



Long-Term Energy Sector Impacts from the Oil Spill

Second Annual Louisiana Oil & Gas Symposium.
The BP Gulf Oil Spill: Long-Term Impacts and Strategies.
Baton Rouge Geological Society.
August 16, 2010

GOM Offshore Oil and Gas – Economic Overview



- In 2008, over **420 MMBbls** of oil and **2.4 Tcf** of natural gas were produced in the Gulf of Mexico OCS.
- Employs over **200,000 workers** in the Gulf Coast region. Over **100,000 workers** associated with offshore activities.
- Contributes almost **\$100 billion** to Gulf Coast states' GDP.
- GOM accounts for **30** percent of total U.S. crude oil production.
- Deepwater areas produced **76** percent of all GOM crude oil production in 2007.

Note: Gulf Coast states include Louisiana, Texas, Mississippi and Alabama

Source: Bureau of Economic Analysis, US Department of Commerce; Energy Information Administration, U.S. Department of Energy; and Baker Hughes.

GOM Offshore Oil and Gas – Deepwater Exploration Trends

Over the past 20 years, the water depth barrier has moved from 5,300 feet to over 9,500 feet.

Project/Prospect	Area/Block	Water Depth (feet)	Discovery Year	Project/Prospect	Area/Block	Water Depth (feet)	Discovery Year
Mensa	MC 731	5,313	1986	Chinook ³	WR 469	8,831	2003
Kepler	MC 383	5,741	1987	Atlas ²	LL 50	8,944	2003
Coulomb	MC 657	7,558	1987	GC767	GC 767	5,116	2004
Fourier	MC 522	6,895	1989	Ticonderoga	GC 768	5,259	2004
King	MC 84	5,303	1993	Goldfinger	MC 771	5,413	2004
King's Peak	DC 133	6,541	1993	Thunder Hawk	MC 734	5,714	2004
Ariel	MC 429	6,134	1995	La Femme	MC 427	5,782	2004
Neptune (AT)	AT 575	6,203	1995	Jack ³	WR 759	6,962	2004
BAHA ³	AC 600	7,620	1996	San Jacinto	DC 618	7,805	2004
Anstey	MC 607	6,601	1997	Mondo Northwest	LL 2	8,362	2004
Atlantis	GC 743	6,612	1998	Atlas NW ²	LL 5	8,807	2004
Rigel	MC 252	5,227	1999	Cheyenne ²	LL 399	8,983	2004
Horn Mountain	MC 127	5,422	1999	Tiger ³	AC 818	9,004	2004
Devil's Tower	MC 773	5,532	1999	Silvertip ³	AC 815	9,226	2004
Thunder Horse	MC 778	6,082	1999	Tobago ³	AC 859	9,627	2004
Aconcagua	MC 305	7,051	1999	Big Foot	WR 29	5,268	2005
Camden Hills	MC 348	7,206	1999	Q2	MC 961	7,926	2005
Thunder Horse North	MC 776	5,662	2000	Mondo NW Extension	LL 1	8,351	2005
Constitution	GC 680	5,001	2001	Jubilee Extension	LL 309	8,774	2005
Red Hawk	GB 877	5,329	2001	Stones ³	WR 508	9,571	2005
Seventeen	MC 299	5,881	2001	Thunder Bird	MC 819	5,672	2006
Bass Lite	AT 426	6,623	2001	Kaskida ³	KC 292	5,721	2006
Blind Faith	MC 696	6,952	2001	Thunder Ridge	MC 737	6,108	2006
Callisto	MC 876	7,790	2001	Mission Deep	GC 955	7,068	2006
Merganser ²	AT 37	7,939	2001	Gotcha ³	AC 856	7,714	2006
Trident ³	AC 903	9,721	2001	Isabela	MC 562	6,535	2007
Great White ³	AC 857	8,119	2002	Julia ³	WR 627	7,087	2007
Cascade ³	WR 206	8,152	2002	Dalmatian	DC 48	5,876	2008
Vortex ²	AT 261	8,344	2002	Freedom	MC 948	6,095	2008
St. Malo ³	WR 678	6,991	2003	Tortuga	MC 561	6,302	2008
Shiloh	DC 269	7,509	2003	Hal ³	WR 848	7,657	2008
Spiderman ²	DC 621	8,082	2003	Diamond	LL 370	9,975	2008
Jubilee ²	AT 349	8,778	2003				

GOM Offshore Oil and Gas – Recent Deepwater Structure



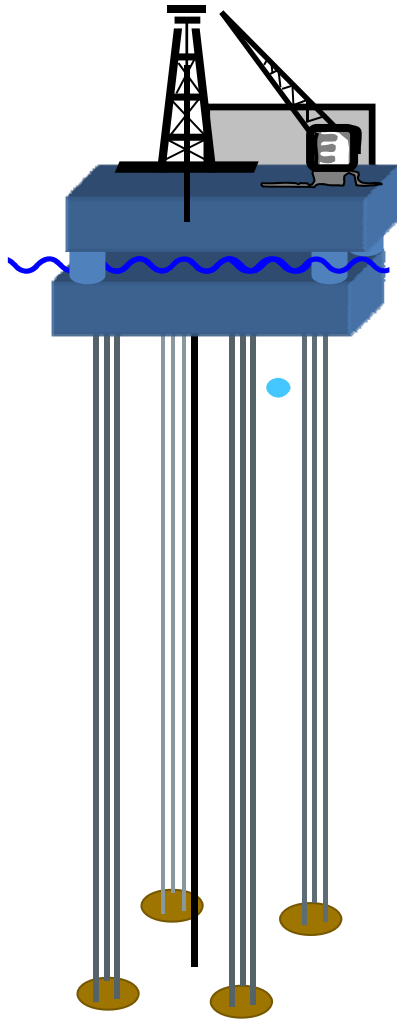
Has 5 independent E&P partners plus one midstream partner/operator. Operates in 8,000 feet water depth.

Enterprise and the Atwater Valley Producers Group, which includes Anadarko, Dominion, Kerr-McGee, Spinnaker and Devon Energy.

Process ultra-deepwater natural gas and condensate discoveries in the previously untapped Eastern Gulf of Mexico.

- **1 Bcf per day** of processing capacity, the largest in the GOM.
- Tie-back flow lines that are longer than **45 miles**, the longest in the GOM.
- **2.4 miles** of mooring lines.
- The Gulf's **deepest suction pile installation**.
- The Gulf's largest monoethylene glycol (MEG) reclamation unit.
- The Gulf's deepest pipeline inline future tie-in subsea structure.
- The Gulf's **longest single subsea umbilical order**. (carbon instead of steel)
- The **flow lines are 210 miles** in total length, and the umbilicals contain about 1,100 miles of stainless steel tubing.

GOM Offshore Oil and Gas – Economic Overview

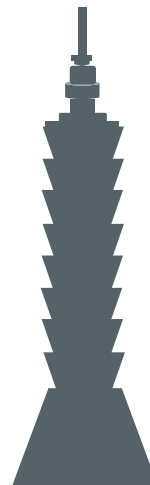


Structures in the GOM are as large some of the world's largest buildings.

Mars Tension Leg Platform
3,250 feet



Sears Tower
1,729 feet



Taipei 101
1,667 feet



Petronas Towers
1,486 feet



Empire State Building
1,472 feet

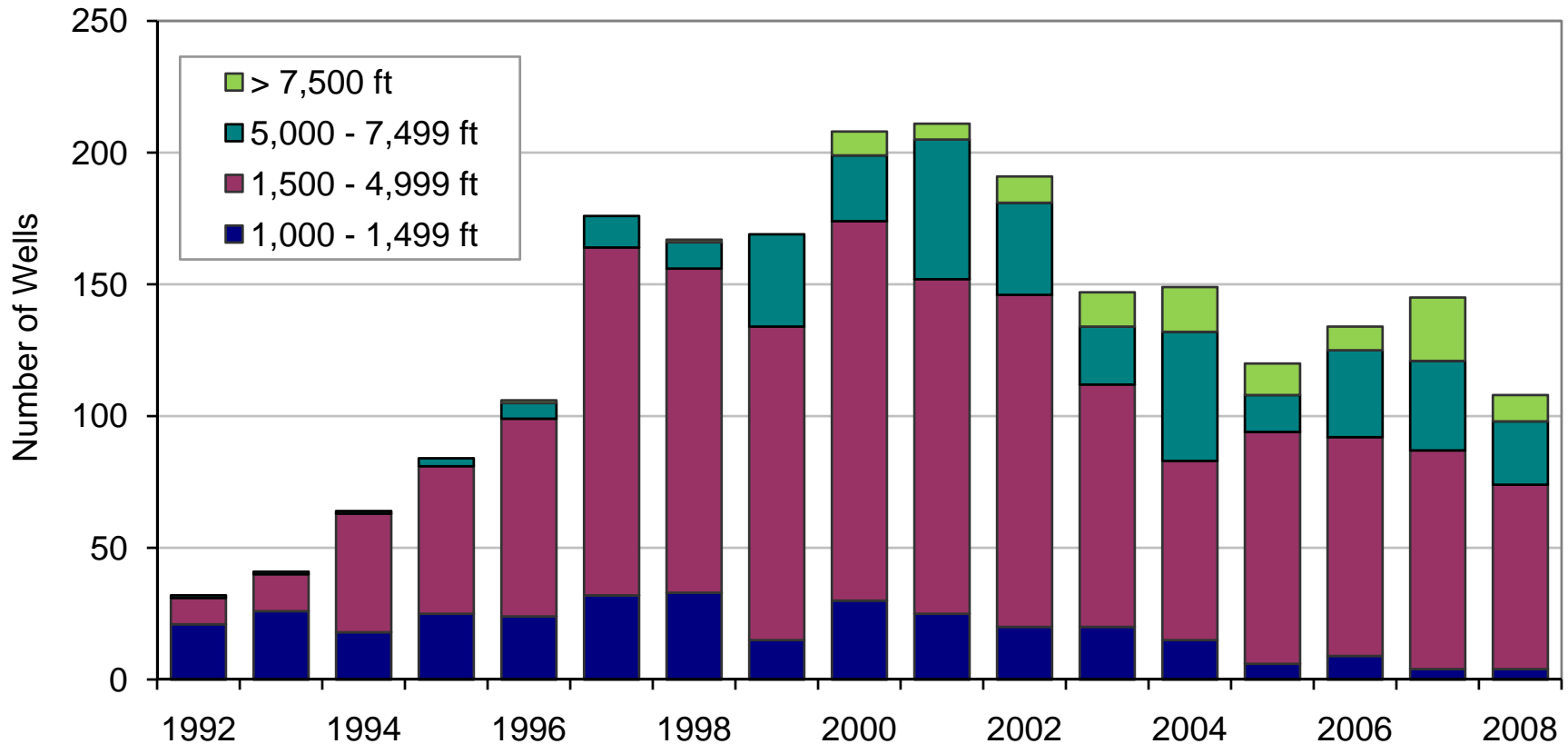
GOM Offshore Oil and Gas – Deepwater Statistics and Considerations



- **Over \$1.5 billion in surface structure and equipment needed to service deepwater wells.**
- **Drilling costs \$80 million to \$120 million per well.**
- **Drilling crews between 200 to 300 for large drilling project.**
- **Structures and wells are typically 100 miles to 200 miles from the coast.**
- **Water depths between 5,000 feet to 8,500 feet.**
- **Drilling depths of 15,000 feet to 28,000 feet (lower tertiary).**

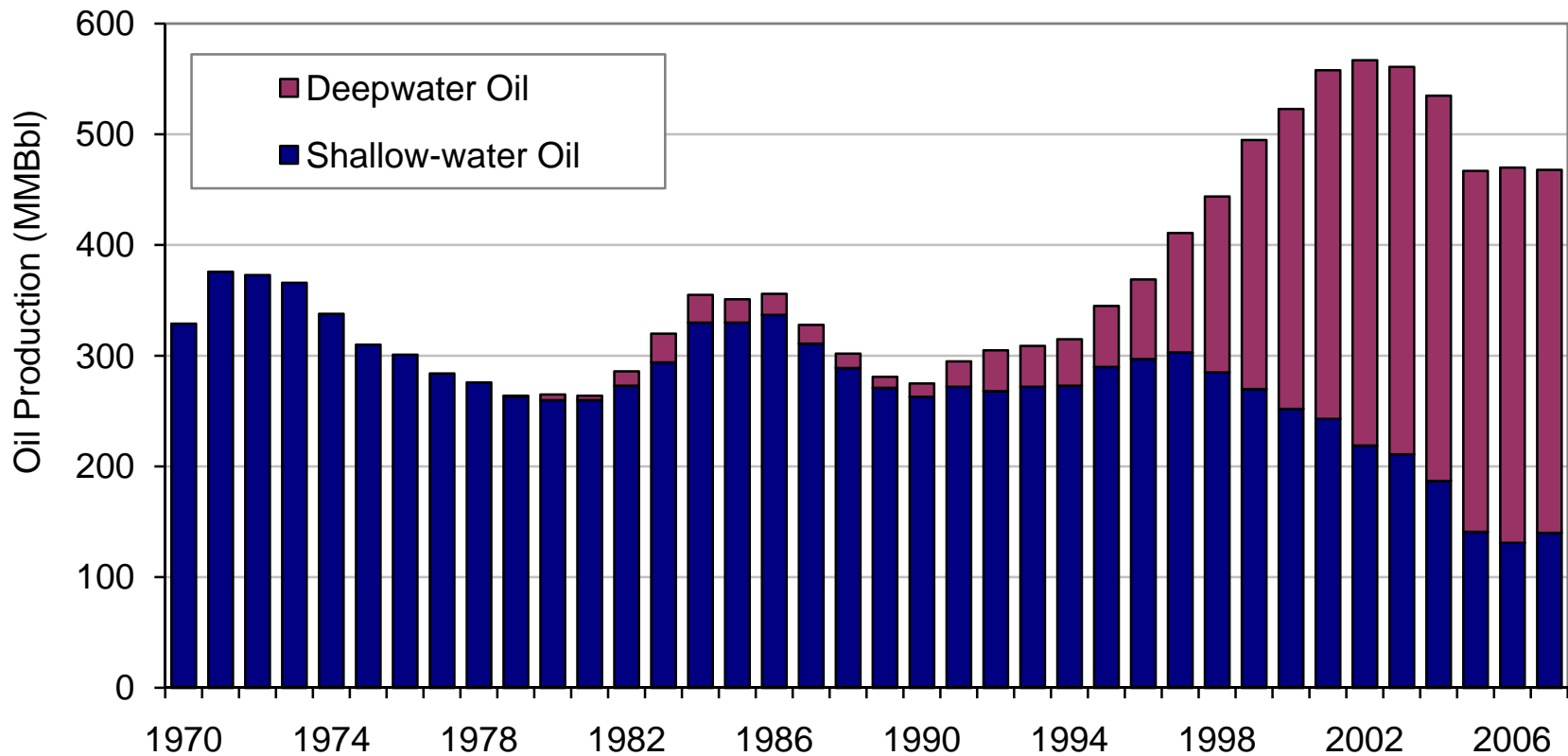
GOM OCS Deepwater Wells

Active deepwater wells are down relative to the earlier part of the decade, but still make considerable contributions to OCS production levels.



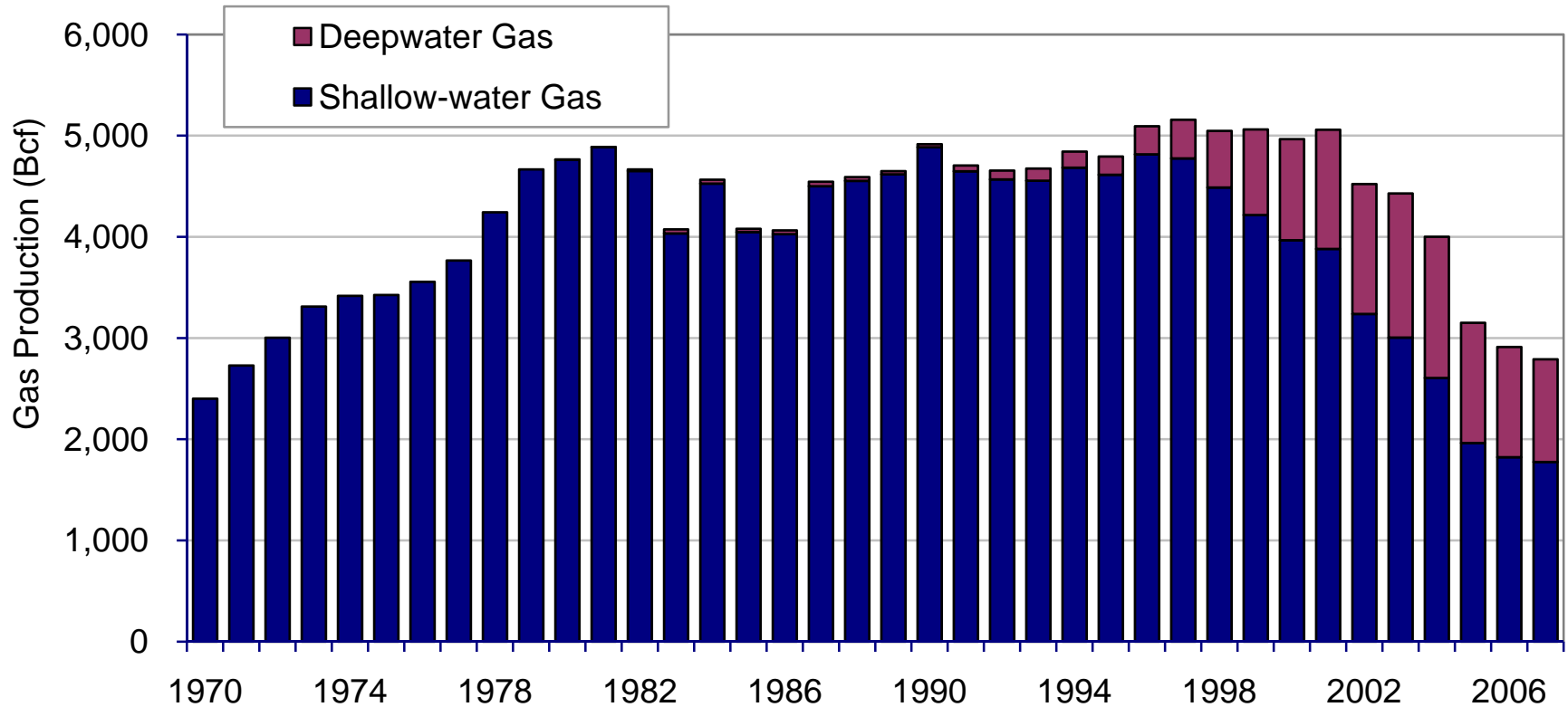
GOM OCS Deepwater Crude Oil Production

The significant increase in deepwater crude oil production has been a major new source of domestic crude oil supply.



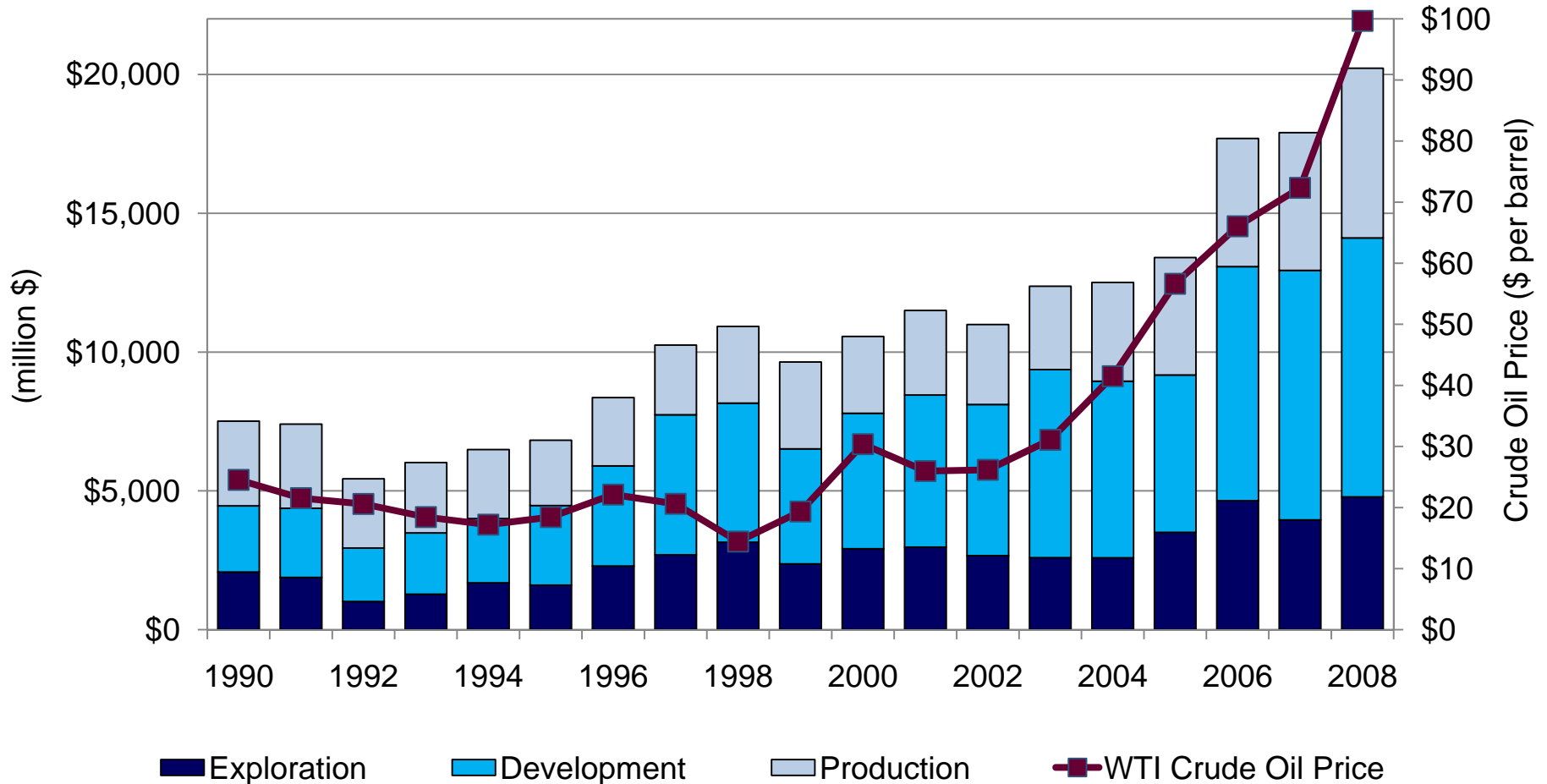
GOM OCS Deepwater Natural Gas Production

Deepwater natural gas production has remained relative constant in recent years, despite the overall GOM gas production plummet in 2002.



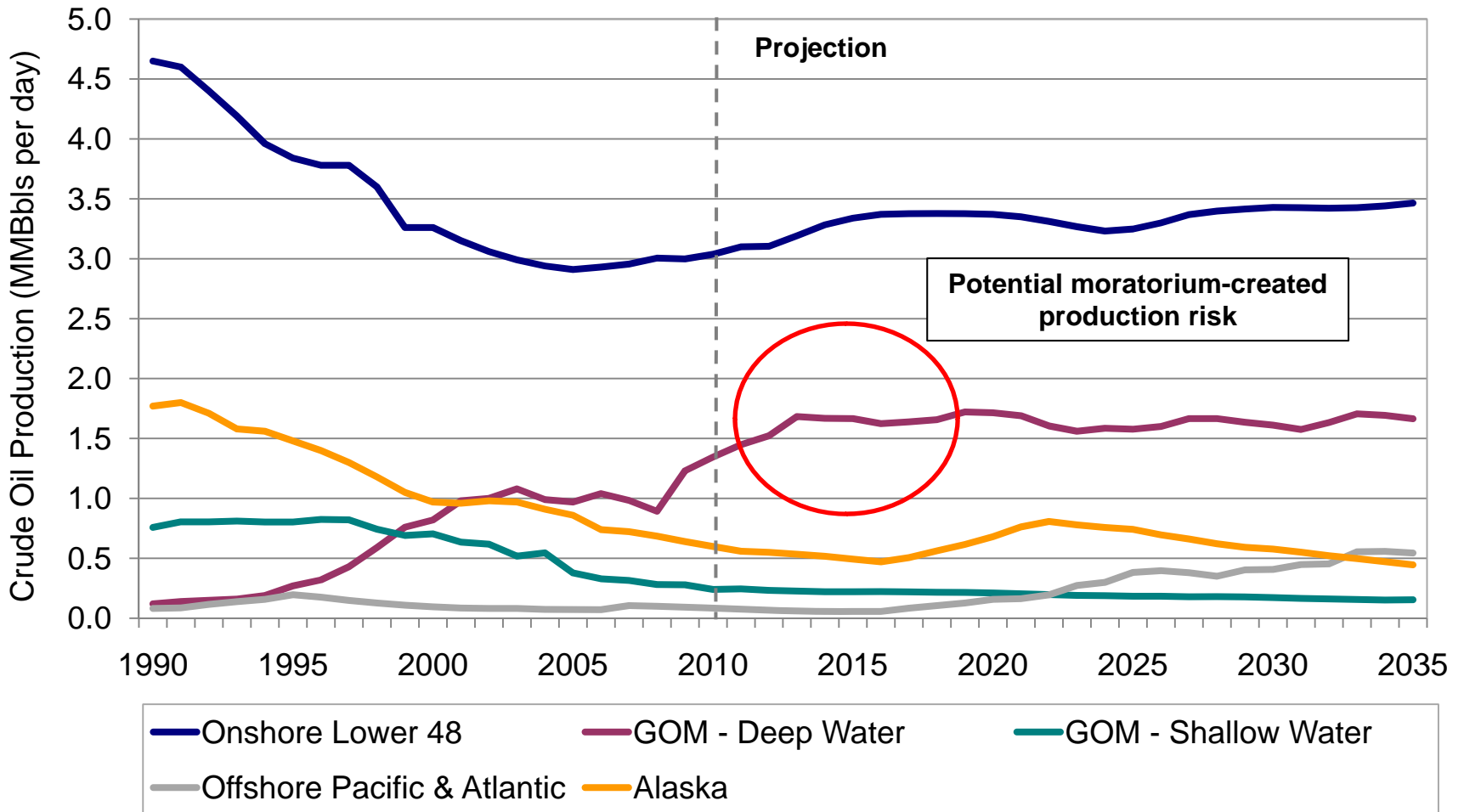
U.S. Offshore Capital Expenditures

The federal OCS, and its deepwater regions, account for a large share of the increasing capital investments for major oil companies.

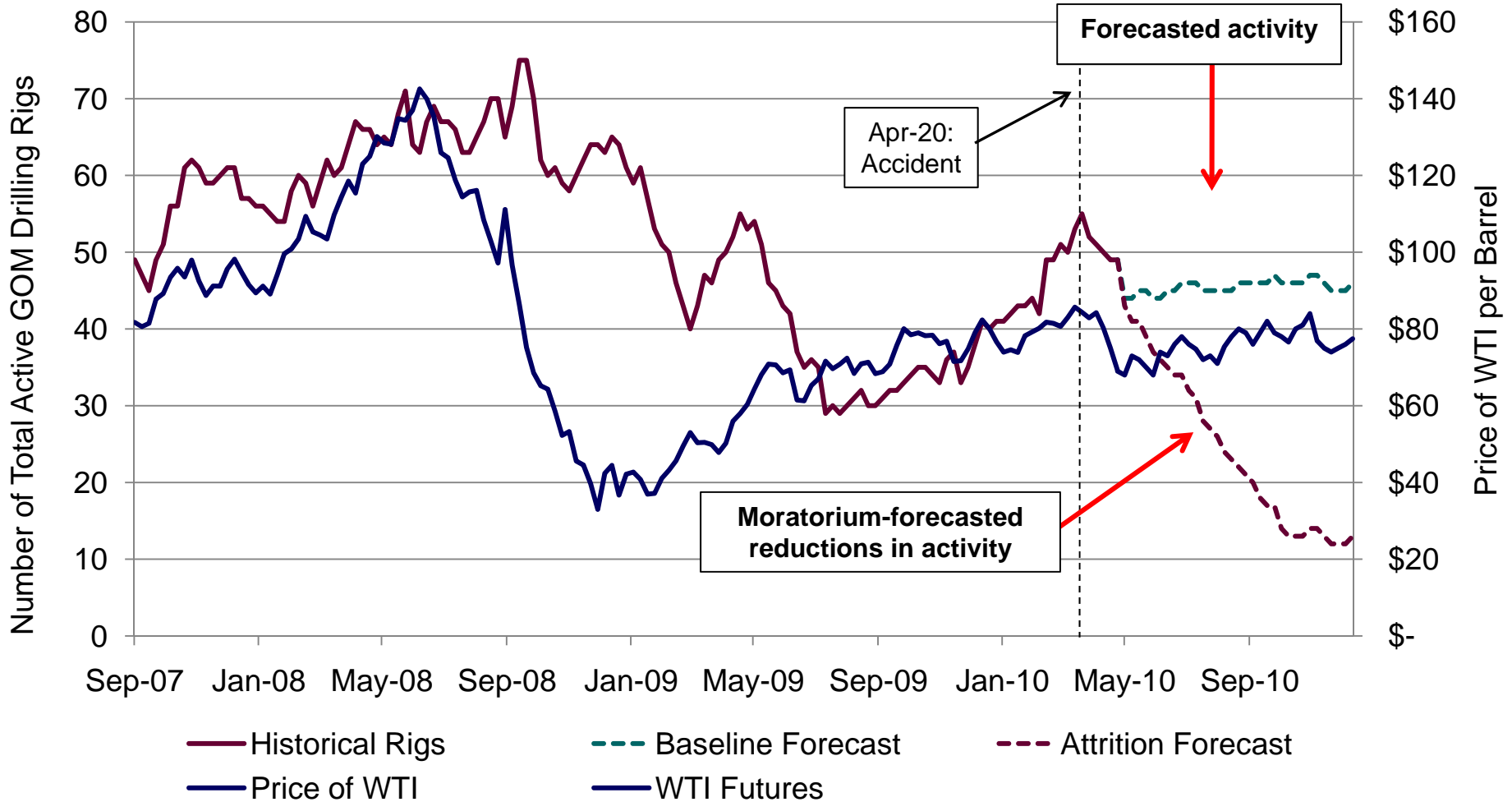


U.S. Crude Oil Production Forecast

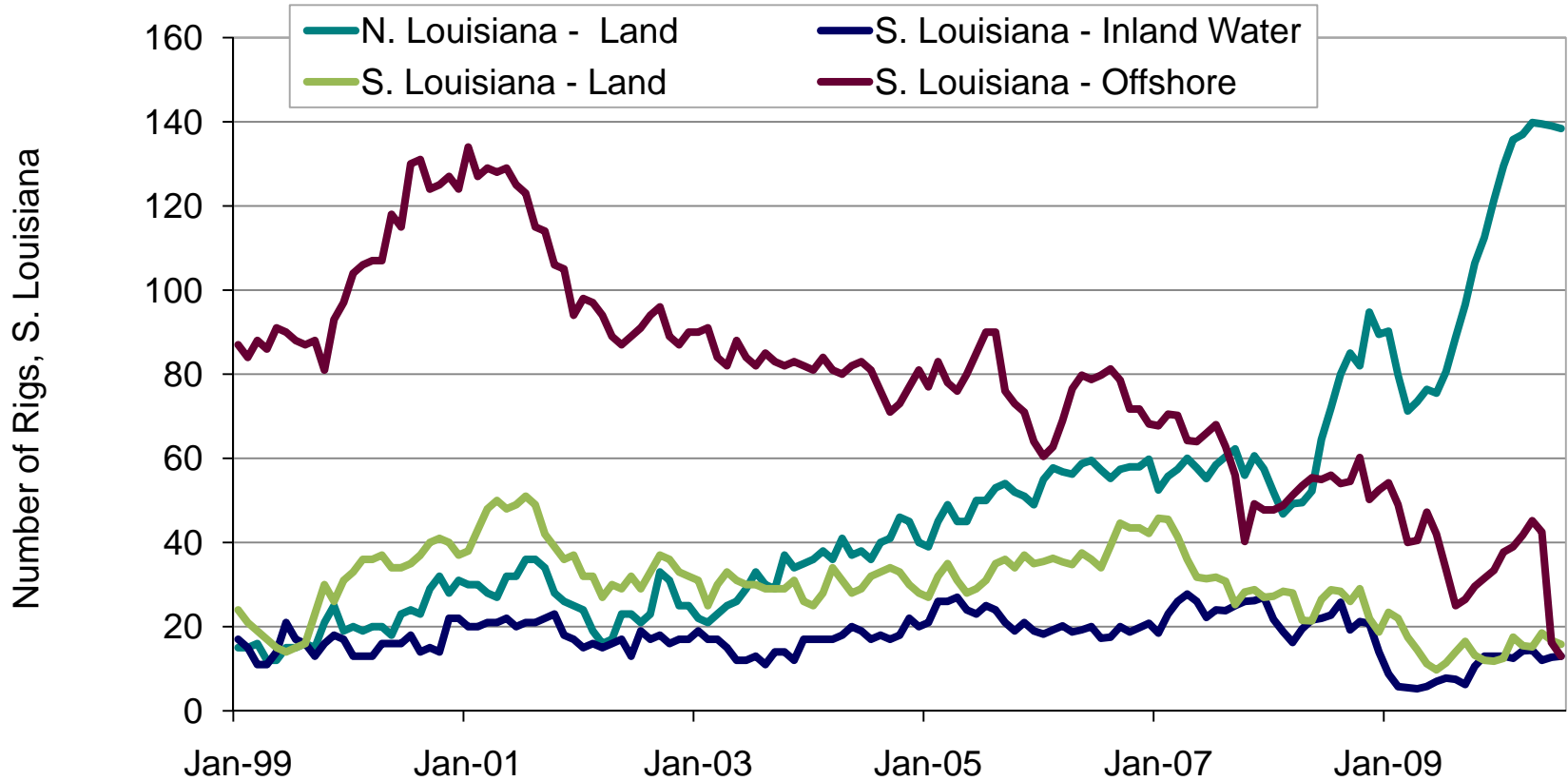
Deepwater production is forecast to increase by almost 20 percent between 2010 and 2030.



Gulf of Mexico Offshore Rig Forecast – Moratorium Impact

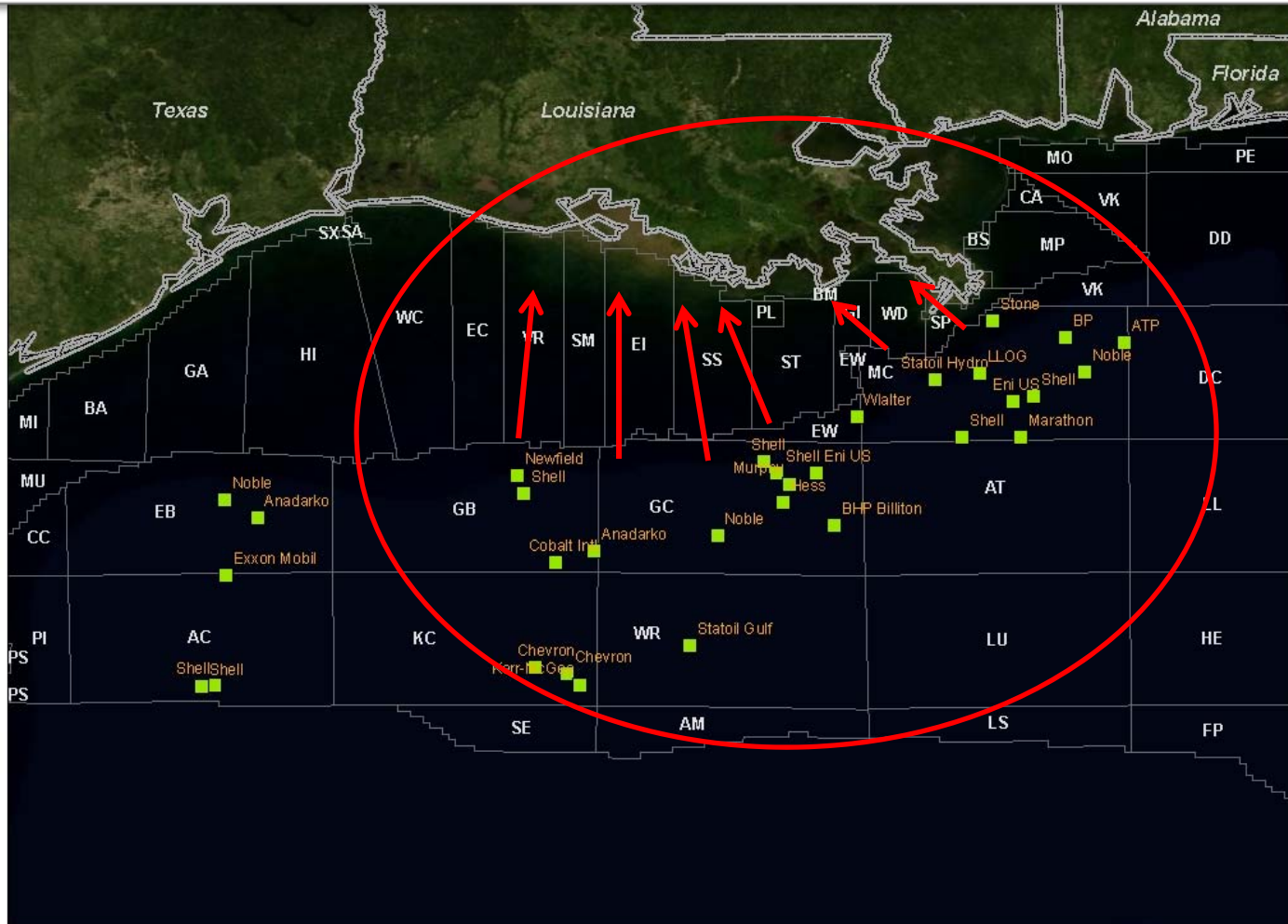


Active Drilling Rig Trends in Louisiana

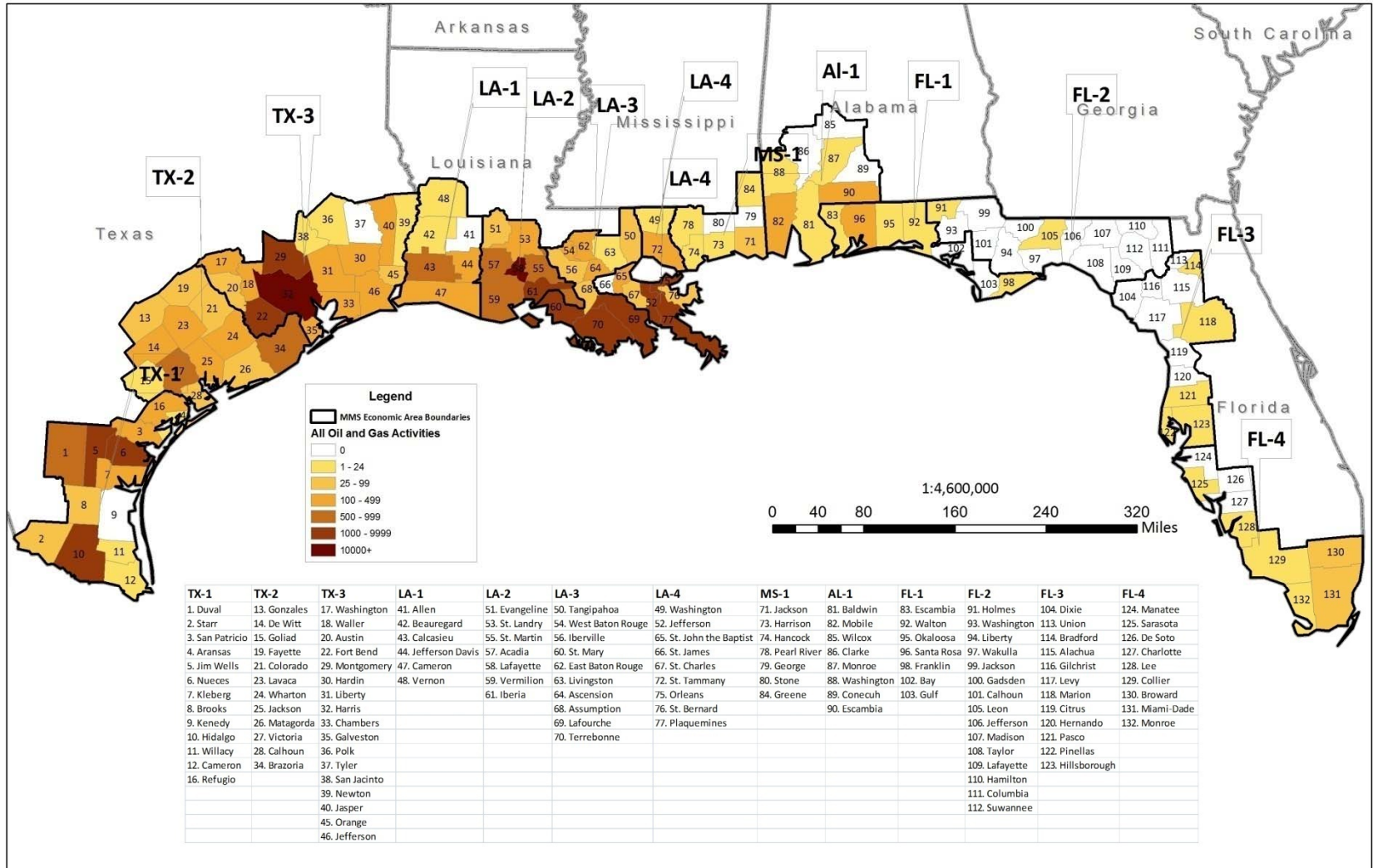


Moratorium Impacted Rigs

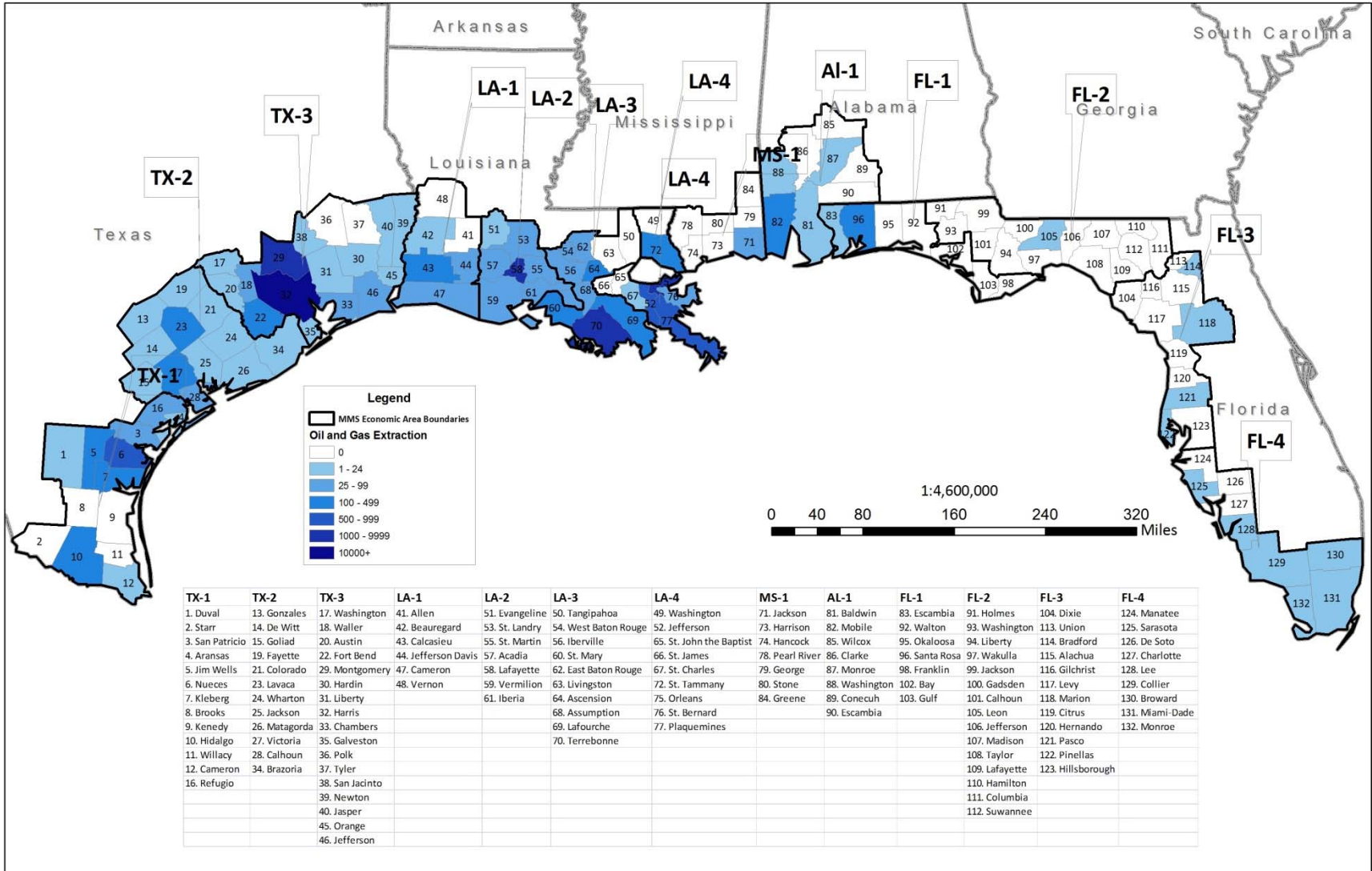
Impacted rigs anticipated to operate in very close proximity to Louisiana ports and support services.



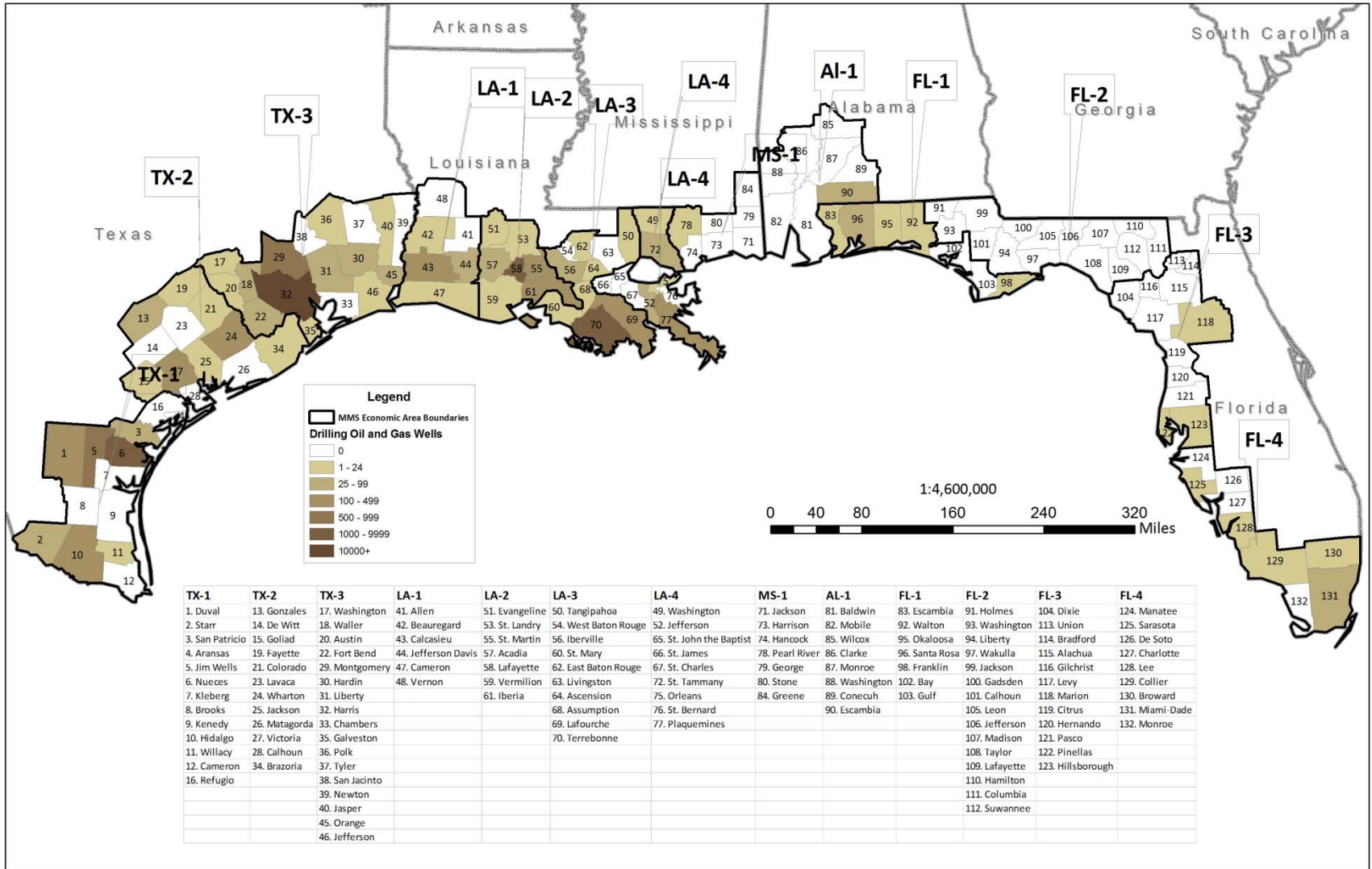
Gulf Coast Oil and Gas Employment – All Activities



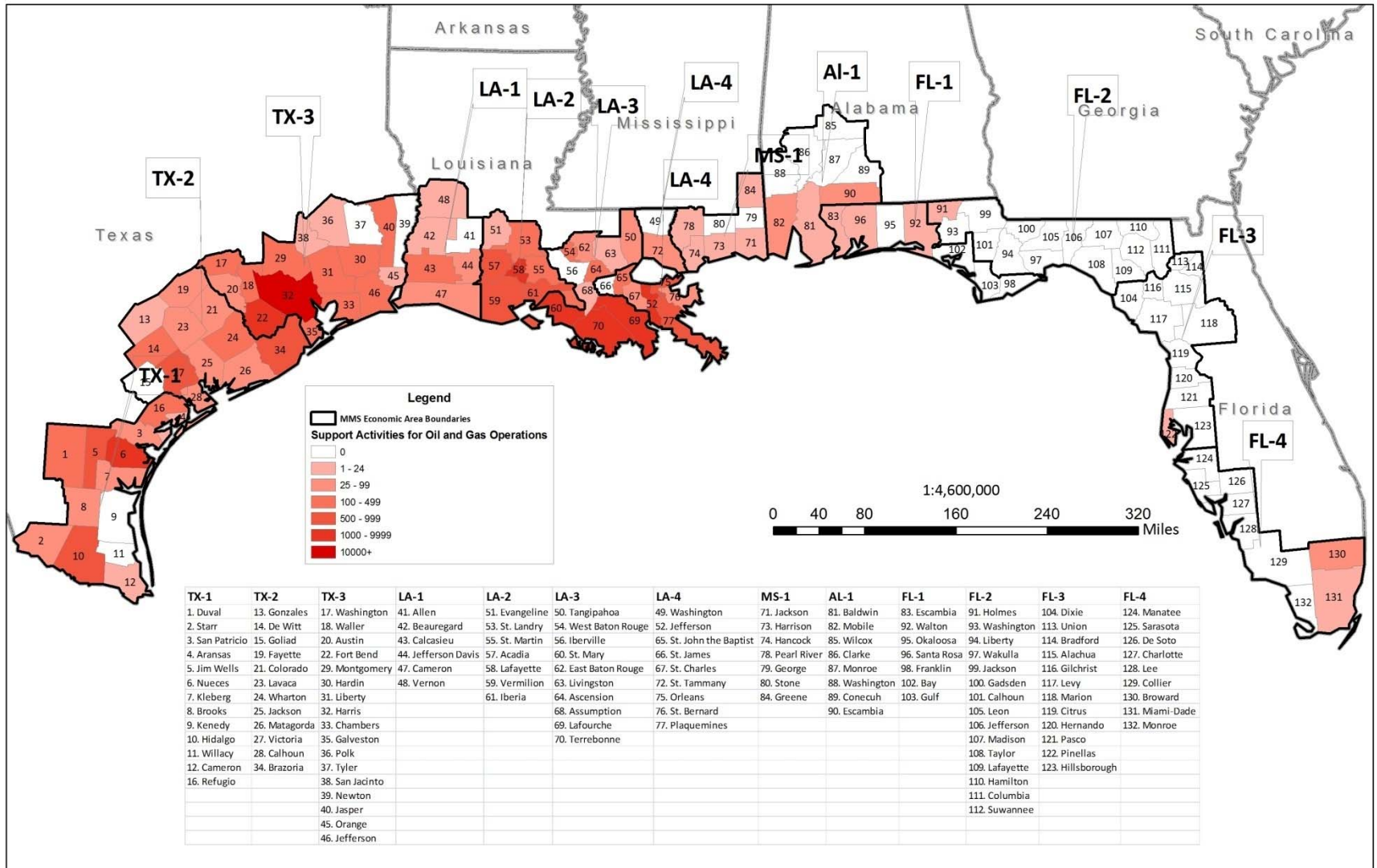
Gulf Coast Oil and Gas Employment - Production



Gulf Coast Oil and Gas Employment - Drilling



Gulf Coast Oil and Gas Employment – Support



Potential Moratorium Impacts – Louisiana Only

	Louisiana-Specific Impacts					
	Employment (cumulative)		Output		Wages	
	<i>Impact Period:</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>
To Moratorium (6 months)	9,952	11,351	\$ 1,140	\$ 1,589	\$ 636	\$ 788
Monthly post 6 months	384	466	\$ 148	\$ 150	\$ 42	\$ 51
<i>Impact Period:</i>	<i>Moratorium plus permitting (120 day)- Louisiana Only</i>					
Peak to New Start (10 Months)	11,488	13,215	\$ 1,730	\$ 2,187	\$ 802	\$ 991
Peak to New Start (14 Months)	13,024	15,079	\$ 2,321	\$ 2,786	\$ 969	\$ 1,194
<i>Impact Period:</i>	<i>Moratorium plus permitting (120 day)- Louisiana Only- Higher Prices</i>					
Peak to New Start (10 Months)	12,000	13,836	\$ 1,927	\$ 2,387	\$ 858	\$ 1,059
Peak to New Start (14 Months)	14,048	16,322	\$ 2,715	\$ 3,185	\$ 1,080	\$ 1,330

Potential Moratorium Impacts (Short Run) – Potential Parish Level Impacts

Parish	Employment (Jobs) - Low				Employment (Jobs) - High				Share of Total Impact	Share of Oil & Gas Employment
	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Direct Impact	Indirect Impact	Induced Impact	Total Impact		
Ascension	0.74	24.44	5.99	31.17	0.89	29.66	7.27	37.83	0.38%	15%
East Baton Rouge	3.68	17.06	6.75	27.50	4.47	20.71	8.19	33.37	0.34%	26%
Iberville	17.68	-	14.33	32.01	21.46	-	17.39	38.85	0.39%	49%
Livingston	-	1.84	0.41	2.25	-	2.24	0.49	2.73	0.03%	34%
Tangipahoa	0.74	9.22	2.63	12.59	0.89	11.19	3.20	15.28	0.15%	36%
West Baton Rouge	-	41.97	9.26	51.23	-	50.93	11.24	62.18	0.62%	29%
Beauregard	0.74	1.38	0.90	3.02	0.89	1.68	1.10	3.67	0.04%	16%
Calcasieu	47.89	111.83	63.49	223.20	58.12	135.73	77.05	270.90	2.72%	36%
Cameron	5.53	14.53	7.68	27.74	6.71	17.63	9.33	33.66	0.34%	21%
Jefferson Davis	9.95	11.53	10.60	32.08	12.07	13.99	12.87	38.93	0.39%	37%
Vernon	-	0.46	0.10	0.56	-	0.56	0.12	0.68	0.01%	34%
Acadia	32.05	167.17	62.87	262.09	38.90	202.89	76.31	318.09	3.20%	36%
Evangeline	2.58	0.92	2.29	5.79	3.13	1.12	2.78	7.03	0.07%	26%
Iberia	91.36	218.36	122.22	431.93	110.88	265.02	148.34	524.24	5.27%	42%
Lafayette	487.73	1,858.69	805.47	3,151.89	591.95	2,255.88	977.60	3,825.44	38.44%	36%
St. Landry	0.74	36.43	8.64	45.81	0.89	44.22	10.49	55.60	0.56%	30%
St. Martin	51.20	76.78	58.43	186.42	62.15	93.19	70.92	226.26	2.27%	44%
Vermilion	2.21	119.21	28.11	149.53	2.68	144.68	34.12	181.48	1.82%	31%
Assumption	0.74	0.92	0.80	2.46	0.89	1.12	0.97	2.99	0.03%	10%
Lafourche	63.36	280.15	113.18	456.69	76.90	340.02	137.37	554.29	5.57%	37%
St. Mary	0.74	547.16	121.39	669.29	0.89	664.09	147.34	812.32	8.16%	29%
Terrebonne	370.95	413.20	391.75	1,175.90	450.23	501.49	475.46	1,427.18	14.34%	34%
Jefferson	11.05	379.99	92.84	483.89	13.41	461.19	112.68	587.29	5.90%	26%
Orleans	4.79	120.82	30.55	156.17	5.81	146.64	37.08	189.54	1.90%	6%
Plaquemines	54.89	170.17	82.03	307.09	66.62	206.53	99.57	372.71	3.74%	26%
St. Bernard	-	6.00	1.32	7.32	-	7.28	1.61	8.88	0.09%	12%
St. Charles	-	13.37	2.95	16.33	-	16.23	3.58	19.81	0.20%	27%
St. John the Baptist	-	71.48	15.78	87.26	-	86.75	19.15	105.91	1.06%	34%
St. Tammany	32.42	18.91	30.44	81.76	39.34	22.95	36.94	99.23	1.00%	35%
Washington	9.95	50.04	19.10	79.09	12.07	60.73	23.19	95.99	0.96%	36%
Total	1,304	4,784	2,112	8,200	1,582	5,806	2,564	9,952	100.00%	

Long Run Issues Associated with Spill

Some longer-run issues for Louisiana and Gulf Coast include:

- **Intermediate-run implications (12-36 months) of current drilling moratoria and the decreased economic activity.**
- **The impacts that likely regulatory changes will have on GOM operations and costs that will impact investment profitability.**
- **Changes in operator liability requirements and the cost of insurance for GOM operations, particularly for independent operators that have a relatively large (in total) economic presence in Louisiana than the majors.**
- **New excise taxes, fees, surcharges, and the elimination of drilling incentives such as the Deepwater Royalty Relief Act and Energy Policy Act of 2005 EPA deep-gas drilling incentives (shallow water, well depths in excess of 20,000 feet).**
- **Impacts on opening the Eastern GOM and elimination of potential economic opportunities for Louisiana service ports (Venice, Fourchon) and LA-based service companies.**

Questions, Comments, & Discussion

dismukes@lsu.edu



www.enrg.lsu.edu