benefits to the Coast and the Coast's economy? **The reason is that there ARE no benefits for the Coast.** It won't provide a significant number of jobs; rig servicing and gas processing will be almost certainly be handled by existing facilities in place in Alabama and Louisiana. From the perspective of gas companies, it would make no sense to

build new facilities just to handle the relatively few rigs in MS waters. The number of jobs on the rigs themselves would be few, and workers to fill those few jobs would most likely be drawn largely from Alabama and Louisiana. Additionally the relatively small payments to the three coastal counties from severance tax amount to on the order of \$10 per year per household over the life of the reserve. The Coast is where the drilling would happen. What kind of economic development doesn't provide any benefit to the local area?

### **Costs**

Now let's consider the costs proponents *won't* tell you about. Drilling in the Sound is taking a scenic locale (the Sound), around which a successful tourism and gaming industry has been built up over the last 20 to 25 years, and turning it into an industrial production zone. Up to this point, industrial uses — commercial shipping, sport fishing, and seafood industries among others — have managed to hammer out a workable if sometimes precarious arrangement to sharing this precious asset with the tourism and gaming industries that rely on the aesthetic values of the Sound and islands. But drilling completely tilts the table in another direction. There will be adverse consequences for all the current parties sharing the resource. By far the most significant of these industries in terms of bottom line — and also in terms of adverse impact — is the tourism and gaming industry. For these industries, drilling near the islands would be worse than putting a heavy industrial park in the middle of Vicksburg National Park — or the Ross-Barnett Reservoir. It's something zoning restrictions and common sense just wouldn't allow.

The problem is that even if the gas and oil companies are perfect angels, even if there is never a single accident contaminating the Sound, just the presence of the rigs will damage the area's tourist reputation. Tourists are a finicky lot; they make their decisions about where to vacation based almost entirely on reputation and sub-consciously formed perceptions. The state's experience with the BP Oil Spill showed that Coast tourism is much more sensitive to the perceived health and condition of the Sound than anyone previously imagined. The Spill also predisposed tourists to have reservations about the environmental health and safety of the Mississippi Coast.

The problem is compounded by the fact that the people most likely to decide to take their vacations elsewhere are the bigger spenders who have made Coast tourism such a success. People who have a choice don't choose to vacation in places they believe to be industrialized or otherwise unattractive.

And how much better than people in most states do we here in Mississippi know that a reputation is a tough thing to rebuild once it's damaged? The state is only now beginning to recover from the damage to tourism wrought by the BP Spill. Now, with tourists only just beginning to forget the claims of oil-soaked beaches, while BP has provided the state \$16 million for marketing to help mitigate the damage to the Coast's reputation, MDA proposes allowing industrial gas rigs in state waters — where they will be readily visible to observers on the mainland shore.

### **The Visibility Question**

The visibility of rigs in the leasable zone is easily demonstrated. From points on the north side of Highway 90 we take a typical elevation above sea level of about 13 feet. In many of the most important locations for tourists along the Coast, elevation for land within viewing range of the Sound exceed this substantially. A typical person's eye level is about 5 feet above the ground for a starting point of 18 feet a.s.l.; note that from a seated position within restaurants or other beach-facing built establishments the eye level elevation will be something more like 24 feet above sea

level. An eye level of 18 feet a.s.l. offers a typical sight-line-to-horizon of 5.2 miles; an eye level of 24 feet a.s.l. provides a sight-line-to-horizon of 6 miles. But viewing a 50-foot tall rig assembly (commonly with flares on top, no less) adds an additional 8.7 miles of visibility. Thus a rig of 50-foot or greater height above the water would be visible from 13.9 miles from a patch of ground at 13 feet elevation (say, along Scenic Drive in Pass Christian, or north of US 90 in downtown Gulfport). From a seated position in a flood-regulation compliant structure virtually anywhere along the Coast with a view of the Sound, such gas rigs would be visible from 14.7 miles. Anecdotal observations suggests the gas rigs in Mobile Bay are about 60 feet tall. Also, from the MDA-provided leasing map showing intended lease areas, one can easily verify the following distances from well-known points on the Coast to the leasable blocks MDA is making available:

- Downtown Gulfport: 8 miles to leasable blocks
- Downtown Pass Christian: 5 miles to leasable blocks
- Old Town Bay St. Louis: 5 miles to leasable blocks
- Biloxi (multiple points): 10 miles to leasable blocks
- Ocean Springs Front Beach: 10 miles to leasable blocks
- Pascagoula near downtown: 8 miles to leasable blocks

The leasable areas form an east-west band typically two miles deep (north edge to south edge), though at one point south of Biloxi the leasable band is as much as 8 miles deep. From all of the Coast locations listed above, then, gas rigs within the leasable blocks would be visible, and only a small fraction of the leasable areas are sufficiently remote to hide a rig taller than 50 feet from view from the mainland.

### Impacts on Tourism

Before Hurricane Katrina, and before the BP Oil Spill associated the Coast with an image of industrial contamination and damage, even the MMRI (which authored the 2004 study estimating the size of the offshore reserve) recognized that gas rigs are particularly unappealing to look at. For this reason their report suggested that developing the Mississippi offshore reserve without risking serious damage to the Coast's tourism industry would require forcing gas companies to redesign their rigs to be less aesthetically offensive. Yet MDA has made no such provision, and now fails to acknowledge the toll which visible gas rigs will have on Coast tourism. Reinforcing visitors' pre-conceptions of the area as an industrial wasteland, even through the cue of distant offshore rigs, will seriously impact Coast tourism's recovery from the BP Spill and Katrina, and may in fact make it impossible for Coast tourism to recover to pre-Katrina levels.

Though the Coast tourism economy remains significantly below its pre-Katrina size, it has experienced significant recovery since Katrina. This recovery has been stunted by the national recession and the BP Oil Spill, but recent evidence suggests slow recovery has resumed. Even in its diminished form, Tourism still holds the position on the Coast as the second largest economic sector after Government. As recently as Fiscal Year 2008, according to MDA documents, tourism in the three Coastal counties contributed over \$185 million to state revenues. Moreover, comparing total leisure and hospitality establishment jobs in the three Coastal counties in 2011 against their pre-Katrina numbers, we can estimate that the current Coastal tourist economy is still approximately 22% smaller than its size just before Hurricane Katrina struck.

Pre-Katrina, about 8 million tourists per year visited Mississippi's Gulf Coast; as of 2011 that number was thought to have been reduced to about 5 million per year. However, in the years since Katrina,

the Park service reports that over 4 million tourists now visit the Gulf National Seashore Islands annually. Of those 4+ million, about 1.1 million visited the Mississippi islands.

We can draw two reasonable conclusions from these numbers. First, continued recovery of the Coastal tourism industry could increase tourism revenue by somewhere between 22% and 30% from current levels; Tourism-sourced revenues to the state from the three Coastal counties should therefore be expected to approach \$225 to as much as \$250 million annually in full recovery, as memory of the BP Spill wains and national economic conditions improve.

Second, as witnessed by the large number of visitors to Mississippi's National Seashore islands relative to total Gulf Coast visitors (about 9% of Gulf Coast tourists are now non-local visitors to the Mississippi islands), we note that a significant number of visitors show interest in coastal ecology in general and in the natural condition of the barrier islands in particular.

#### Sensitivity of Tourism Revenues to Drilling

Consider now the total tourist-sourced revenues from the three Coastal counties totaled over the 20 year life of the reserve. Over that time period, the offshore reserve would generate revenues of from \$67.1 to \$166.2 million for the state. In the same time period, tourist revenues from the three Coastal counties will total from \$3.37 billion (assuming no growth from Fiscal Year 2010) to \$5 billion (assuming the state is able to recover Coast tourism to its pre-Katrina, pre-BP relative size). These are the numbers which should be compared to determine the relative risk and reward in choosing whether to drill, particularly since there is little doubt that drilling will adversely affect tourism, but only a question of to what degree.

Suppose now that, as a result even of just the appearance of visible gas drilling rigs on the horizon, 1 in 20 potential tourists choose to vacation elsewhere. Using the most conservative cumulative tourism revenue numbers (\$3.37 billion), the loss of state tourism revenue over the life of the reserve would amount to \$168.5 million dollars — swamping even the optimistic \$166.2 million of drilling revenue and potentially resulting in a net loss of over \$100 million for the state as a result of damage to Coast tourism. If the state were to otherwise be successful in recovering Coast tourism to pre-Katrina levels, the loss could be even more staggering, for a net loss due to drilling of from about \$80 million to about \$180 million *after* including all drilling revenues.

The critical issue is not so much the specific numbers as the risk to the much larger tourism revenues for what amount to paltry and relatively insignificant payoffs from drilling. The BP Spill demonstrated clearly that tourists do, in fact, care about their environmental perceptions of a destination to an extraordinary degree. Assuming only that tourism revenues continue at Fiscal Year 2010 levels, a drop in tourism of as little as 2% could swamp drilling revenue for a net loss. If tourism revenues recover, a drop of as little as 3.3% would consume even the more optimistic drilling revenues estimate.

### Weighing the Costs and the Benefits to the State

So let's weigh what drilling brings to the table. The upside for the state is somewhere between 6 and 11 million dollars a year in state revenue for the 20 years the reserve lasts. The downside is a very real — even likely — **risk of loss of tens or hundreds of millions in revenues more than drilling would bring to the table** as a result of a tourism downturn, accompanied by potentially permanent degradation of some of our most valuable attractions as a destination. **In fact a drop in tourism of as little as 2 to 3% could swamp any gains from drilling and leave the state with a net loss of revenue.** And remember that once the damage has been done to the Coast's tourism reputation, it will be the gift that keeps on giving. Long after the gas reserve has been exhausted and the gas companies have moved on, the state of Mississippi and the Coast will still be living down the image of paradise spoiled.

It is difficult to imagine the anger of Mississippi voters on finding that their elected representatives had given away the states natural assets to gas drilling interests at significant cost to the state budget.

### Point 3: Risks and Unquantifiable Costs

In addition to the quantifiable costs just discussed, there are a lot of risks we don't fully understand, and costs that you can't put a dollar figure on. These are costs most of us already understand — the inability to take our kids to the islands to watch a sunset uninterrupted by rigs on the horizon. The loss of something unique and surprising that sets Mississippi apart from its neighbors with their rigs. The loss of yet another piece of our heritage — an unchanged place where you can sit and imagine that you are seeing things in the way our ancestors might have seen them.

Perhaps even more troubling are the risks we don't understand so well. Most significant of these is the risk of a catastrophic accident brought to mind by the BP Oil Spill disaster; those events don't happen often but when they do the consequences are tragic. While gas drilling doesn't seem to have much potential for this, not that the close proximity to the estuary-like Sound means any accidental spills, or leaks from the drill column or borehole could cause significant environmental damage where it would be most harmful. Indications that mercury seeping up from the wellbores of Alabama's gas rigs is adding to the toxic load found in local seafood there suggest that the already disturbing toxicity levels in local seafood might be driven higher by gas drilling. Concerns about seismic studies destroying the vegetative cover that holds the island together threaten faster erosion of the islands themselves. And the known risk of drilling-induced subsidence of protective barrier islands — which the Army Core have shown to reduce storm wave height on the mainland — suggesting that simply by drilling for gas under our wilderness islands we could literally make their permanent loss more likely.

We don't have enough evidence to put numbers on these risks. But the point should be this: **You take risks in life for significant potential gain. With little potential gain for the state or the Coast and significant downside risks, why would we even consider taking a chance on offshore gas drilling?**

### **Point 4: Why Now?**

Six years ago residents of the Coast said "No" to drilling near the islands, and to its credit the MDA and Governor Barbour listened at that time. So why have the MDA and certain supported elected officials resurrected the idea now? The more closely one looks at the economics of this deal, the worse they look they look for citizens of Mississippi, and the more one is left to wonder: Why would anyone charged with looking after the public interest advocate drilling *today*?

We are aware that the economic downturn has forced elected officials to look hard for reasonable sources of funding to cover basic expenses for the state. But elected officials also have an obligation to the people of the state to look after public assets which the state has held since its formation in 1817. Natural resources like the Mississippi offshore reserve are effectively natural gifts belonging to the people of the state, and they should be managed as an investment *for* the people of the state.

The problem is that the MDA has timed its efforts at development of Mississippi's offshore gas reserve to happen at what is very likely to be the worst period for natural gas prices in possibly 50 years. The decision to drill now is so spectacularly irrational that one is left to wonder how anyone could make that choice in good faith.

#### Recent Changes in the Economics of Domestic Natural Gas

If you regularly follow the natural gas business — or even just take 10 or 15 minutes with Google researching the topic on the web — you will know that there has been a breathtaking change in the economics of domestic natural gas production over the last few years that has shaken the market to its core. Back in 2005 when MDA first proposed drilling in state waters, domestic reserves in the U.S. were beginning to run short, and it seemed that our only choice was to build massive (and controversial at the time) liquified natural gas (LNG) terminals so that we could import foreign gas to meet domestic energy needs. What we did not know then was that technological breakthroughs in horizontal drilling and in so-called fracking over the next few years would dramatically increase recoverable reserves and production of on-shore shale gas through much of the country. Offshore production and reserves in the Gulf have continued to decline, but meanwhile explosive growth of shale gas reserves — a more than sevenfold increase since 2005 — have more than compensated for the decline in offshore, which now represents only a fraction of domestic reserves. U.S. Energy Information Agency data (<http://www.eia.gov>) show that domestic proven reserves grew by 70% from 2005 to 2009, attaining their greatest levels since 1971.

How significant is this increase? It has fundamentally changed strategic thinking about resource management by responsible players. First, note that prices have declined steadily since about 2008, driven by the incredible growth in domestic supply, and have currently reached 10-year lows. And experts expect the excess of domestic reserves to continue for at least the next 10 to 15 years. Remember those LNG terminals that were built to import foreign gas to meet domestic needs before the rampant increase in domestic reserves? Now they are planned for use to *export* American domestic natural gas to foreign markets. EIA says the U.S. will become a net exporter (with gas exports exceeding imports) in 2016, and exports are expected to grow through the next decade.

Gas rigs in the adjacent areas of the Gulf have an average productive life of 11 to 16 years. This means drilling now would guarantee that Mississippians get the lowest possible value in exchange for taking the risks of allowing drilling near its tourism and fisheries assets. **In other words,**

**opening the state's waters to drilling at this time may serve someone's interests, but it is *not* the interest of the state's citizens.**

But wait, there's more. Domestic gas producers — private enterprises that must make rational decisions about managing the gas reserves they control in order to survive — are now beginning to respond to the massive increase in domestic reserves and the associated drop in gas prices by *cutting production* — by shutting down wells. Just last Monday (23 January 2012) it was announced that the nation's second largest producer of natural gas, Chesapeake Energy, would cut production by 8% in response to price drops. Perhaps you've read about it in your local newspaper — though MDA and your elected officials don't seem to be getting the news. In spite of this, experts point out that such efforts are unlikely to trim the current market glut in the long run due to larger market factors, and prices are expected to remain historically low.

### State Government's Obligations to the State's Citizens

Elected officials have a responsibility to act in the long-term best interest of present and future citizens of the state. That includes managing the state's publicly owned assets — including natural ones like the Mississippi offshore gas reserve, which has sat undisturbed since before the state's formation nearly 200 years ago. Though we liken management of public assets to management of an individual's investments (that is, "buy low, sell high" is a better policy than "sell at record low prices"), there is one significant difference: publicly owned assets must be managed over a much longer time horizon than an individual's investments. As individuals we expect to be around only for 70 to 80 years, and though we can pass our assets to our children, we generally expect them to pay off during our lifetimes. But our state has been around for nearly two centuries, and we all hope and pray that it will be around for another two centuries, with a growing, thriving population of Mississippians. In the current economic downturn, our elected officials may be desperate for "easy money" to pay for the state's education needs, but 10, 20, or 50 years from now the state will continue to have an obligation to educate Mississippians, and will continue to need funding. Though they have frequently not done so in the past, if Mississippi is to thrive we must expect our elected officials to govern with cool heads, making sound decisions about managing our limited resources with the long-term good always in mind.

Selling off the state's offshore gas reserves at the current time is exactly like Esau's selling his birthright for a bowl of porridge in the Old Testament — it is a shortsighted, expedient decision which will lead to a lifetime of regret for the state's citizens. Mississippians know better — why don't our elected officials?

### Costs and Benefits of Postponing Development of the Reserve

Aside from the obvious benefits of preserving an unspoiled natural asset to allow the state to sustain and grow its tourism industry, there are a few other reasons protecting state offshore reserves makes good sense at this time.

We know that eventually even the current enormous domestic gas reserves will play out. It may be 20 years, or 50, but we know that time is coming. We also know that, when that time comes, real domestic gas prices will rise to historically unprecedented levels, and the nation's need for domestic sources will be critical. Over the intervening years, conservation and efficiency of gas usage will improve, and drilling technology and safety will also only get better. **So what is the downside to**

**protecting the Mississippi offshore gas reserve until it is really needed by the country and can produce real value for the state's citizens?**

The reserve has sat undisturbed since before the state was formed. Unlike many investments which have a maintenance cost associated with holding them, **this natural resource can be kept as is indefinitely — at no cost to the state.** In other words, there is no good reason for state officials *not* to wait for optimal market conditions to develop the reserve.

But what about recent public claims by MDA's Marketing and Communications Director that if we don't pump the reserve, Alabama drillers will "steal" Mississippi's gas? The argument is a canard. While no one disputes that drilling in Alabama waters at the border would likely be able to draw *some* gas from under Mississippi waters nearest the border, the idea that a significant amount of the Mississippi gas reserve could be removed economically from Alabama is preposterous; natural gas has only limited mobility underground. Consider: If the claim were true, why would any gas driller be interested in building new rigs in state waters? Drilling is already permitted in Federal waters within 2 to 3 miles of most of the blocks MDA wants to lease — why have drillers not simply drained the reservoir from Federal waters? Why have no geologists joined Mr. Turner in claiming that the reserve is at risk? If MDA or elected state officials really believe that a significant amount of Mississippi-owned gas is being pumped by drillers in Alabama waters, they have an obligation to pursue compensation for the state's citizens through the Federal courts. The fact that they have never even raised the issue previously tells you all you need to know about this claim: It is simply a scare tactic intended to mislead the public and pressure Mississippians into supporting a terrible decision.

There is still another reason to hold off as long as possible in drilling the offshore reserve: **Drilling safety improves as the technology advances, and hazards diminish as more is learned about potential environmental risks.** For this specific reason the Federal government decided to postpone drilling along the west coast of Florida for another 8 years or so, in order that drilling safety and environmental costs can be reduced with improved technology. MDA officials have claimed that the dangers exposed by the BP Oil Spill disaster aren't relevant to gas drilling. But the BP disaster illustrated not just that deep-well oil drilling operations off the coast of Louisiana are dangerous, but more generally that the industry as a whole has been cavalier about risks. Every time an energy industry representative tells you "It can't happen here, look at our track record," a warning signal should go off in your head. Before the BP incident the record for oil drilling in the Gulf was apparently excellent. By focusing on that good record and failing to consider the role of good fortune or the continued possibility of unforeseen catastrophic events, industry representatives are sending you the message that they believe they are infallible. Not a good sign. Any reasonable plan for drilling must acknowledge the possibility of accidents and environmental damage in order to prepare for it. If Florida deserves additional technological improvements before allowing drilling, why don't Mississippians?

So Seriously. Why Now?

We've shown that current market conditions, which experts believe will persist for the next decade or more, make a decision to drill today far less beneficial and potentially more costly to the state than when it was last considered in 2005. **Potential revenues from drilling are relatively small, and risks to the enormous and important revenue generated by Coastal tourism are quite large, creating the possibility that drilling could *reduce* net state revenues**

**rather than increasing them.**

We've also pointed out that, if the state chooses to sell the gas reserve under state waters, **the timing of such a sale should be chosen to maximize the benefit to the people — not for the benefit of the gas companies.** By choosing to drill now rather than preserve the offshore gas for at least another 20 years, the state is offering its citizens a likely loss of state revenues and the Coast a likely loss of hundreds of millions of income in exchange for our pristine wilderness islands, for our reputation as a unique tourist destination, and for our offshore natural gas reserve.

The whole issue of timing raises some troubling questions, and **citizens should start asking their representatives and MDA for answers:**

- If any ordinary citizen can, with 20 minutes of internet research on natural gas, ascertain that market conditions make domestic natural gas less valuable than it will likely be at any time over the next 50 years, why couldn't MDA and elected officials do the same?
- Why has MDA misleadingly used prices predating technology-induced price drops to overstate the dollar value to state revenues? Why no mention of price trends looking forward? Careless error? Incompetence? Something else?
- How is it, when the country's largest gas producing businesses are cutting back production due to changing market conditions, that the MDA recommends putting our reserves on sale? We understand that, as is commonly said, government typically makes much worse business decisions than private enterprise, as demonstrated by the MDA beef plant debacle of a few years ago. But this calculation isn't nearly as complicated: The natural gas market is glutted, and technology changes over the last few years suggest we will be in surplus for the coming 10-20 years, so let's drill? Please explain your reasoning.
- Much though we'd be tempted to drag the gas industry into this round, in fairness to them we have to ask, why have industry representatives been so quiet? Perhaps because they are aware of broader market issues? Given that producers are shutting down wells, will anyone even bid on the leases? Will the state have to give away even more to get someone to drill under today's market conditions? If so, what exactly will MDA and your elected officials give away to sweeten the deal?
- Do elected representatives simply take everything MDA says at face value, without even applying simple arithmetic or sanity checks? Has no one in state government asked these basic questions? Are they even paying attention?

We understand the economy is bad, and everyone wants a free lunch. And we'd like to believe that elected officials supporting drilling are just not paying attention to the beat of the market drum, or are simply so desperate and panicked that they are making bad choices. But in this case the facts are plain enough that we believe citizens need to start asking state officials at least this simple question: Why now? Who profits? It is clear that it will not be residents of the state.



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Bounds was trained at the Massachusetts Institute of Technology, where he was awarded four degrees including a Doctorate of Science in Engineering.