Turbine Associates

DAYTONA BEACH, FL

-Research Paper- Florida Offshore Energy Exploration

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January 25, 2010

Florida Chamber Statements

- "Floridians must accept that the state's economy is evolving from one centered on **tourism, construction and agriculture** to one driven by **science and engineering, global competition and a stronger sense of place**." – October 13, 2009
- "The Florida economy built on agriculture, tourism, sunshine and cheap labor that sustained the state quite well for the past 30 years is, indeed, over. And good riddance, perhaps, because Florida has relied too long on a "cheap" economy of low-wage jobs and second-rate education." - October 19, 2009
- Remarks by Florida Chamber CEO Mark Wilson 2009 annual meeting

Florida Status on Drilling

- **DRILLING FOR OIL IN THE GULF**
-

A federal law passed in 2006 prohibited oil drilling within 234 miles of Tampa Bay and appeared a formidable roadblock against any future attempts to allow drilling off Florida's Gulf coast.

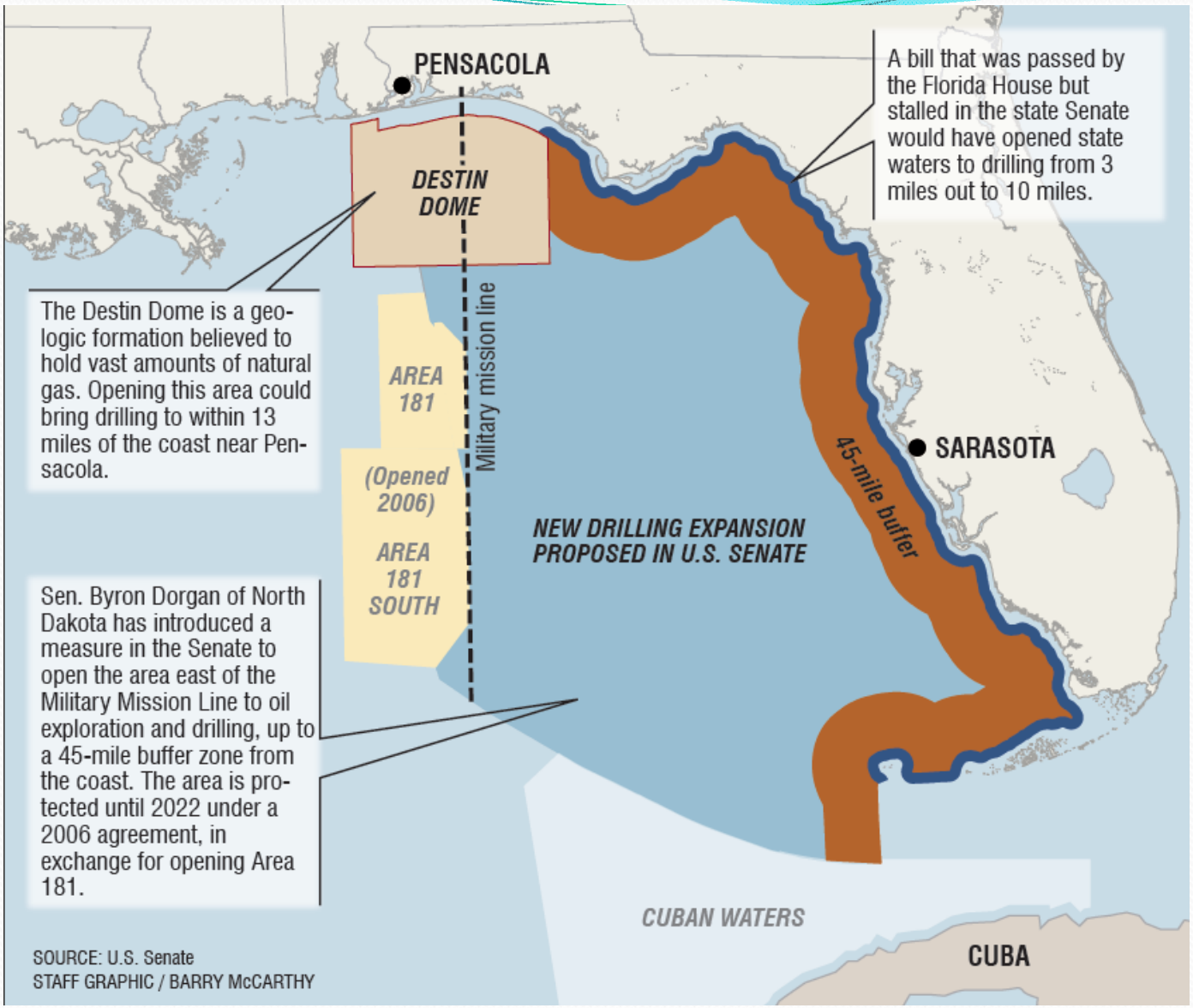
But the combination of soaring gas prices, anxiety over dependence on foreign suppliers and the state's own floundering economy have fueled action on three fronts to revive the issue:

In July 2008, then-President George W. Bush lifted a ban on oil drilling in the eastern Gulf. That made it possible for Congress to pass legislation opening areas to drilling.

In May 2009, In May, the Florida House passed legislation to allow oil drilling in state waters, 3 to 10 miles from the coast. The bill did not pass the Senate. But legislators say they have momentum to pass the legislation in 2010.

In June 2009, the U.S. Senate proposed legislation to allow drilling 45 miles off the coast, superseding a 2006 law that allowed drilling on 8.3 million acres in the Gulf in exchange for a 234-mile buffer west of Tampa Bay until 2022. Source: Herald Tribune, Sarasota, FL

Visual of Possible Florida Drilling Areas



Florida's Energy Options

- Be a Watcher
  - Let the resources get drawn out from under the state
- Be a Player
  - Approve Drilling Now and Set the Rules in Advance based on Florida needs

Gulf of Mexico Subdivision

- The Gulf of Mexico (GOM) is divided into three major exploration/planning areas
  - Western (Texas)
  - Central (Louisiana, Mississippi)
  - Eastern (Florida)
    - Florida's coastal zone is the entire State, but has two tiers. Local governments eligible to receive coastal management funds are limited to those Gulf and Atlantic coastal cities and counties which include or are contiguous to state water bodies where marine species of vegetation constitute the dominant plant community. Florida's seaward boundary in the Gulf of Mexico is 3 marine leagues (9 nautical miles) and is 3 nautical miles in the Atlantic.

State & Federal Waters

- *"**States** with energy development off their shores in federal waters[3] have been **seeking a larger portion of the federal revenues** generated in those areas. They particularly want more assistance for coastal areas that may be most affected by onshore and near-shore activities that support offshore energy development."* - *CRS Report for Congress,* Outer Continental Shelf Leasing: Side-by-Side Comparison of Five Legislative Proposals, Updated September 16, 2008, Prepared by Marc Humphries Analyst in Energy Policy Resources, Science, and Industry Division

3 State jurisdiction is typically limited to three nautical miles seaward of the baseline from which the breadth of the territorial sea is measured. However, the state jurisdiction off the Gulf Coast of Florida and Texas extends nine nautical miles and for Louisiana, three imperial nautical miles. Federal jurisdiction extends, typically, 200 nautical miles seaward of the baseline from which the breadth of the territorial sea is measured. One nautical mile equals 1.15 statute miles.

http://fpc.state.gov/documents/organization/110371.pdf

Florida Shared Revenues

- **Senate Draft Energy Reform Act of 2008**
- Sec. 401. Would open the Eastern Gulf of Mexico in areas beyond 50 miles off the coastline for oil and natural gas leasing, but only after consultation with the Secretary of Defense. Sec. 401.
- The southeastern states (Virginia, North Carolina, South Carolina, and Georgia) may submit a petition for approval to the Secretary of the Interior to conduct an oil and natural gas lease sale beyond 50 miles from its coast. Sec. 401.
- Sec. 401. Revenue sharing provisions in the bill would allow for Southeastern states - Virginia, North Carolina, South Carolina, and Georgia to receive 37.5% of revenues generated from leases 50 to 100 off their coasts. If two or more neighboring states "opt-in," then the revenue share would increase to 50%.

Energy Reform Update (Continued)

- As of January 2010, the U.S. Congress is still sitting on a final bill for Energy Reform but **Florida can be in the driver's seat by taking its own action prior to any Federal bill.**
- **Florida's position is unique among all states** because of its massive coastline on two major bodies of water – the Gulf of Mexico and the Atlantic Ocean.
- Critical to Florida acting first is its ability to offer a revenue sharing proposal that drives all leases, both Gas and oil, to meet Florida demands around which the Federal bill will be written.
- Result – the growth of huge onshore support operations for exploration and research in advance of any actual production that will bring thousands of jobs to the state.
- Risk Environmental – There is no negative risk to the state relevant to the environmental from exploration and energy research due to new technologies in drilling, storage, and distribution.
- Risk Economic – Not acting first will only allow other states, the federal government and even other countries to "take" energy resources without any or little revenue sharing with Florida.

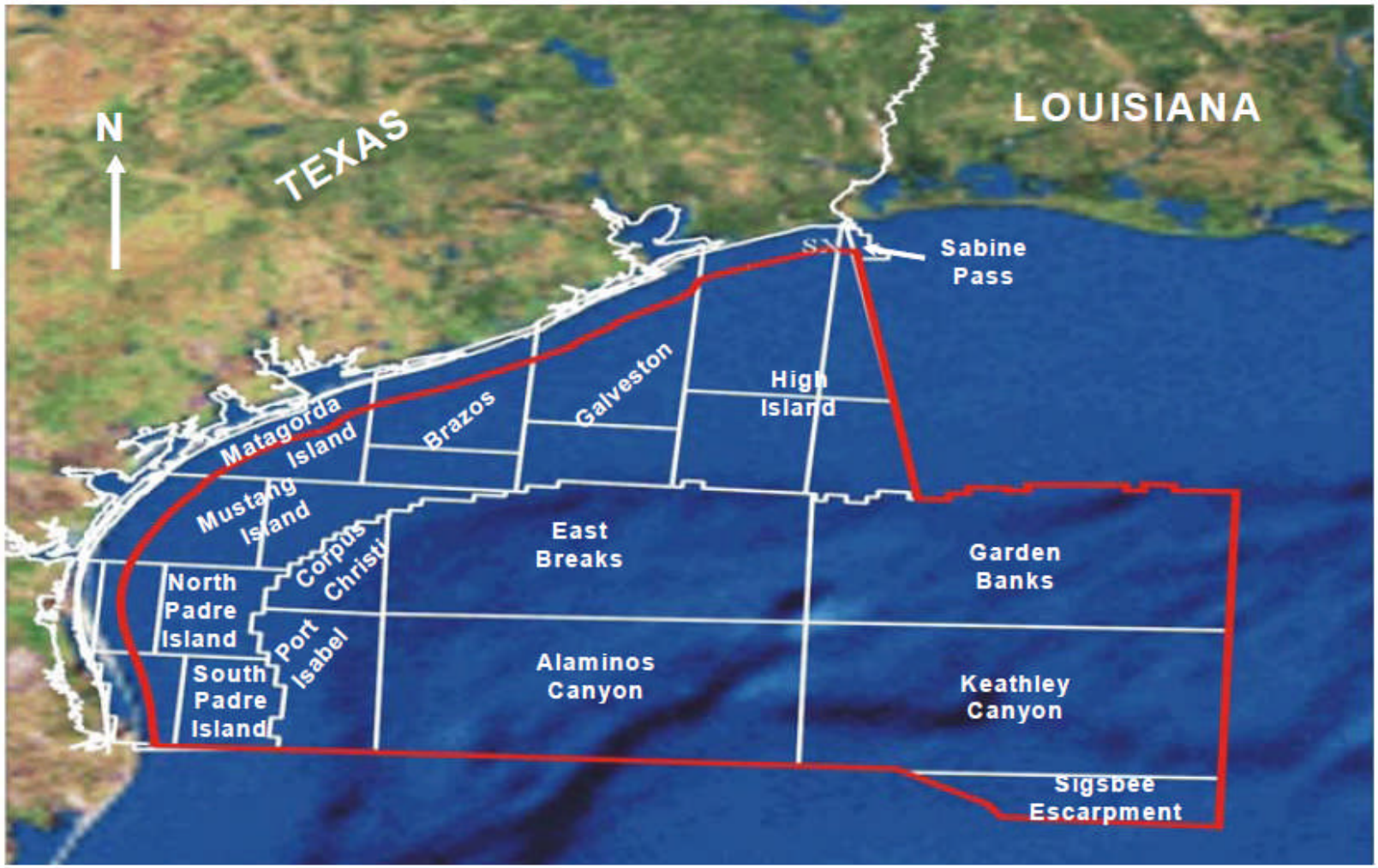


Figure 4. Western Planning Area, Gulf of Mexico, Outer Continental Shelf.

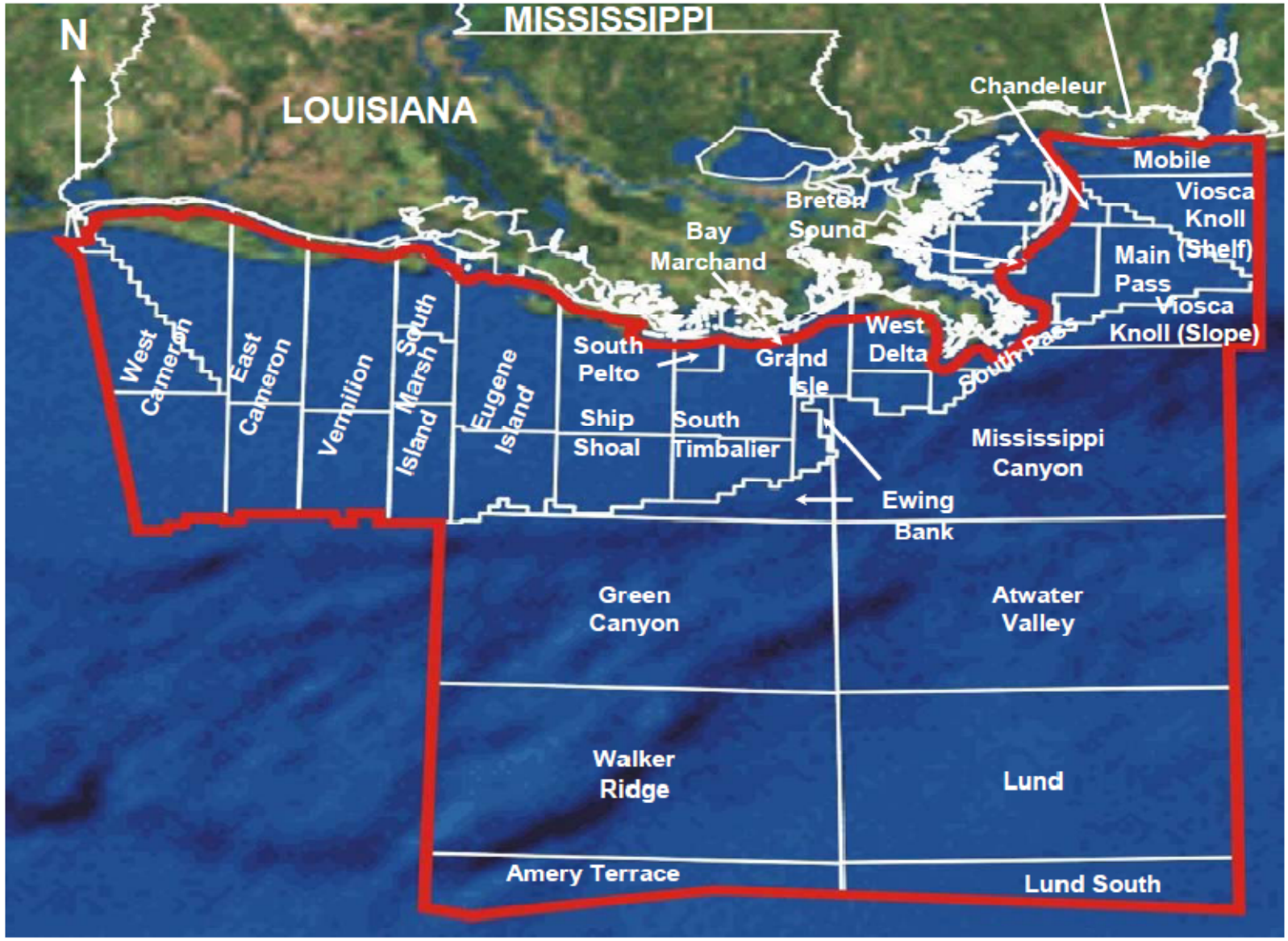


Figure 5. Central Planning Area, Gulf of Mexico, Outer Continental Shelf.

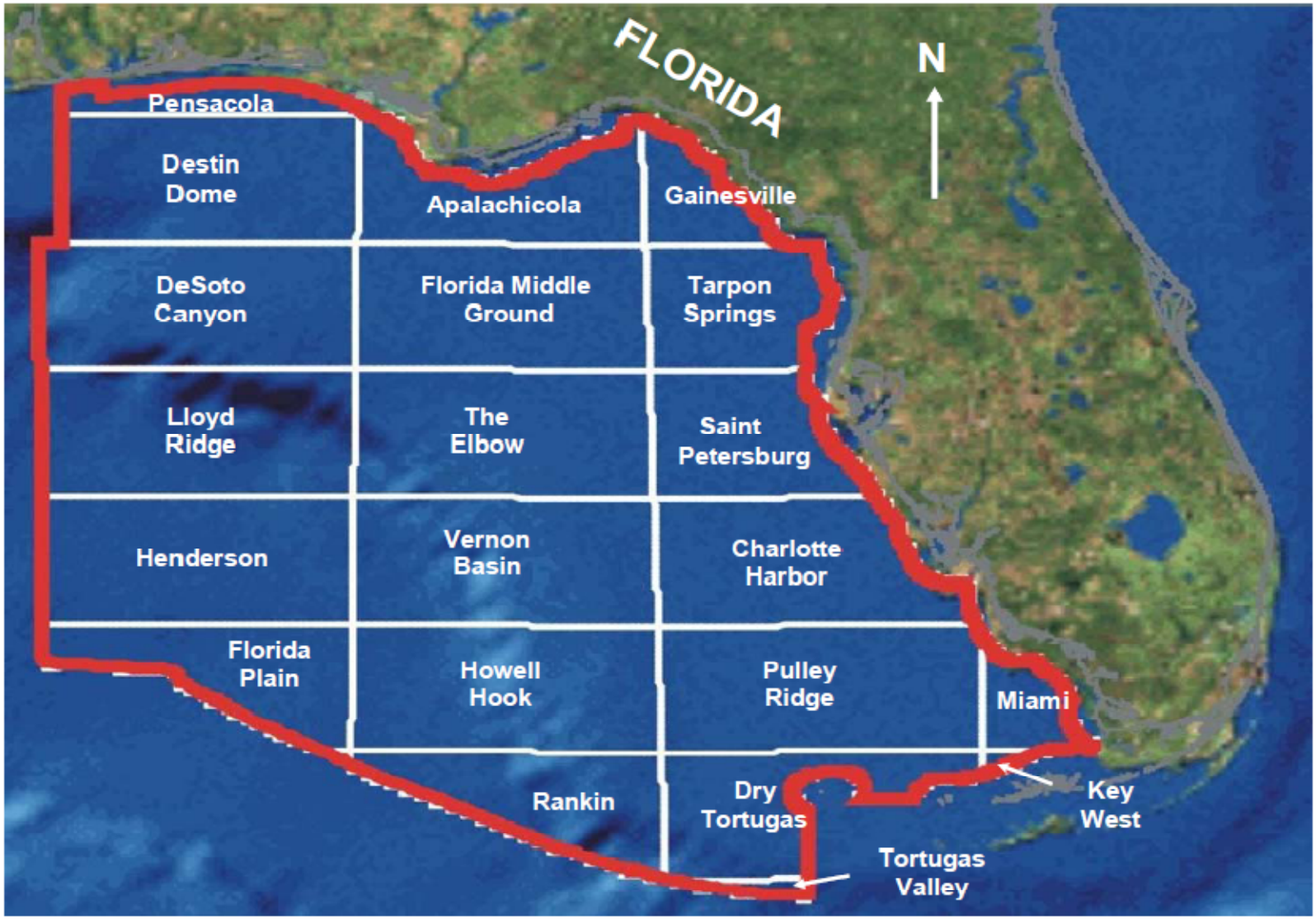
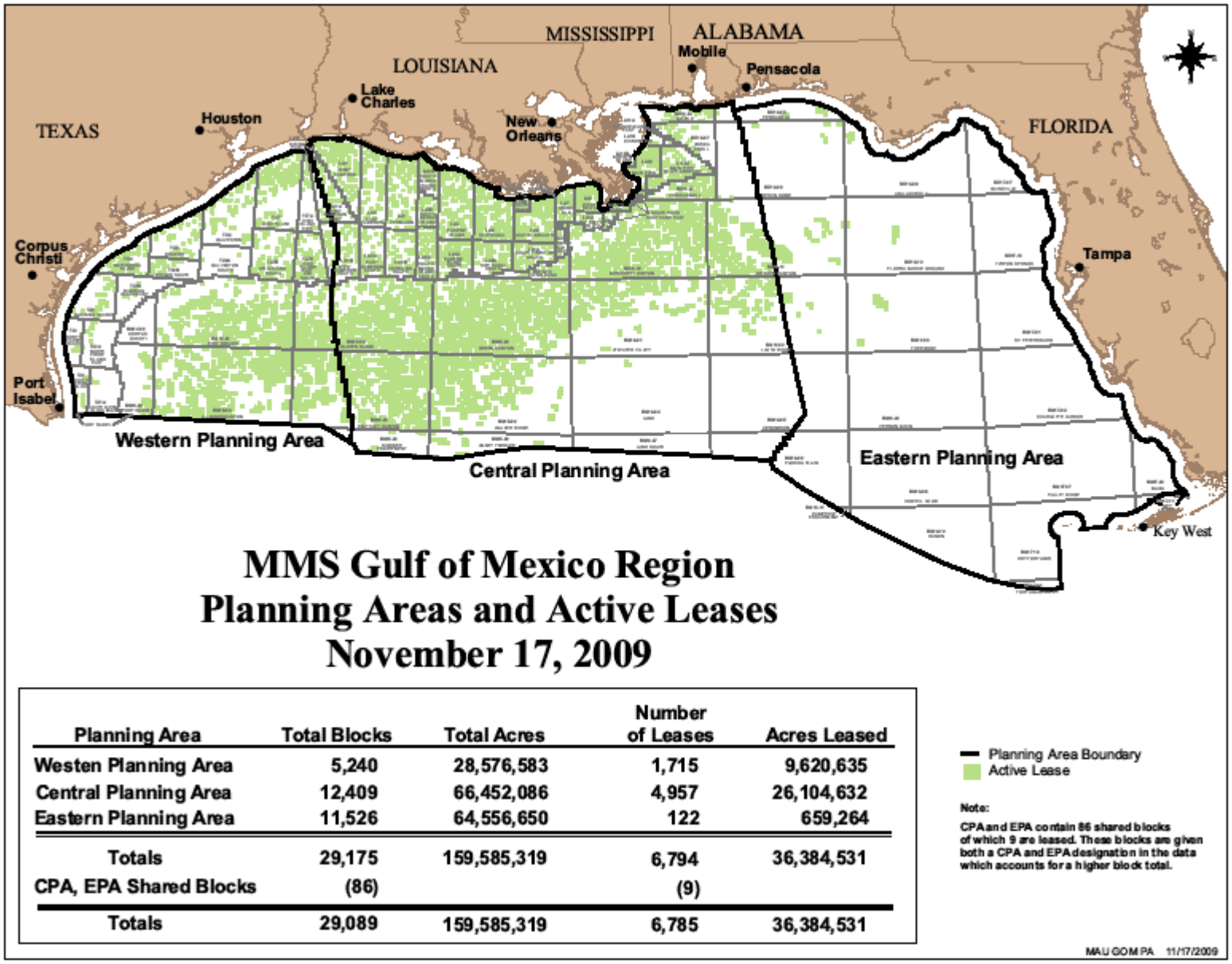


Figure 6. Eastern Planning Area, Gulf of Mexico, Outer Continental Shelf.



MMS Gulf of Mexico Region
Planning Areas and Active Leases
November 17, 2009

Planning Area	Total Blocks	Total Acres	Number of Leases	Acres Leased
Westen Planning Area	5,240	28,576,583	1,715	9,620,635
Central Planning Area	12,409	66,452,086	4,957	26,104,632
Eastern Planning Area	11,526	64,556,650	122	659,264
Totals	29,175	159,585,319	6,794	36,384,531
CPA, EPA Shared Blocks	(86)		(9)	
Totals	29,089	159,585,319	6,785	36,384,531

Planning Area Boundary
Active Lease

Note:
CPA and EPA contain 86 shared blocks of which 9 are leased. These blocks are given both a CPA and EPA designation in the data which accounts for a higher block total.

MMS GOM PA 11/17/2009

Major Gas Find in Louisiana

A Lesson for Florida – January 11, 2010

- **New Orleans firm reports major oil and gas find in the Gulf of Mexico**
- **By From the Times-Picayune**
- **January 11, 2010, 12:11PM**
- McMoRan Exploration Co. this morning announced what may be one of the largest oil and gas finds in recent years in the shallow waters of the Gulf of Mexico. McMoRan said it drilled a well in its Davy Jones prospect more than 28,000 feet beneath the ocean floor and discovered oil- and gas-soaked rock. The New Orleans energy firm drilled the well in partnership with Energy XXI. The Davy Jones prospect is located in 20 feet of water.
- McMoRan co-chairman James R. Moffett said the find could be "one of the largest discoveries on the shelf of the Gulf of Mexico in decades."
- McMoRan has made a name for itself drilling deep beneath the ocean floor in the shallow waters of the Gulf of Mexico.
- The Davy Jones discovery is McMoRan's second major find in recent years. In 2007, the company announced a major discovery in its Flatrock field, also in the shallow waters of the Gulf. Flatrock was estimated to contain close to a trillion cubic feet of natural gas reserves.
- McMoRan is the lead operator of Davy Jones, with nearly 33 percent working interest and Energy XXI has a 16 percent stake.
- Other partners include Houston's Plains Exploration and Production Co., with 28 percent; Japan's Nippon Oil Exploration USA Limited, with 12 percent; and W.A. "Tex" Moncrief, Jr. with 9 percent.

•The U.S. Minerals Management Service, which oversees offshore oil and gas production in federal waters, describes "deep water" as any oil and gas development in depths of 1,000 feet or more. The Shelf comprises shallow water closer to shore.
•Major oil companies like Royal Dutch Shell have left the Gulf of Mexico Shelf in recent decades, lured by much larger and more profitable fields in the deep water, as well as federal royalty relief programs meant to spur development farther offshore. They sold offshore leases on the Shelf to smaller firms with lower operating costs that could still turn profits on the smaller fields.
•Billions of barrels?
•McMoRan is now one of the largest acreage holders on the Shelf. Among its other shallow-water discoveries is a well called South Timbalier 168, formerly known as Blackbeard, that the company said may contain billions of barrels of oil.
•The industry has been waiting to see how much natural gas also might lie in wells deep beneath the sea floor in shallow Gulf waters, said Tyler Priest, director of Global Studies in the Bauer College of Business at the University of Houston, who has written about the history of offshore oil and gas development in the Gulf of Mexico.
•"This is a real breakthrough," he said.
•What's more, it once again challenges the conventional wisdom that the Gulf of Mexico's best day are behind it.
•"It's the goose that keeps on giving, apparently," Priest said.

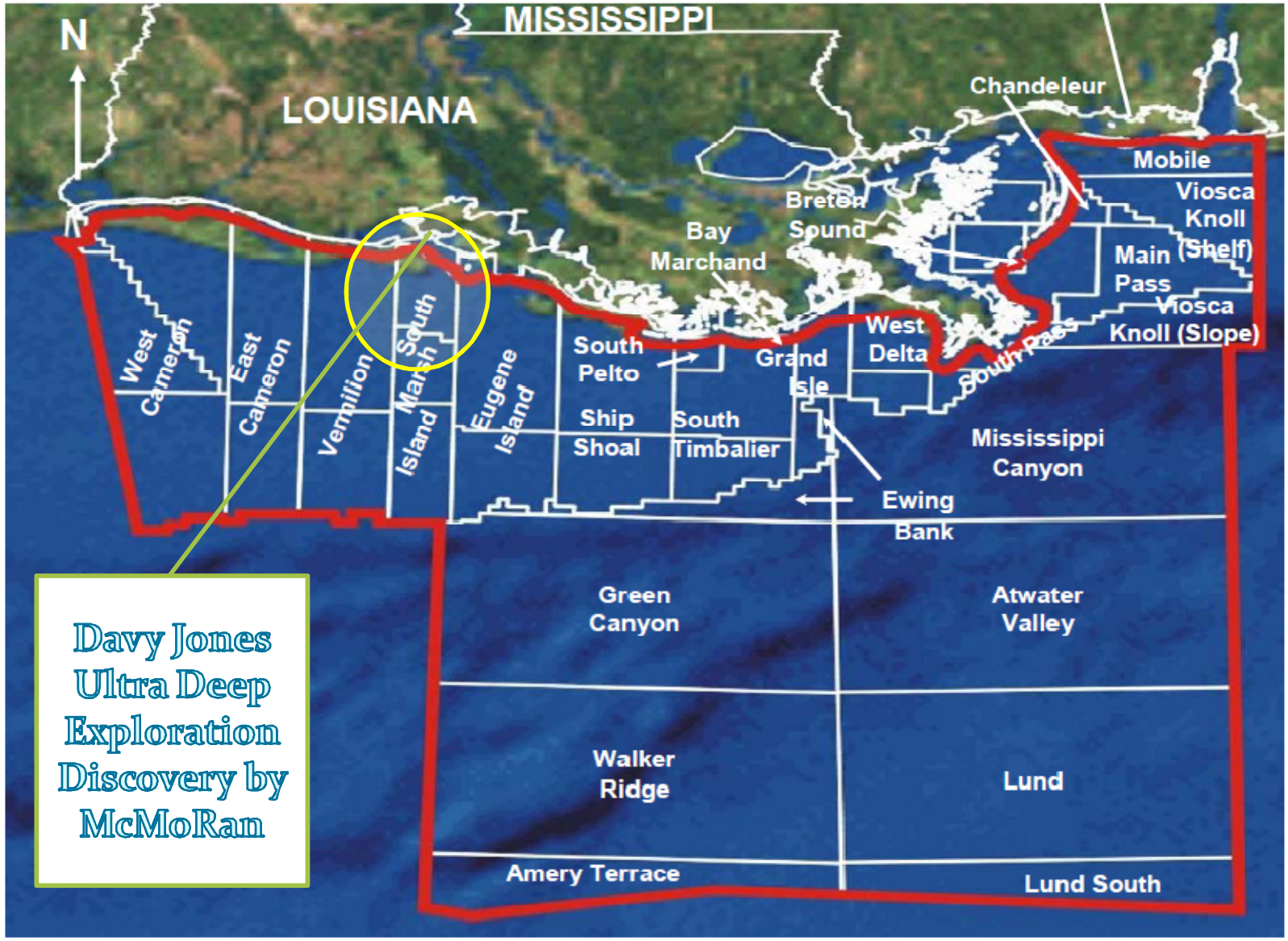
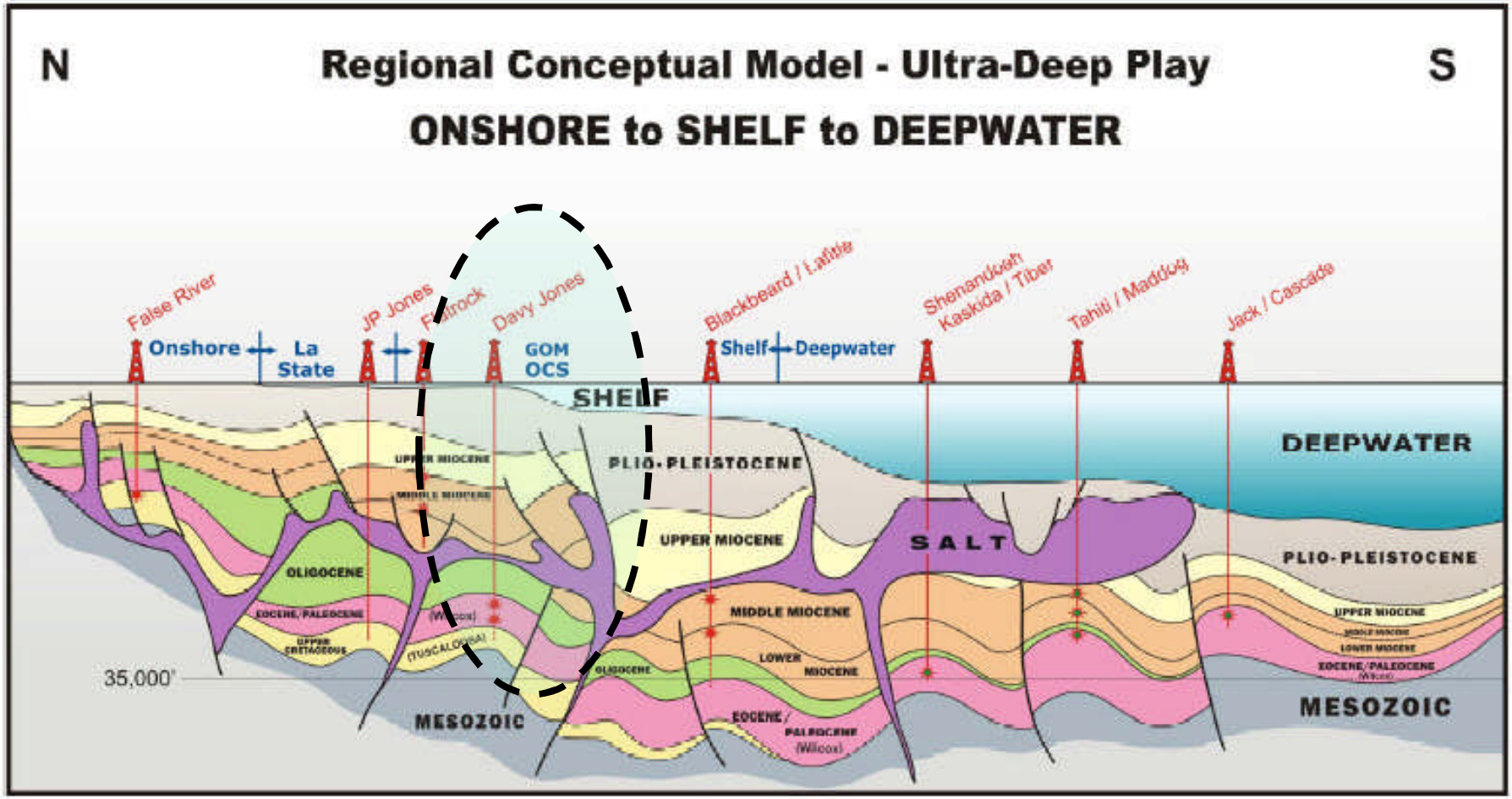


Figure 5. Central Planning Area, Gulf of Mexico, Outer Continental Shelf.

The Davey Jones Discovery

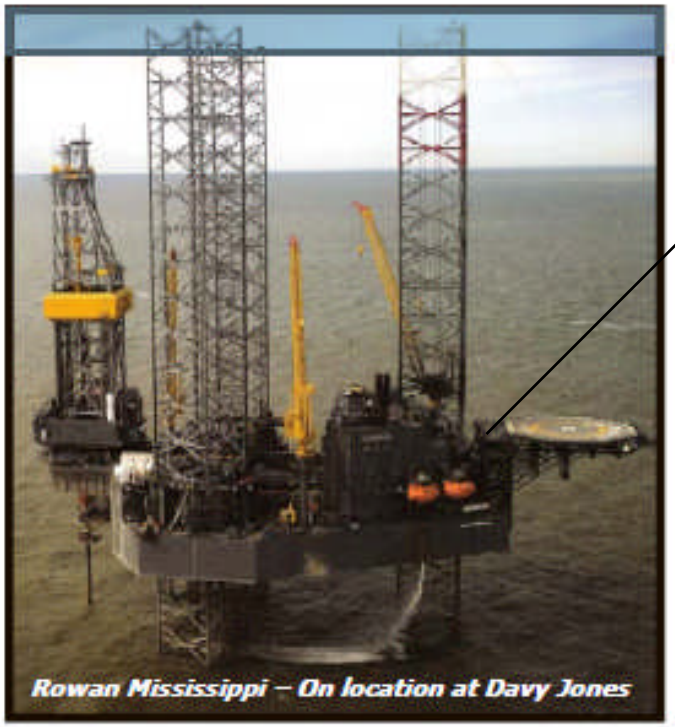
McMoRan Broadly Recognized as Industry Leader in This New Exploration Frontier



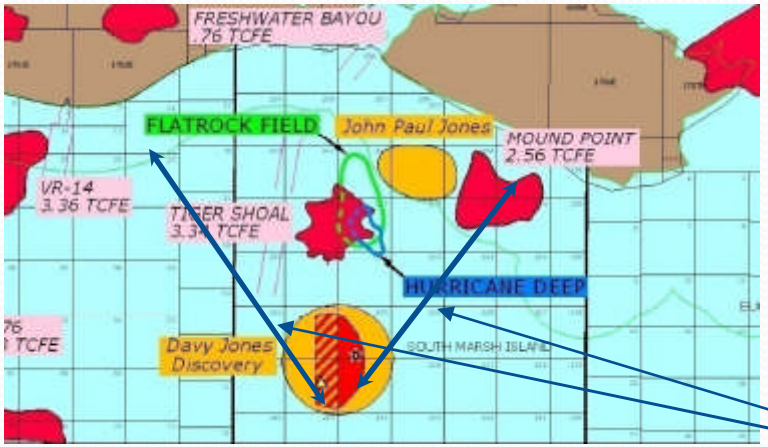
Data received to date from Davy Jones/Blackbeard West confirm McMoRan's original geologic modeling, which correlates the objective sections on the Shelf below the salt weld in the Miocene and older age sections to those productive sections seen in deepwater discoveries by other industry participants.

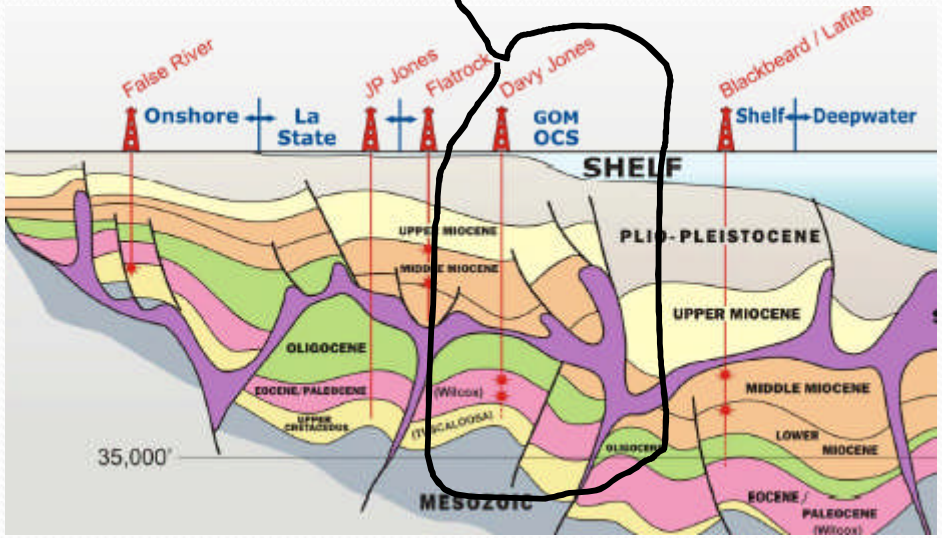
20

Davey Jones – (Continued)



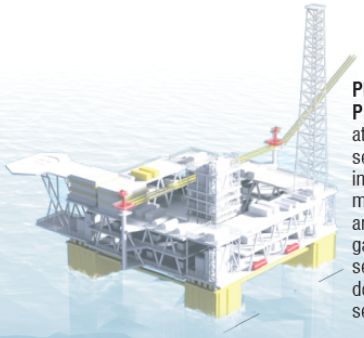
This is the type of drilling platform used for Deep Well exploration



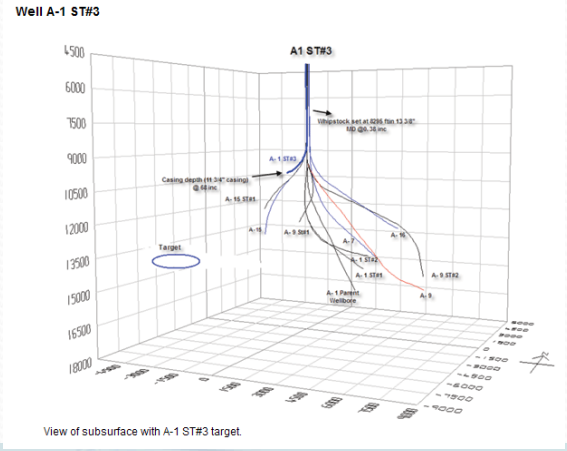


The Davy Jones discovery is about 12 miles from land in 20 feet of water.

Example of a Subsea System for Crude Oil and Natural Gas Recovery



PRODUCTION PLATFORM at the surface separates the incoming mixture into oil and natural gas, which are sent back down to the sea floor.



View of subsurface with A-1 ST#3 target.

WHAT DRILLING PROPONENTS TOUTED

SUBSEA SYSTEMS

can have multiple wells drilled into the sea bed at depths typically greater than 5,000 feet. The wells themselves are completely below the surface, but must be tied back to larger traditional drilling platforms, large floating vessels or to established pipelines that send the crude oil and natural gas to onshore production facilities.

Cost: A single subsea well can cost between $50 million and $70 million. Additional pipelines are about $1 million per mile.

Depth: Presently used in water depths greater than 5,000 feet.

EXPORT LINES along the sea floor deliver oil and natural gas to shore.

SEA-FLOOR FIELDS of interconnected wells collect oil and gas from the reservoirs and feed it through umbilical cords up to the production platform.

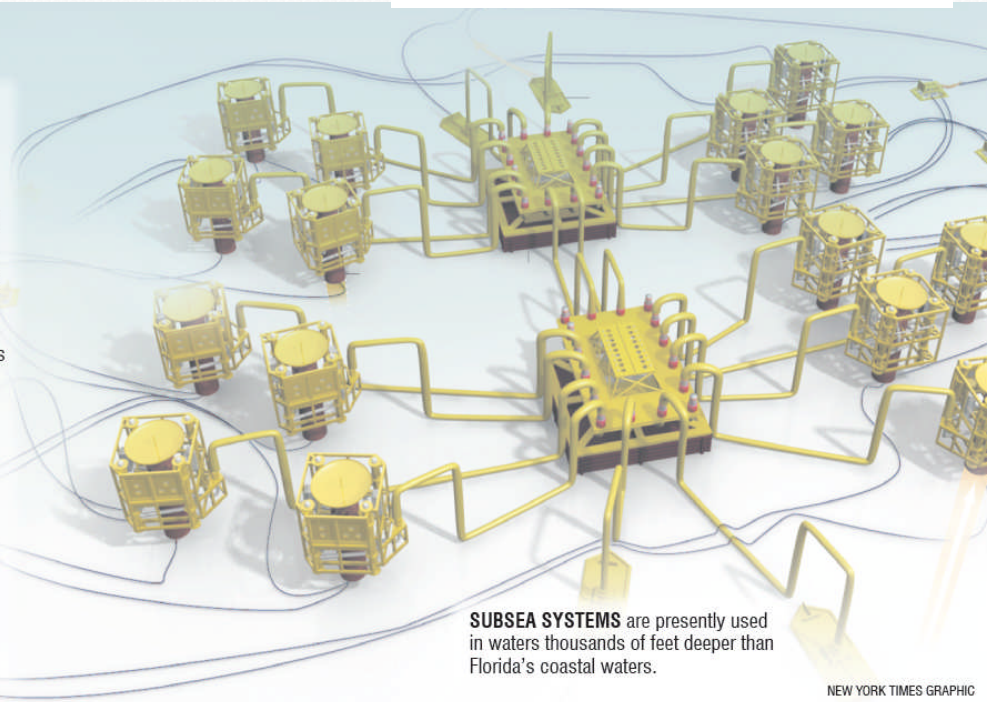
FIXED DRILLING PLATFORMS

(not shown)

These are the most common drilling systems. Of the more than 4,000 drilling rigs in the gulf, 3,700 are the fixed platforms that are the best option for waters less than 1,500 feet, according to the American Petroleum Institute. If drilling were allowed off Florida's coast, present technology would make these most likely for recovering oil within 10 miles of Florida's coastline.

Cost: A fixed platform can cost between $5 million and $10 million.

Depth: The fixed platform is economically feasible for installation in water depths up to 1,500 feet.



SUBSEA SYSTEMS are presently used in waters thousands of feet deeper than Florida's coastal waters.

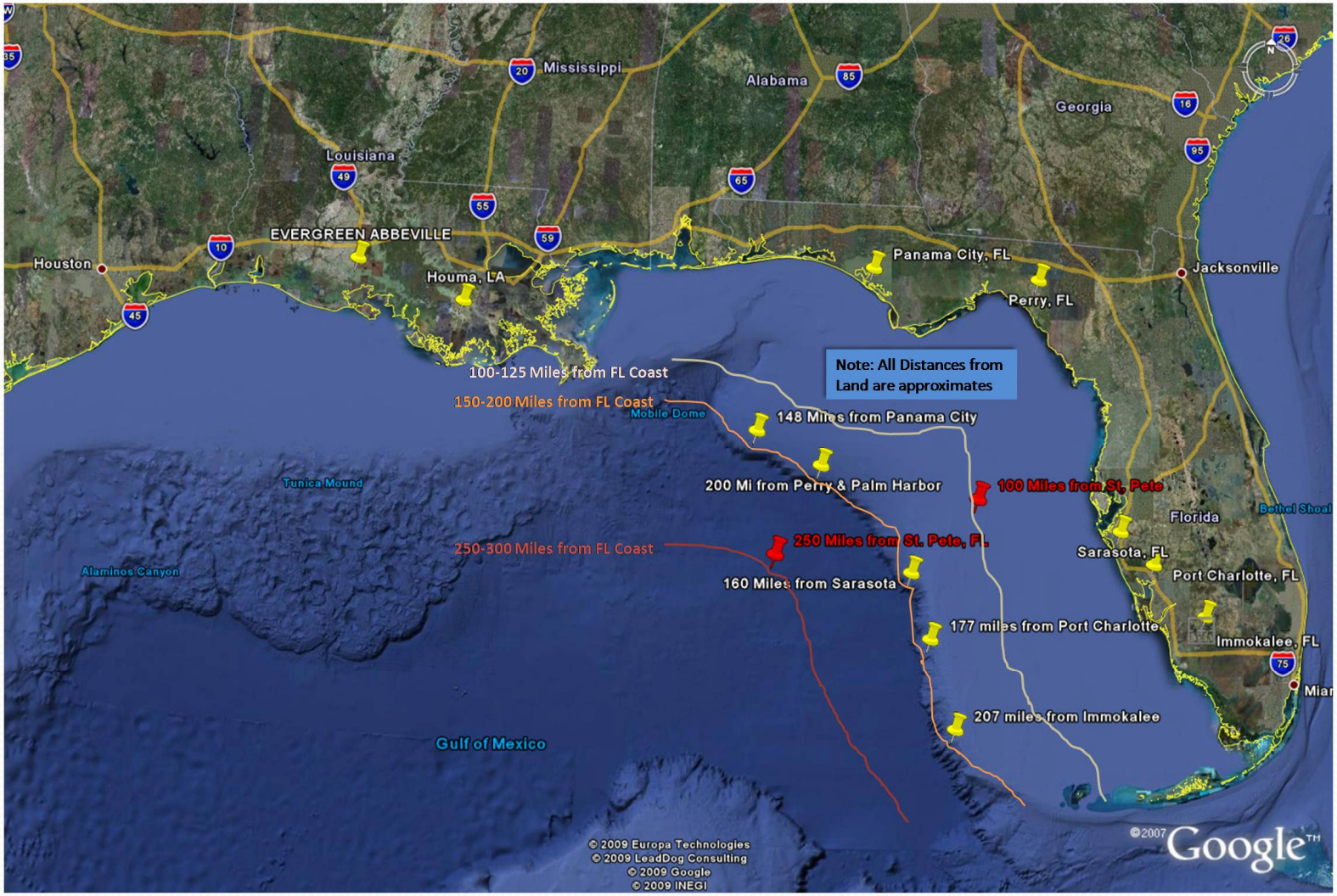
NEW YORK TIMES GRAPHIC

Line of Sight Distance Over Water

- A five foot tall person standing on the beach can see a 100 foot tall object at a distance of 11.2 nautical miles.
- Line of Sight Distances

Height (feet)	Distance (nm)	Height (feet)	Distance (nm)
5	2.6	70	9.8
10	3.7	75	10.1
15	4.5	80	10.5
20	5.2	85	10.8
25	5.9	90	11.1
30	6.4	95	11.4
35	6.9	100	11.7
40	7.4	120	12.8
45	7.8	150	14.3
50	8.3	200	16.5
55	8.7	250	18.5
60	9.1	300	20.3
65	9.4		

Florida Offshore Drilling Distances (Approximates)

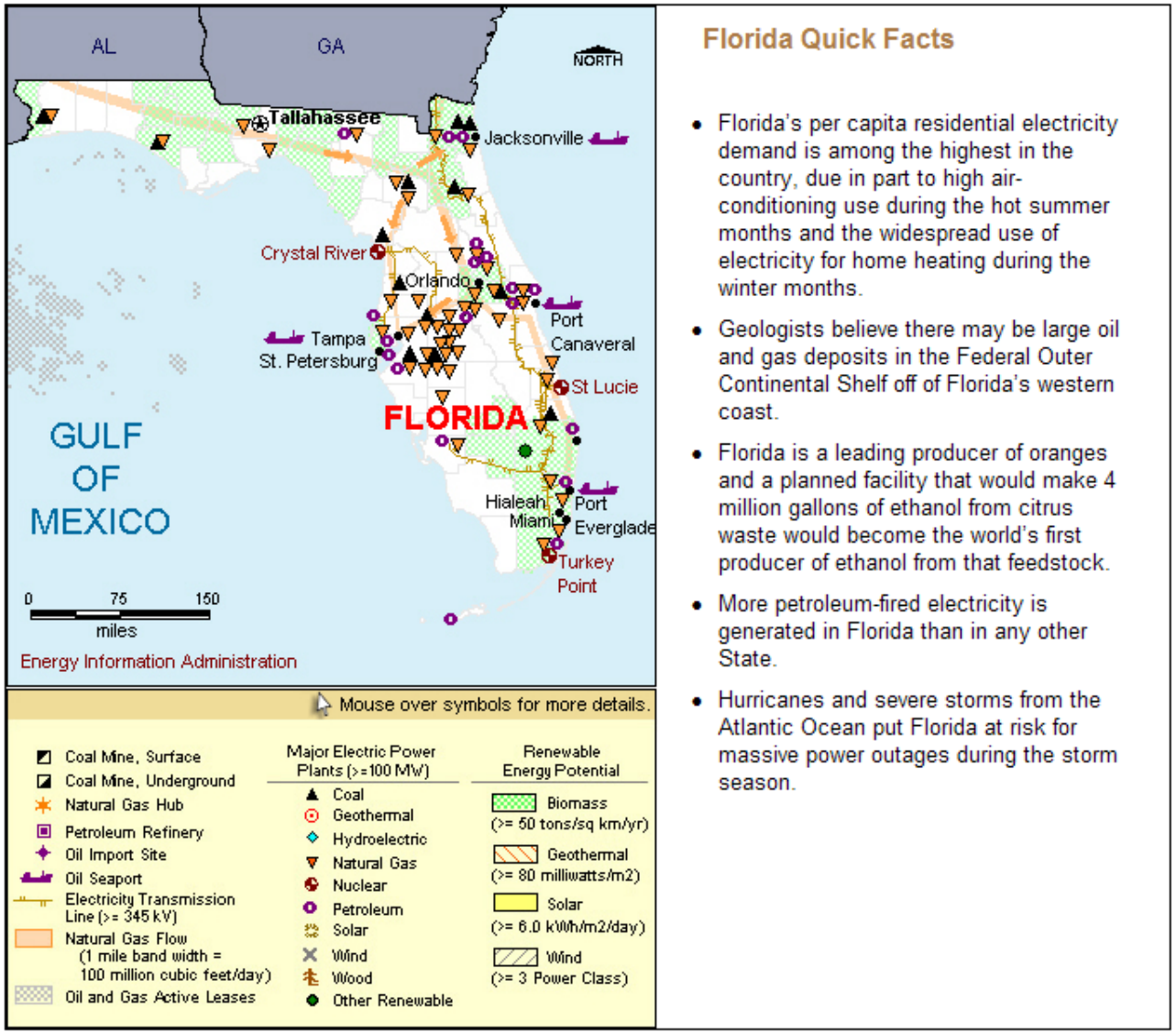


Legislative Update

- **Lifting of the Moratorium on Offshore Drilling (2008)**
- **Description**
  In July 2008, President George W. Bush lifted the Executive Order that had banned drilling in large areas of the Federal Outer Continental Shelf (OCS) since 1990 (see Moratorium on Offshore Drilling (1990)). A congressional ban on drilling in certain offshore areas also ended when Congress did not include the leasing prohibition in budget legislation beyond the fiscal year ending September 30, 2008. Earlier (January 2007), President Bush had modified the leasing status of two areas on the OCS, one in the North Aleutian Basin of Alaska and the other in the Central Gulf of Mexico, which made them eligible for inclusion in the Minerals Management Service's (MMS) following 5-year OCS oil and gas leasing program (2007-2012). **A ban on drilling through 2022 on certain tracts near Florida in the Eastern and Central Gulf of Mexico remains in place under provisions of the Gulf of Mexico Energy Security Act of 2006.**

  Impact
  It is unclear what effect the lifting of the moratoria will have upon oil and gas development for some years to come or whether other limits will be placed upon offshore development by another administration or Congress. According to estimates by the MMS, about 76 trillion cubic feet of natural gas and 18 billion barrels of oil are technically recoverable in areas in the lower 48 Federal OCS that were subject to the moratoria. **Even with the lifting of the moratoria, it will be several years before production in previously restricted areas could occur.** MMS manages all offshore leasing according to a 5-year plan, which first requires extensive environmental review, public comment periods, and approval from governors of States bordering the proposed lease areas. Once the leasing program is in place, the first lease sale can be offered. **The actual leasing process takes 1 to 2 years, and it can take 2 to 10 years from the granting of a lease before production begins. The total time required to obtain a lease, explore and develop the area, and begin actual production is between 4 and 12 years, or more.**
- In July 2008, MMS announced it would initiate development of a new 5-year leasing plan to run from about the middle of 2010 to about the middle of 2015 that would include some areas that were previously off limits. The current 5-year plan took effect on July 1, 2007, and will expire in 2012. According to MMS, the widening gap between U.S. energy consumption and supply has changed the assumptions on which many of the decisions were based in the current 5-year program. Comments on the new plan were received in September 2008 and will be incorporated in a draft proposed program for further public comment. - Source
  http://www.eia.doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/liftingofmoratorium.html

Florida Energy Profile



Florida Quick Facts

- Florida's per capita residential electricity demand is among the highest in the country, due in part to high air-conditioning use during the hot summer months and the widespread use of electricity for home heating during the winter months.
- Geologists believe there may be large oil and gas deposits in the Federal Outer Continental Shelf off of Florida's western coast.
- Florida is a leading producer of oranges and a planned facility that would make 4 million gallons of ethanol from citrus waste would become the world's first producer of ethanol from that feedstock.
- More petroleum-fired electricity is generated in Florida than in any other State.
- Hurricanes and severe storms from the Atlantic Ocean put Florida at risk for massive power outages during the storm season.

Florida Energy Review (1-10-2010)

- **Resources and Consumption**
- Florida has minor oil and gas reserves and few other energy resources. However, geologists believe that large deposits of oil and gas may be found in the federally administered Outer Continental Shelf (OCS) off Florida's western coast. Congressional and Presidential moratoria prohibiting energy development in most of the OCS were lifted in 2008,but a separate Act banning energy development within 100-125 miles of Florida remains in effect until 2022.
- Although Florida has few renewable energy resources, researchers are looking for ways to produce ethanol using citrus peel waste from Florida's juice-processing industry. A planned facility in Hendry County is expected to produce 4 million gallons per year of ethanol from citrus waste; the facility would be the first ethanol plant in the world to use that feedstock. The plant, which would be located near the center of the State's sugar cane industry, is planning to experiment with sugar cane feedstock as well.
- Due to its large population, Florida's total energy consumption is among the highest in the country. However, due to relatively low energy use by the industrial sector, per capita energy consumption is among the lowest in the country. Florida's transportation and residential sectors lead State energy demand.

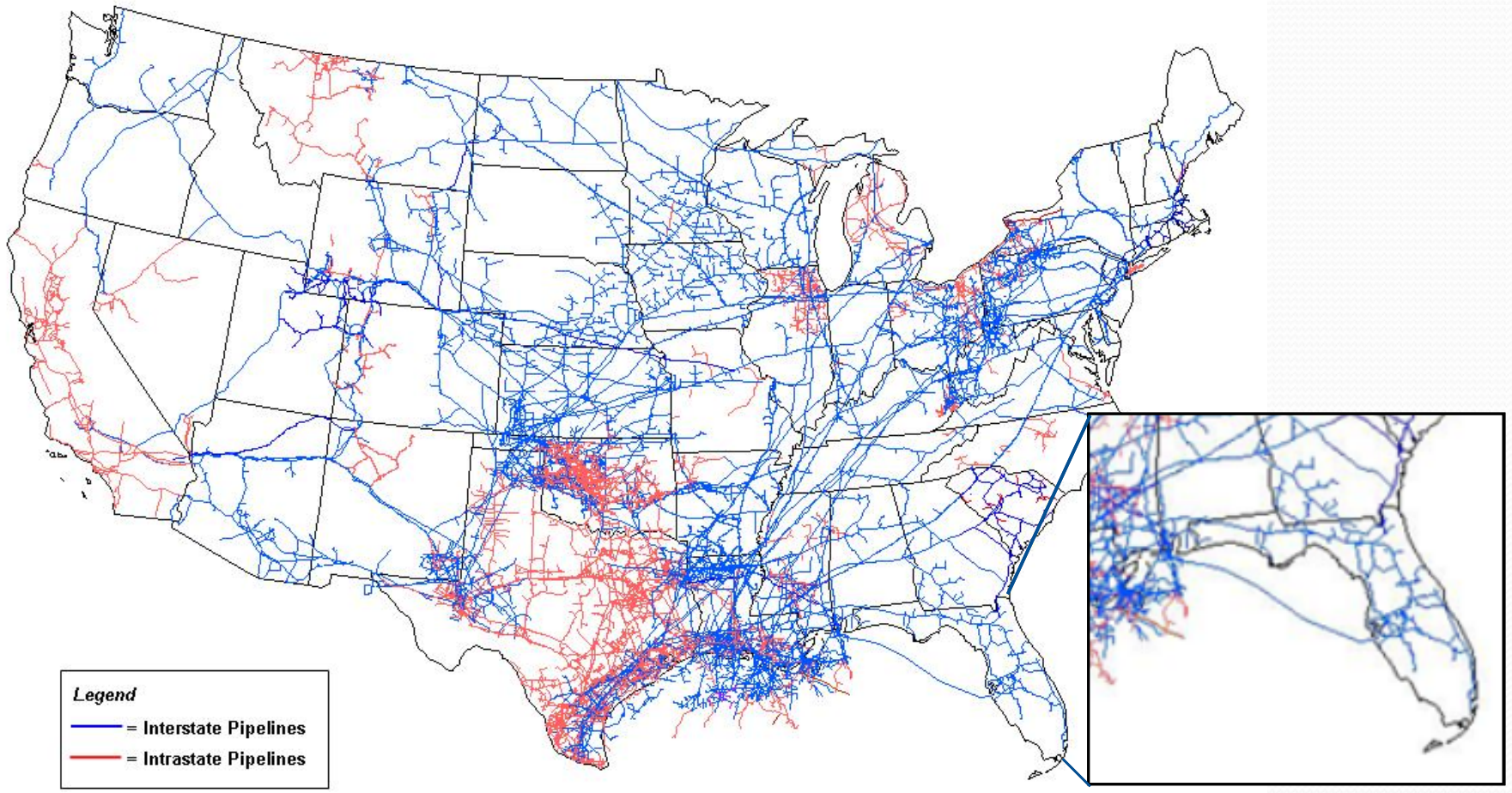
Source: January 10, 2010 http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=FL

Florida Energy Review (1-10-2010)

- **Petroleum**
- Most of Florida's **minor crude oil production** comes from fields in the northwestern Panhandle, but the State also produces some crude oil from smaller fields in the south. Although companies have explored for oil and gas in the Federal OCS south of Panama City, **exploration activity has been dormant since 1995,** when a litigation settlement returned 73 oil and gas leases in this area to the Federal Government. **Florida has no oil refineries** and **relies on petroleum products delivered by tanker and barge to marine terminals** near the State's major coastal cities. Due in part to Florida's tourist industry, **demand for petroleum-based transportation fuels (motor gasoline and jet fuel) is among the highest in the United States**. Traffic at the international airports in Miami and Orlando is among the heaviest in the country.
- **Natural Gas**
- Florida receives most of its **natural gas supply from the Gulf Coast Region via two major interstate pipelines**: the **Florida Gas Transmission line**, which runs from Texas through the Florida Panhandle to Miami, and the **Gulfstream pipeline**, an underwater link from Mississippi and Alabama to central Florida. With the completion of the Cypress Pipeline in May 2007, the Jacksonville area has also begun receiving supplies from the liquefied natural gas (LNG) import terminal at Elba Island, Georgia. **Florida's natural gas consumption is high and has grown rapidly in recent years**, due primarily to increasing demand from the electric power sector, which dominates State natural gas use. To help meet Florida's growing demand for natural gas, companies have proposed building new LNG import terminals in the Federal waters off Florida's Atlantic and Gulf coasts and on the nearby islands of the Bahamas that would be connected via underwater pipeline to Florida's existing natural gas pipeline system.

Source: January 10, 2010 http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=FL

U.S. Natural Gas Pipeline Network, 2009



Source: Energy Information Administration, Office of Oil & Gas, Natural Gas Division, Gas Transportation Information System

Florida Energy Review (1-10-2010)

- **Coal, Electricity, and Renewables**
- Electricity generation in Florida is among the highest in the United States. **Natural gas and coal are the leading fuels for electricity production**, typically accounting for about 40 percent and 30 percent of net generation, respectively. Nuclear and petroleum-fired power plants account for much of the remaining electricity production wi**Florida has more petroleum-fired electricity generation than any other State**thin the State.. Florida also a leading producer of electricity from municipal solid waste and landfill gas, although generation from those sources contributes only minimally to the electricity grid. There are no coal mines in Florida and coal-fired power plants rely on supplies delivered by railroad and barge, mostly from Kentucky, Illinois, and West Virginia.
- **Florida's per capita residential electricity demand is among the highest in the country**, due in part to high air-conditioning use during the hot summer months and the widespread use of electricity for home heating during the winter months. Despite high demand from the residential and commercial sectors, total per capita electricity consumption in Florida is not high, because industrial electricity use is relatively low. About nine-tenths of Florida households use electricity as their main energy source for home heating.
- While the State does not have a renewable portfolio standard, Florida did adopt energy standards that require major facility projects in the State to be constructed to high energy efficiency standards in order to reduce energy use. In addition, utilities in Florida are required to disclose their fuel sources and adopt net metering to credit customers' utility bills for electricity they provide to the grid from renewable sources.

Source: January 10, 2010 http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=FL

Click **Rank** to sort in ascending order by rank. Click **State** to sort alphabetically by State.

Rank	State	Total Energy Production (trillion Btu)
1	Texas	11,341.26
2	Wyoming	10,290.49
3	Louisiana	6,893.37
4	West Virginia	4,145.85
5	Kentucky	3,040.87
6	California	2,898.68
7	Pennsylvania	2,683.41
8	New Mexico	2,553.76
9	Oklahoma	2,440.75
10	Colorado	2,335.33
11	Alaska	2,051.77
12	Illinois	1,951.19
13	Alabama	1,503.20
14	Montana	1,214.89
15	Virginia	1,173.14
16	Utah	1,087.45
17	Washington	971.61
18	Ohio	901.79
19	Indiana	885.29
20	New York	873.21
21	Kansas	797.05
22	Michigan	757.61
23	North Dakota	752.04
24	South Carolina	654.32
25	Arkansas	588.70
26	Georgia	550.34
27	Arizona	546.42
28	North Carolina	533.73
29	Florida	524.28
30	Tennessee	484.05
31	Mississippi	413.32
32	Iowa	405.08
33	Oregon	397.43
34	New Jersey	360.68
35	Nebraska	333.95
36	Minnesota	326.20
37	Wisconsin	278.14
38	Maryland	251.29
39	Connecticut	199.20
40	Maine	153.58
41	Missouri	153.48
42	New Hampshire	145.94
43	South Dakota	144.29
44	Idaho	119.35
45	Massachusetts	97.54
46	Vermont	64.48
47	Nevada	58.15
48	Hawaii	18.12
49	Rhode Island	3.78
50	Delaware	2.35
51	District of Columbia	1.09
	U.S. Total:	**71,353.31**

Florida State Ranking

Total Energy Production, 2007 (trillion Btu)

RANK 29

524.28 Trillion BTU

Total Energy Consumption per Capita

RANK 44

252.86 Million BTU

Potential Company Employers Who Could Operate in Florida

- Off Shore Support – 417
- Maritime – 1,107
- Oil, Gas Production & Exploration – 149

- TOTAL POSSIBLE NEW FLORIDA EMPLOYMENT - TBD

Summary

- Florida can dictate an economic boom by acting early with its own energy production/recovery plan.
- This will attract many different companies and businesses to Florida, in advance, of any resource recovery.
- Attracting businesses in advance will also lead to additional industries, jobs and overall state growth.
- Taking the initiative will set in motion revenue and profit participation