

LOUISIANA  
ENERGY  
FACTS  
ANNUAL

2016

DEPARTMENT OF NATURAL RESOURCES  
Technology Assessment Division  
February 10, 2017

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# LOUISIANA ENERGY FACTS

## ANNUAL 2016

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February 10, 2017

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# Louisiana Energy Facts Annual 2016

## INTRODUCTION

### ABOUT THIS PUBLICATION

The **Louisiana Energy Facts Annual (Annual)** is published to provide a comprehensive compendium of Louisiana related energy production and use statistics on a yearly basis. The data tables are supplemented with numerous graphs and charts to aid in the interpretation of the data and the discernment of trends. The **Annual** is published as soon as sufficient data for the previous calendar year is available. Due to time lags in the availability of some of the data, there is approximately a six month lag before the current **Annual** can be published. Some changes have been introduced in order to incorporate the latest available data.

If you read our monthly **Louisiana Energy Facts** newsletter, you may find that some of the previously published data has been revised in the **Annual**. This data, by its nature, continues to be revised, sometimes years after its initial publication. We try to bring attention to these changes by marking them as revisions.

The most recent **Louisiana Energy Facts** monthly newsletter may contain even more updates. Please refer to the recent monthlies for the very latest data. The **Louisiana Energy Facts** monthly newsletter is available online at our website:

<http://www.dnr.louisiana.gov/tad>

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Facts & Figures

Note: the data in these tables will be updated throughout the year. The data files are not audited and will change as more reliable data becomes available.

The Technology Assessment Division is not the source of the data, but merely reports data provided to us by the responsible agency. We understand that users of our time series data need consistency and, for that reason, our time series have been adjusted backward to reflect these new modifications.

Additional comments or suggestions about this publication can be directed to the Technology Assessment Division staff members listed on the General Questions and Comments page.

We hope you find this document useful, and we appreciate your feedback. Please fill in, detach and return the survey form at the back of this report.

## 2016 HIGHLIGHTS

The data in the 2016 **Louisiana Energy Facts Annual** contains some recent trends.

### **Crude Oil and Natural Gas Prices**

Gas spot price average was \$2.67 per MCF in 2015, and it was \$2.49 per MCF in 2016; which is 6.7% lower than in 2015. The Louisiana natural gas spot market average in January 2016 was \$2.35 per MCF and rose to \$3.53 per MCF in December 2016. The January price was attributed to record gas shale production and mild temperate weather and the price increase at the end of 2016 was caused by decreased storage and greater demand. The average price for gas for 2017 is expected to be above \$3.00 per MCF.

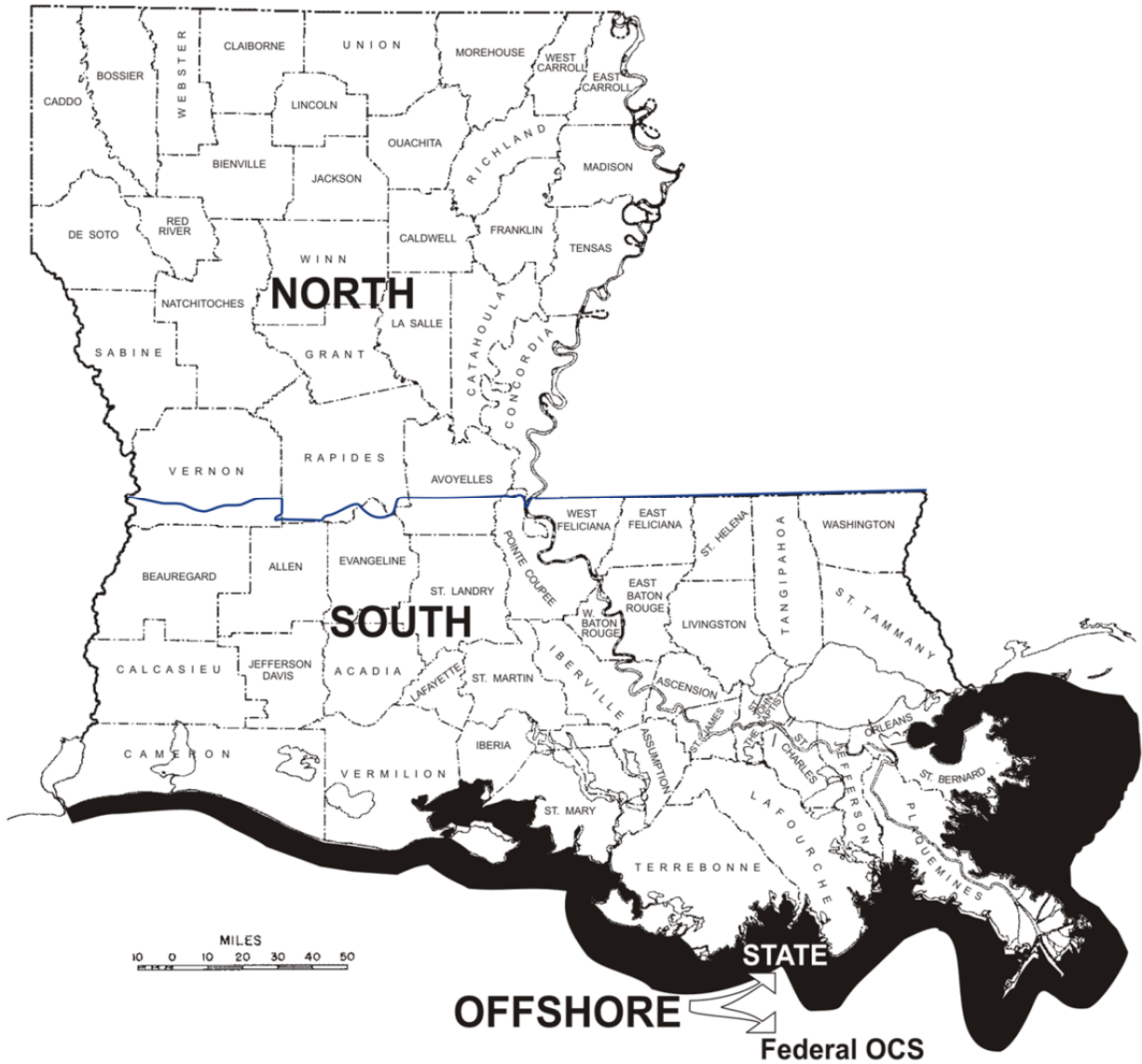
Light Louisiana Sweet (LLS) average spot crude oil price was \$52.36 per barrel in 2015 and it was \$44.82 per barrel in 2016, a 14.4% drop. The LLS crude oil spot price average was \$32.82 per barrel in January 2016 and rose to \$53.38 per barrel in December 2016. The oil price increase was caused by lower production in oil shale, OPEC cutting production, and slowly declining volume in storage. The 2017 LLS average spot price is expected to be above \$50 per barrel.

### **Oil and Gas Production**

Louisiana state oil production was lower in 2016 than in 2015, and the same holds true for the federal Outer Continental Shelf (OCS) in the Gulf of Mexico (GOM). The Louisiana state crude oil and condensate production, excluding the federal OCS, was 57.1 million barrels (MMB) in 2016 and it was 64.1 MMB in 2015. The 2016 oil production was 7.0 MMB or 10.9% lower than 2015. The preliminary Central GOM oil production in 2016 is 486.8 MMB and it was 27.5 MMB or 5.4% lower than 2015 oil production. The decrease in Central GOM oil was caused by the lower exploration and production budgets in the area and lower overall oil prices compared to the beginning of the decade.

Louisiana gas production was lower in 2016 than in 2015. The Louisiana state natural gas and casinghead, excluding OCS production, was 1.67 TCF in 2016, 1.5% lower than 2015. The decrease in gas was driven by low gas prices and a decline in drilling in the Haynesville shale area, and higher production from other shale plays that are capable of producing hydrocarbons liquids. The Haynesville shale is producing around 58% of the state total gas production. The preliminary Central GOM gas production in 2016 is 0.96 TCF, declining from production in 2015 by 9.6%. The Central GOM gas production has declined due to lower gas prices at the beginning of the year, making the year lag, and shifting priorities from gas fields to oil fields.

# SUBDIVISIONS OF LOUISIANA



## **Drilling**

Louisiana rig count, including the OCS area, averaged 47 active rigs in 2016, 39.0% lower than in 2015. In state areas, state offshore region drilling rigs was almost non-existent in 2016, South LA Inland water showed a 2 drilling rigs decrease in 2016, South LA inland land showed 6 drilling rigs decrease in 2016, North LA region showed 10 drilling rigs decrease in 2016, and LA Federal OCS average showed a 12 drilling rigs decrease in 2016 from 2015. Falling oil and gas prices, low demand and high inventories in crude oil and natural gas are the culprit for the decline in drilling in 2016, but drilling is expecting a slight rebound in 2017.

## **Other significant items**

Louisiana refineries 2016 daily crude oil average runs to stills were 2.92 million barrels per day, negligibly lower than in 2015 at 0.8%.

Average employment in the oil and gas extraction industries was 43,882 in 2015; a 12.34% decrease from 2014, due to lower oil prices and a decrease in exploration and production activities.

Louisiana proved oil reserves were lower in 2014 than in 2013, due to large decreases in the Fed OCS and a slight decline in the North regions, while state offshore and south onshore showed a slight increase. The decrease in oil reserve was due to falling oil prices and reservoir adjustment. Louisiana proved gas reserves were higher in 2014 than in 2013 in all Louisiana regions with the exception of the state offshore region. The increase in gas reserves were the result of steady gas drilling activities in these Louisiana regions and discovering more supply, and the state offshore region natural gas reserve decline was due to lack of drilling activities in the region.

**Table 1**

**LOUISIANA STATE CRUDE OIL PRODUCTION**  
**Excluding OCS**  
**(Barrels)**

<b>DATE</b>	<b>NORTH</b>	<b>SOUTH</b>	<b>OFFSHORE</b>	<b>TOTAL</b>
1996	16,576,627	63,662,781	14,748,690	94,988,098
1997	17,254,666	63,980,263	13,537,822	94,772,751
1998	16,320,254	62,329,107	12,731,270	91,380,631
1999	13,024,727	56,492,360	11,507,149	81,024,236
2000	11,890,407	53,957,823	10,120,547	75,968,777
2001	10,835,037	50,906,438	9,293,584	71,035,059
2002	9,734,754	43,151,661	7,630,661	60,517,076
2003	9,179,787	41,803,886	8,453,966	59,437,639
2004	8,697,903	41,289,067	7,015,580	57,002,550
2005	8,585,924	36,628,208	5,587,547	50,801,679
2006	8,327,465	36,416,376	4,639,216	49,383,057
2007	8,091,774	39,053,879	5,480,658	52,626,311
2008	8,010,562	36,313,404	4,124,198	48,448,164
2009	7,955,097	35,621,149	3,858,277	47,434,523
2010	7,915,495	36,270,826	4,671,151	48,857,472
2011	9,136,216	37,563,060	5,064,106	51,763,382
2012	9,961,475 r	39,816,038 r	5,036,472 r	54,813,985 r
2013	10,478,346 r	40,421,255 r	5,584,262 r	56,483,863 r
2014	10,093,552 r	39,265,997 r	5,551,263 r	54,910,812 r
January	844,206 r	3,212,263 r	484,449 r	4,540,918 r
February	765,879 r	2,897,446 r	448,571 r	4,111,896 r
March	847,437 r	3,062,035 r	506,259 r	4,415,731 r
April	803,368 r	2,969,539 r	464,880 r	4,237,787 r
May	818,795 r	3,096,215 r	456,393 r	4,371,403 r
June	789,391 r	2,937,925 r	432,097 r	4,159,413 r
July	805,419 r	3,002,010 r	394,481 r	4,201,910 r
August	809,573 r	2,963,955 r	399,551 r	4,173,079 r
September	792,743 r	2,878,233 r	447,891 r	4,118,867 r
October	814,437 r	2,968,969 r	399,492 r	4,182,898 r
November	800,173 r	2,770,149 r	395,670 r	3,965,992 r
December	831,288 r	2,722,634 r	416,910 r	3,970,832 r
<b>2015 Total</b>	<b>9,722,709 r</b>	<b>35,481,373 r</b>	<b>5,246,644 r</b>	<b>50,450,726 r</b>
January	785,511	2,637,854	386,841	3,810,206
February	732,807	2,571,517	415,171	3,719,495
March	737,984	2,791,039	431,804	3,960,827
April	718,478	2,729,736	420,329	3,868,543
May	754,373	2,778,365	453,478	3,986,216
June	755,680	2,626,665	439,593	3,821,938
July	778,159	2,669,216	428,276	3,875,651
August	778,114	2,565,635	424,756	3,768,505
September	755,776	2,624,843	398,111	3,778,730
October	774,808 p	2,686,981 p	394,422 p	3,856,211 p
November	762,359 p	2,608,321 p	409,942 p	3,780,623 p
December	763,685 p	2,604,689 p	404,113 p	3,772,486 p
<b>2016 Total</b>	<b>9,097,734 p</b>	<b>31,894,862 p</b>	<b>5,006,836 p</b>	<b>45,999,431 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 2**

**LOUISIANA STATE CONDENSATE PRODUCTION**  
**Excluding OCS**  
**(Barrels)**

<b>DATE</b>	<b>NORTH</b>	<b>SOUTH</b>	<b>OFFSHORE</b>	<b>TOTAL</b>
1996	5,162,593	26,495,266	2,313,383	33,971,013
1997	4,397,384	24,247,395	2,737,982	31,382,763
1998	3,962,756	24,405,878	2,400,173	30,760,168
1999	3,555,355	24,032,940	2,233,271	29,798,463
2000	3,417,173	26,347,208	1,429,439	31,193,588
2001	3,352,988	28,003,761	1,933,594	33,831,960
2002	2,926,737	27,980,334	1,761,536	33,173,039
2003	2,789,398	25,616,633	1,850,882	30,936,684
2004	2,926,460	21,468,353	1,684,363	26,689,554
2005	3,323,446	20,365,449	1,195,413	24,884,308
2006	3,773,415	18,735,542	2,078,103	24,587,060
2007	4,335,873	18,299,586	2,114,728	24,750,187
2008	5,107,407	16,897,961	2,157,717	24,163,085
2009	4,254,544	15,004,194	2,131,896	21,390,634
2010	3,269,391	13,240,103	1,911,052	18,420,546
2011	3,148,207	12,601,089	1,452,156	17,201,452
2012	2,797,876 r	11,878,591 r	1,559,822 r	16,236,289 r
2013	3,203,023 r	11,356,408 r	1,186,810 r	15,746,241 r
2014	3,377,301 r	9,989,651 r	787,171 r	14,154,123 r
January	311,822 r	807,125 r	63,015 r	1,181,962 r
February	249,541 r	717,404 r	54,323 r	1,021,268 r
March	260,310 r	768,166 r	61,422 r	1,089,898 r
April	231,324 r	738,317 r	50,907 r	1,020,548 r
May	262,601 r	745,236 r	54,637 r	1,062,474 r
June	220,405 r	735,866 r	50,807 r	1,007,078 r
July	203,281 r	782,375 r	53,263 r	1,038,919 r
August	257,488 r	772,075 r	40,900 r	1,070,463 r
September	233,215 r	735,043 r	42,418 r	1,010,676 r
October	251,439 r	747,917 r	38,633 r	1,037,989 r
November	274,786 r	713,516 r	37,299 r	1,025,601 r
December	292,434 r	755,341 r	38,814 r	1,086,589 r
<b>2015 Total</b>	<b>3,048,646 r</b>	<b>9,018,381 r</b>	<b>586,438 r</b>	<b>12,653,465 r</b>
January	280,638	723,961	38,180	1,042,779
February	254,610	654,451	39,301	948,362
March	304,375	686,147	37,266	1,027,788
April	319,176	640,180	32,882	992,238
May	266,344	638,033	30,413	934,790
June	353,801	596,289	29,637	979,727
July	261,847	607,358	35,058	904,263
August	208,796	620,158	26,421	855,375
September	232,260	583,732	26,624	842,616
October	255,476 p	596,006 p	27,464 p	878,946 p
November	259,549 p	592,899 p	28,141 p	880,589 p
December	240,906 p	592,230 p	27,851 p	860,987 p
<b>2016 Total</b>	<b>3,237,778 p</b>	<b>7,531,445 p</b>	<b>379,237 p</b>	<b>11,148,460 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 3**

**LOUISIANA STATE CRUDE OIL and CONDENSATE PRODUCTION**  
**Excluding OCS**  
**(Barrels)**

<b>DATE</b>	<b>NORTH</b>	<b>SOUTH</b>	<b>OFFSHORE</b>	<b>TOTAL</b>
1996	22,078,179	89,743,267	17,137,665	128,959,111
1997	21,829,276	88,295,426	16,030,812	126,155,514
1998	20,304,949	87,523,706	14,312,144	122,140,799
1999	16,711,501	81,260,610	12,850,588	110,822,699
2000	15,307,562	80,304,828	11,549,975	107,162,365
2001	14,274,475	79,328,486	11,264,058	104,867,019
2002	12,726,261	71,523,765	9,440,089	93,690,115
2003	12,049,211	67,975,624	10,349,488	90,374,323
2004	11,696,648	63,270,406	8,725,050	83,692,104
2005	11,909,370	56,993,657	6,782,960	75,685,987
2006	12,100,880	55,151,918	6,717,319	73,970,117
2007	12,427,647	57,353,465	7,595,386	77,376,498
2008	13,117,969	53,211,365	6,281,915	72,611,249
2009	12,209,641	50,625,343	5,990,173	68,825,157
2010	11,184,886	49,510,929	6,582,203	67,278,018
2011	12,284,423	50,164,149	6,516,262	68,964,834
2012	12,759,351 r	51,694,629 r	6,596,294 r	71,050,274 r
2013	13,681,369 r	51,777,663 r	6,771,072 r	72,230,104 r
2014	13,470,853 r	49,255,648 r	6,338,434 r	69,064,935 r
January	1,156,028 r	4,019,388 r	547,464 r	5,722,880 r
February	1,015,420 r	3,614,850 r	502,894 r	5,133,164 r
March	1,107,747 r	3,830,201 r	567,681 r	5,505,629 r
April	1,034,692 r	3,707,856 r	515,787 r	5,258,335 r
May	1,081,396 r	3,841,451 r	511,030 r	5,433,877 r
June	1,009,796 r	3,673,791 r	482,904 r	5,166,491 r
July	1,008,700 r	3,784,385 r	447,744 r	5,240,829 r
August	1,067,061 r	3,736,030 r	440,451 r	5,243,542 r
September	1,025,958 r	3,613,276 r	490,309 r	5,129,543 r
October	1,065,876 r	3,716,886 r	438,125 r	5,220,887 r
November	1,074,959 r	3,483,665 r	432,969 r	4,991,593 r
December	1,123,722 r	3,477,975 r	455,724 r	5,057,421 r
<b>2015 Total</b>	<b>12,771,355 r</b>	<b>44,499,754 r</b>	<b>5,833,082 r</b>	<b>63,104,191 r</b>
January	1,066,149	3,361,815	425,021	4,852,985
February	987,417	3,225,968	454,472	4,667,857
March	1,042,359	3,477,186	469,070	4,988,615
April	1,037,654	3,369,916	453,211	4,860,781
May	1,020,717	3,416,398	483,891	4,921,006
June	1,109,481	3,222,954	469,230	4,801,665
July	1,040,006	3,276,574	463,334	4,779,914
August	986,910	3,185,793	451,177	4,623,880
September	988,036	3,208,575	424,735	4,621,346
October	1,030,284 p	3,282,987 p	421,886 p	4,735,157 p
November	1,021,909 p	3,201,221 p	438,083 p	4,661,212 p
December	1,004,591 p	3,196,920 p	431,963 p	4,633,473 p
<b>2016 Total</b>	<b>12,335,512 p</b>	<b>39,426,306 p</b>	<b>5,386,073 p</b>	<b>57,147,891 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B



Figure 1

### LOUISIANA STATE OIL PRODUCTION Actual and Forecasted Through Year 2030

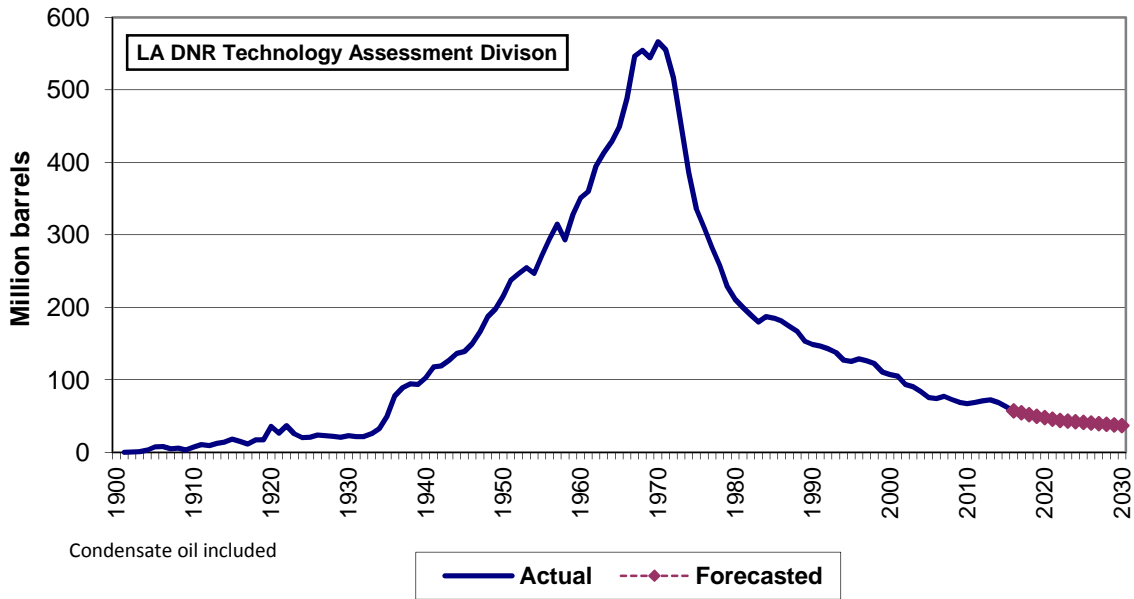
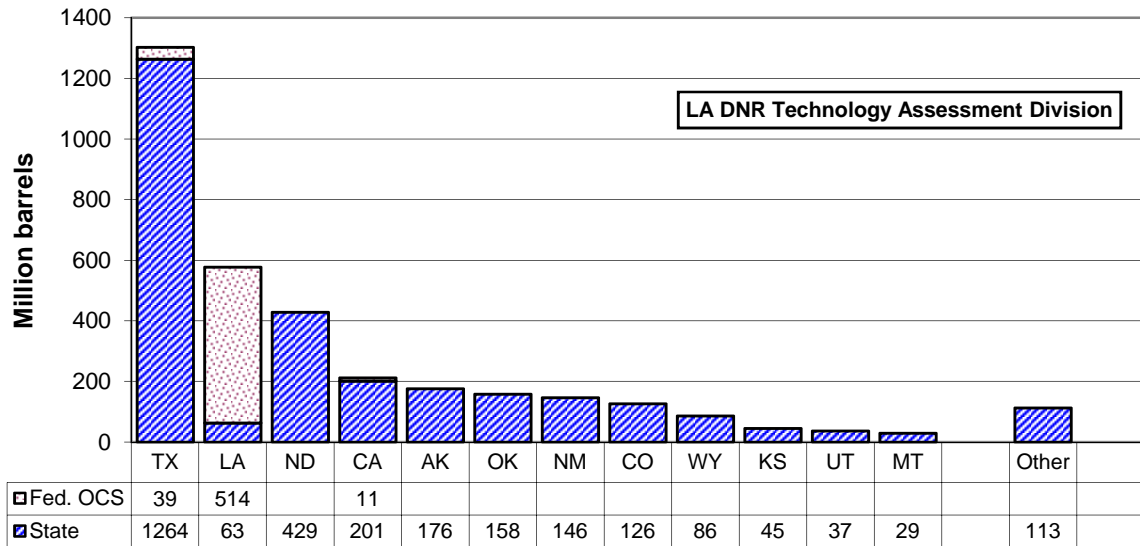


Figure 2

### 2015 UNITED STATES OIL PRODUCTION BY STATE



Federal OCS production estimated

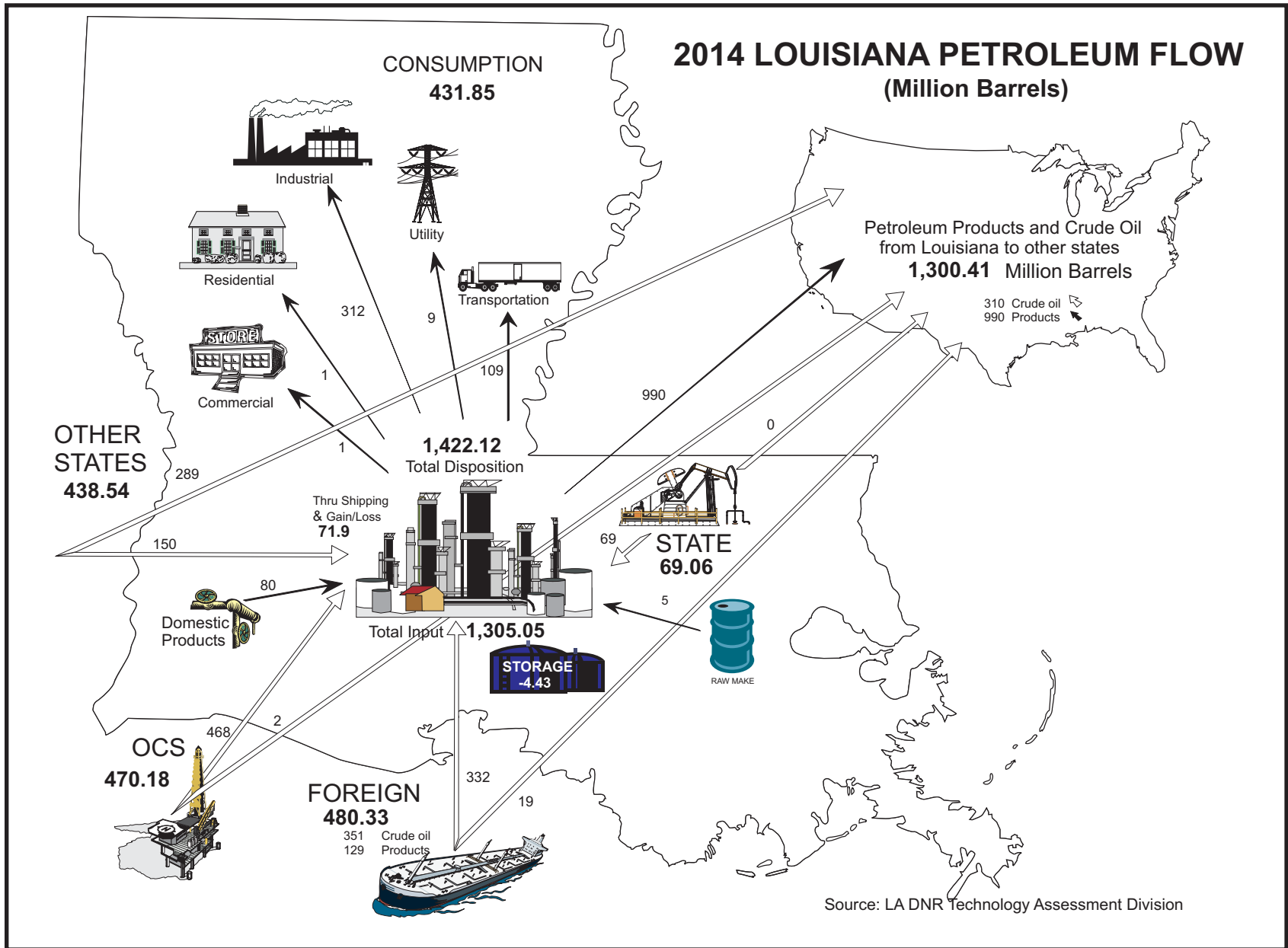
**Table 4**

**LOUISIANA and GOM CENTRAL CRUDE OIL and CONDENSATE PRODUCTION  
(Barrels)**

DATE	ONSHORE	OFFSHORE		TOTAL
		State	GOM Central	
1996	111,821,446	17,137,665	345,928,261	474,887,372
1997	110,124,702	16,030,812	389,573,523	515,729,037
1998	107,828,655	14,312,144	419,841,427	541,982,226
1999	97,972,111	12,850,588	474,461,887	585,284,586
2000	95,612,390	11,549,975	500,407,261	607,569,626
2001	93,602,961	11,264,058	524,563,398	629,430,417
2002	84,250,026	9,440,089	521,432,474	615,122,589
2003	80,024,835	10,349,488	509,552,915	599,927,238
2004	74,967,054	8,725,050	482,598,762	566,290,866
2005	68,903,027	6,782,960	418,763,978	494,449,965
2006	67,252,798	6,717,319	431,633,489	505,603,606
2007	69,781,112	7,595,386	435,264,843	512,641,341
2008	66,329,334	6,281,915	396,112,395	468,723,644
2009	62,834,984	5,990,173	544,854,279	613,679,436
2010	60,695,815	6,582,203	541,600,736	608,878,754
2011	62,448,572	6,516,262	451,838,190	520,803,024
2012	64,453,980 r	6,596,294 r	422,692,750 r	493,743,024 r
2013	65,459,032 r	6,771,072 r	415,760,908 r	487,991,012 r
2014	62,726,501 r	6,338,434 r	470,176,016 r	539,240,951 r
January	5,175,416 r	547,464 r	41,548,166 r	47,271,046 r
February	4,630,270 r	502,894 r	37,413,511 r	42,546,675 r
March	4,937,948 r	567,681 r	39,631,409 r	45,137,038 r
April	4,742,548 r	515,787 r	42,187,310 r	47,445,645 r
May	4,922,847 r	511,030 r	39,827,113 r	45,260,990 r
June	4,683,587 r	482,904 r	39,034,025 r	44,200,516 r
July	4,793,085 r	447,744 r	45,178,643 r	50,419,472 r
August	4,803,091 r	440,451 r	47,291,637 r	52,535,179 r
September	4,639,234 r	490,309 r	46,699,165 r	51,828,708 r
October	4,782,762 r	438,125 r	45,800,023 r	51,020,910 r
November	4,558,624 r	432,969 r	42,875,852 r	47,867,445 r
December	4,601,697 r	455,724 r	46,874,115 r	51,931,536 r
<b>2015 Total</b>	<b>57,271,109 r</b>	<b>5,833,082 r</b>	<b>514,360,969 r</b>	<b>577,465,160 r</b>
January	4,427,964	425,021	46,458,184	51,311,169
February	4,213,385	454,472	42,423,742	47,091,599
March	4,519,545	469,070	47,151,800	52,140,415
April	4,407,570	453,211	44,853,728	49,714,509
May	4,437,115	483,891	46,352,191	51,273,197
June	4,332,435	469,230	39,001,745	43,803,410
July	4,316,580	463,334	40,196,870	44,976,784
August	4,172,703	451,177	36,846,160	41,470,040
September	4,196,611	424,735	34,569,699	39,191,045
October	4,313,271 p	421,886 p	37,587,205	42,322,362 p
November	4,223,129 p	438,083 p	36,078,452	40,739,664 p
December	4,201,510 p	431,963 p	35,324,076 p	39,957,549 p
<b>2016 Total</b>	<b>51,761,819 p</b>	<b>5,386,073 p</b>	<b>486,843,852 p</b>	<b>543,991,743 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 3



Source: LA DNR Technology Assessment Division

**Table 5**

**LOUISIANA STATE OIL PRODUCTION\* BY TAX RATES  
AS PUBLISHED IN SEVERANCE TAX REPORTS<sup>8</sup>  
(Barrels)**

<b>DATE</b>	<b>FULL RATE</b>	<b>INCAPABLE WELLS RATE</b>	<b>STRIPPER WELLS RATE</b>	<b>TAXED VOLUME</b>
1996	103,524,192	3,786,147	6,240,956 e	113,551,295 e
1997	101,772,533	3,466,389	6,101,247 e	111,340,169 e
1998	89,083,365	2,878,225	5,892,007 e	97,853,597 e
1999	85,207,438	2,786,515	5,690,984 e	93,684,937 e
2000	88,411,207	2,783,268	5,322,515	96,516,990
2001	83,994,058	2,576,683	5,175,142	91,745,883
2002	79,038,703 e	2,571,901 e	4,681,607 e	86,292,211 e
2003	75,070,785	2,565,017	4,912,890	82,548,691
2004	73,133,821	2,852,851	4,838,681	80,825,353
2005	61,356,971	2,754,911	4,784,530	68,896,412
2006	61,520,365	2,621,592	4,786,820	68,928,778
2007	64,036,607	2,612,497	4,531,456	71,180,560
2008	61,520,109	2,564,615	4,974,960	69,059,684
2009	55,212,475	1,927,478	4,364,995	61,504,949
2010	52,998,554	2,144,740	4,315,681	59,458,975
2011	51,052,360	2,360,106	4,764,525	58,176,991
2012	52,052,999	2,319,256	5,117,590	59,489,845
2013	54,720,459	2,110,666	5,117,677	61,948,801
2014	50,583,025	2,021,531	4,565,344	57,169,900
January	3,761,072	104,679	280,501	4,146,251
February	4,316,864	153,115	324,476	4,794,456
March	5,634,776	345,977	738,921	6,719,674
April	3,913,032	111,554	397,938	4,422,525
May	3,782,102	187,177	433,755	4,403,034
June	3,902,119	157,729	359,992	4,419,840
July	3,999,419	150,366	350,818	4,500,603
August	4,157,897	162,407	442,193	4,762,497
September	4,169,965	169,519	393,272	4,732,757
October	2,833,285	193,565	473,950	3,500,799
November	3,638,371	127,776	422,331	4,188,479
December	4,860,987	185,839	424,303	5,471,130
<b>2015 Total</b>	<b>48,969,890</b>	<b>2,049,703</b>	<b>5,042,452</b>	<b>56,062,045</b>
January	4,190,131	170,514	372,316	4,732,962
February	3,898,566	161,863	408,016	4,468,444
March	4,060,917	161,010	373,356	4,595,283
April	4,069,966	147,945	323,900	4,541,812
May	4,105,255	156,785	328,602	4,590,642
June	4,310,208	284,356	288,500	4,883,063
July	3,676,561	252,393	303,525	4,232,480
August	4,098,193	250,176	274,549	4,622,918
September	N/A	N/A	N/A	N/A
October	N/A	N/A	N/A	N/A
November	N/A	N/A	N/A	N/A
December	N/A	N/A	N/A	N/A
<b>2016 Total</b>	<b>32,409,797</b>	<b>1,585,043</b>	<b>2,672,763</b>	<b>36,667,604</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

\* Due to reporting time lag and well exemptions the above figures are different from actual production.

**Table 6**

**UNITED STATES OCS CRUDE OIL AND CONDENSATE PRODUCTION<sup>12</sup>**  
**(Barrels)**

<b>YEAR</b>	<b>LOUISIANA</b>	<b>TEXAS</b>	<b>CALIFORNIA</b>	<b>TOTAL</b>
1971	385,760,351	1,685,047	31,103,548	418,548,946
1972	387,590,662	1,733,018	22,562,213	411,885,893
1973	374,196,856	1,617,829	18,915,314	394,729,999
1974	342,435,496	1,381,825	16,776,744	360,594,065
1975	313,592,559	1,340,136	15,304,757	330,237,452
1976	301,887,002	1,054,554	13,978,553	316,920,109
1977	290,771,605	909,037	12,267,598	303,948,240
1978	278,071,535	2,107,599	12,085,908	292,265,042
1979	271,008,916	3,595,546	10,961,076	285,565,538
1980	256,688,082	10,502,007	10,198,886	277,388,975
1981	255,875,717	14,284,661	19,605,027	289,765,405
1982	275,513,489	17,263,766	28,434,202	321,211,457
1983	298,093,559	19,710,197	30,527,487	348,331,243
1984	318,024,622	21,960,086	30,254,306	370,239,014
1985	338,901,863	20,640,957	29,781,465	389,324,285
1986	340,152,276	19,835,882	29,227,846	389,216,004
1987	307,950,881	24,634,142	33,556,686	366,141,709
1988	261,936,530	26,115,776	32,615,118	320,667,424
1989	246,207,653	25,887,841	33,072,161	305,167,655
1990	264,670,535	24,970,114	33,312,719	324,423,181
1991	262,647,733	24,380,908	29,146,090	323,831,064
1992	288,918,208	23,639,788	41,222,801	346,053,626
1993	293,443,881	20,376,996	50,078,144	358,655,540
1994	293,077,191	26,819,958	57,229,464	371,300,873
1995	320,255,087	20,419,104	71,254,440	416,293,300
1996	349,101,048	25,841,553	67,804,200	436,634,538
1997	399,536,004	28,718,405	58,279,489	469,873,968
1998	425,865,901	27,837,631	40,636,231	484,861,417
1999	451,391,454	31,758,296	42,071,101	537,198,889
2000	477,645,662	35,044,216	34,373,524	557,370,524
2001	502,115,031	42,991,844	34,763,192	592,514,727
	<b>GULF OF MEXICO<sup>12</sup></b>		<b>PACIFIC<sup>7</sup></b>	<b>TOTAL</b>
	<b>CENTRAL</b>	<b>WESTERN</b>		
2002	521,432,474	46,423,253	29,783,000	597,638,727
2003	509,552,915	51,825,370	30,001,000	591,379,285
2004	482,598,762	52,683,149	27,510,000	562,791,911
2005	418,763,978	48,155,514	26,498,079	493,417,571
2006	431,633,489	40,379,554	25,992,128	498,005,171
2007	435,264,843	32,704,378	24,623,593	492,592,814
2008	396,112,395	27,297,077	24,029,346	447,438,818
2009	544,854,279	25,399,965	22,306,167	592,560,411
2010	541,600,736	20,900,548	21,708,034	584,209,318
2011	451,838,190	29,695,690	19,816,847	501,350,727
2012	422,692,750	42,005,409	17,678,497	482,376,656
2013	415,613,873 r	43,131,250 r	18,558,778	477,303,901 r
2014	467,871,403 r	40,309,194 r	18,481,821	526,662,418 r
2015	512,976,484	38,547,835	14,261,000	565,785,319

e Estimated r Revised p Preliminary See footnote in Appendix B

NOTE: Starting in 2002 BOEM has not formally published production by state adjacent areas

Table 7

**UNITED STATES CRUDE OIL AND CONDENSATE PRODUCTION AND IMPORTS**  
(Thousand barrels)

DATE	ALL OCS <sup>7</sup>	DOMESTIC PRODUCTION <sup>7</sup>	IMPORTS TOTAL <sup>7</sup>	IMPORTS SPR <sup>7</sup>
				4,485
1996	438,063	2,366,017	2,747,839	0
1997	466,303	2,354,831	3,002,299	0
1998	494,621	2,281,919	3,177,584	0
1999	533,766	2,146,732	3,186,663	0
2000	558,242	2,130,707	3,319,816	3,041
2001	591,588	2,117,511	3,404,894	3,006
2002	599,484	2,096,588	3,336,175	3,912
2003	590,803	2,061,995	3,527,696	5,767
2004	562,864 r	1,991,394 r	3,692,063	0
2005	493,433 r	1,892,095 r	3,695,971	0
2006	498,004 r	1,856,606 r	3,693,081	18,889
2007	492,595 r	1,853,243 r	3,661,404	3,086
2008	447,355 r	1,830,416 r	3,580,694	2,703
2009	592,608 r	1,954,241 r	3,289,675	7,113
2010	588,334 r	1,998,583 r	3,362,856	20,368
2011	500,518 r	2,057,608 r	3,261,422	0
2012	481,108 r	2,370,114 r	3,120,755	0
2013	476,433 r	2,720,782 r	2,821,480	0
2014	528,459 r	3,178,555 r	2,680,626	0
January	46,636 r	290,746 r	222,315 r	0
February	42,282 r	266,465 r	198,807 r	0
March	44,184 r	296,531 r	235,360 r	0
April	46,407 r	288,801 r	216,229 r	0
May	44,952 r	293,617 r	224,604 r	0
June	43,116 r	279,588 r	219,618 r	0
July	49,149 r	291,964 r	228,160 r	0
August	51,094 r	290,916 r	239,212 r	0
September	50,394 r	282,676 r	216,838 r	0
October	49,489 r	290,098 r	220,171 r	0
November	46,285 r	279,132 r	221,130 r	0
December	50,319 r	285,980 r	244,965 r	0
<b>2015 Total</b>	<b>564,307 r</b>	<b>3,436,514 r</b>	<b>2,687,409 r</b>	<b>0</b>
January	50,493	285,002	237,910	0
February	46,148	265,253	229,402	0
March	51,427	284,402	249,300	0
April	48,212	268,413	229,100	0
May	50,351	275,353	246,323	0
June	46,861	261,331	228,320	0
July	48,908	269,418	250,845	0
August	51,546	271,523	249,099	0
September	45,618	257,264	241,721	0
October	49,707	273,008	235,827	0
November	46,195	259,298	235,021	0
December	45,907	258,281	238,371	0
<b>2016 Total</b>	<b>581,373</b>	<b>3,228,545</b>	<b>2,871,238</b>	<b>0 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 8

**LOUISIANA STATE ROYALTY OIL, GAS AND PLANT PRODUCTS  
CALCULATED VOLUMES, Excluding OCS**

DATE	OIL (Barrels)	GAS (MCF)	PLANT LIQUIDS (Barrels)
1996	6,489,394	60,326,587	477,640
1997	6,534,913	60,778,002	1,440,435
1998	6,604,124	56,691,269	331,767
1999	6,030,138	51,051,870	204,124
2000	6,366,604	53,780,835	355,112
2001	7,059,789	65,034,347	983,641
2002	4,707,772	53,434,290	800,697
2003	4,910,469	53,135,969	1,459,006
2004	4,222,899	45,261,610	2,185,235
2005	3,340,640	34,454,802	1,101,153
2006	3,611,971	40,978,902	1,399,577
2007	4,554,260	43,242,493	1,416,364
2008	4,301,480	44,210,090	1,482,867
2009	4,094,544	41,624,043	721,985
2010	3,912,951	37,204,336	4,784,684
2011	3,901,117	42,335,904	5,506,453
2012	3,898,453 r	43,827,524 r	5,796,373 r
2013	4,010,856 r	44,018,931 r	10,239,741 r
2014	3,789,924 r	39,516,318 r	9,251,536 r
January	312,084 r	3,383,217 r	899,403 r
February	294,307 r	2,705,379 r	763,484 r
March	300,970 r	2,954,094 r	652,733 r
April	293,854 r	3,003,918 r	601,454 r
May	295,228 r	3,182,270 r	729,515 r
June	281,518 r	3,106,432 r	723,912 r
July	284,341 r	3,058,881 r	676,856 r
August	287,308 r	2,956,493 r	645,502 r
September	264,392 r	2,698,459 r	604,967 r
October	272,220 r	2,809,454 r	617,667 r
November	259,622 r	2,610,055 r	608,688 r
December	262,536 r	2,608,328 r	602,724 r
<b>2015 Total</b>	<b>3,408,380 r</b>	<b>35,076,980 r</b>	<b>8,126,904 r</b>
January	235,073	2,552,257	590,100
February	249,655	2,350,020	527,880
March	275,404	2,469,045	571,855
April	274,182	2,312,888	557,269
May	265,640	2,475,264	536,779
June	253,486	2,373,236	530,634
July	254,538	2,369,892	591,187
August	249,447	2,209,957	548,140
September	236,141 p	2,177,420 p	515,111 p
October	228,568 p	2,147,451 p	519,328 p
November	213,862 p	2,178,276 p	N/A
December	226,191 p	2,167,715 p	N/A
<b>2016 Total</b>	<b>2,962,188 p</b>	<b>27,783,420 p</b>	<b>5,488,283 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 9**  
**LOUISIANA STATE NATURAL GAS PRODUCTION**  
**WET AFTER LEASE SEPARATION**  
 Excluding OCS and Casinghead Gas  
 (Thousand Cubic Feet (MCF) at 15.025 psia and 60 degrees Fahrenheit)

DATE	NORTH	SOUTH	OFFSHORE	TOTAL
1996	390,027,306	968,846,558	142,807,837	1,501,681,701
1997	406,306,877	900,334,348	143,913,520	1,450,554,745
1998	386,628,112	891,315,044	127,056,460	1,404,999,616
1999	355,536,417	858,338,237	100,525,024	1,314,399,678
2000	358,193,670	880,522,742	94,251,610	1,332,968,022
2001	370,998,160	903,068,572	97,208,445	1,371,275,177
2002	370,358,148	803,816,704	87,069,617	1,261,244,469
2003	401,217,674	779,381,241	72,327,053	1,252,925,968
2004	462,100,053	741,913,556	59,881,419	1,263,895,028
2005	526,863,613	645,073,330	46,609,741	1,218,546,684
2006	562,637,880	659,271,052	62,090,012	1,283,998,944
2007	603,078,425	611,264,372	65,638,857	1,279,981,654
2008	676,367,962	542,416,864	79,984,290	1,298,769,116
2009	903,727,141	444,014,121	70,811,813	1,418,553,075
2010	1,603,226,702	359,800,310	62,296,972	2,025,323,984
2011	2,449,125,453	339,286,937	63,099,986	2,851,512,376
2012	2,504,650,215 r	322,427,305 r	71,866,441 r	2,898,943,961 r
2013	1,858,426,760 r	338,932,998 r	58,666,623 r	2,256,026,381 r
2014	1,526,458,894 r	308,016,621 r	42,805,939 r	1,877,281,454 r
January	118,398,180 r	23,873,672 r	3,301,629 r	145,573,481 r
February	109,334,564 r	20,981,564 r	3,010,034 r	133,326,162 r
March	118,405,465 r	23,712,309 r	3,195,262 r	145,313,036 r
April	115,861,565 r	23,945,992 r	2,876,176 r	142,683,733 r
May	120,895,863 r	24,675,013 r	2,991,146 r	148,562,022 r
June	110,142,711 r	24,384,429 r	2,725,628 r	137,252,768 r
July	114,712,994 r	25,129,444 r	2,735,727 r	142,578,165 r
August	114,187,351 r	24,708,514 r	2,438,888 r	141,334,753 r
September	113,625,867 r	23,293,442 r	2,396,838 r	139,316,147 r
October	115,721,063 r	23,125,583 r	2,297,559 r	141,144,205 r
November	111,975,838 r	22,347,717 r	2,235,521 r	136,559,076 r
December	117,646,202 r	23,169,290 r	2,420,750 r	143,236,242 r
<b>2015 Total</b>	<b>1,380,907,663 r</b>	<b>283,346,969 r</b>	<b>32,625,158 r</b>	<b>1,696,879,790 r</b>
January	121,349,973	21,009,482	2,395,083	144,754,538
February	114,827,100	18,842,272	2,187,130	135,856,502
March	119,504,059	20,637,455	2,247,272	142,388,786
April	122,235,489	19,620,535	1,975,212	143,831,236
May	120,479,459	19,120,530	2,038,991	141,638,980
June	113,049,549	18,289,707	2,082,894	133,422,150
July	125,537,084	18,962,782	2,061,415	146,561,281
August	119,180,391	18,058,981	1,974,196	139,213,568
September	115,359,563	17,736,762	1,867,790	134,964,115
October	116,655,056	17,402,162	1,979,018	136,036,236
November	116,517,261 p	17,927,268 p	1,947,222 p	136,391,752 p
December	117,202,343 p	17,855,433 p	1,920,712 p	136,978,487 p
<b>2016 Total</b>	<b>1,421,897,327 p</b>	<b>225,463,369 p</b>	<b>24,676,935 p</b>	<b>1,672,037,631 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B



Table 10

**LOUISIANA STATE CASINGHEAD GAS PRODUCTION,  
WET AFTER LEASE SEPARATION, Excluding OCS**  
(Thousand Cubic Feet (MCF) at 15.025 psia and 60 degrees Fahrenheit)

DATE	NORTH	SOUTH	OFFSHORE	TOTAL
1996	25,253,140	95,560,699	16,692,314	137,506,153
1997	35,537,210	107,984,665	17,042,997	160,564,872
1998	42,629,820	117,397,217	17,264,409	177,291,446
1999	29,943,303	99,043,293	15,304,875	144,291,471
2000	23,214,008	98,062,634	13,295,103	134,571,745
2001	19,843,912	90,200,751	14,001,877	124,046,540
2002	16,711,388	72,739,365	11,166,555	100,617,308
2003	15,270,654	65,328,195	11,086,256	91,685,105
2004	13,325,138	64,252,316	8,252,738	85,830,192
2005	11,006,284	48,525,678	6,876,708	66,408,670
2006	9,217,910	51,568,797	5,183,113	65,969,820
2007	8,385,917	61,102,107	5,842,664	75,330,688
2008	7,686,180	49,011,952	3,951,968	60,650,100
2009	7,405,876	45,822,387	4,050,916	57,279,179
2010	7,042,385	48,420,430	6,175,270	61,638,085
2011	7,251,475 r	53,008,327	6,788,281	67,048,083 r
2012	7,483,821 r	53,411,350 r	4,972,599 r	65,867,770 r
2013	7,063,257 r	54,872,105 r	4,693,333 r	66,628,695 r
2014	6,284,596 r	54,977,775 r	5,132,659 r	66,395,030 r
January	492,550 r	4,750,904 r	510,400 r	5,753,854 r
February	445,294 r	4,180,631 r	422,365 r	5,048,290 r
March	491,474 r	4,577,979 r	444,399 r	5,513,852 r
April	473,673 r	4,308,196 r	433,235 r	5,215,104 r
May	487,249 r	4,568,405 r	331,196 r	5,386,850 r
June	459,138 r	4,415,874 r	276,724 r	5,151,736 r
July	455,419 r	4,464,962 r	292,898 r	5,213,279 r
August	451,835 r	4,401,853 r	300,658 r	5,154,346 r
September	450,122 r	4,089,920 r	334,222 r	4,874,264 r
October	445,127 r	4,404,942 r	318,616 r	5,168,685 r
November	404,236 r	3,908,232 r	289,372 r	4,601,840 r
December	419,933 r	3,813,859 r	314,331 r	4,548,123 r
<b>2015 Total</b>	<b>5,476,050 r</b>	<b>51,885,757 r</b>	<b>4,268,416 r</b>	<b>61,630,223 r</b>
January	405,403	3,596,061	285,564	4,287,028
February	377,994	3,517,638	263,928	4,159,560
March	408,809	3,712,050	290,208	4,411,067
April	379,318	3,559,101	259,502	4,197,921
May	402,352	3,532,286	288,794	4,223,432
June	386,953	3,456,675	297,433	4,141,061
July	405,112	3,468,127	278,759	4,151,998
August	387,045	3,378,411	273,441	4,038,897
September	377,546	3,408,575	253,107	4,039,228
October	372,981	3,529,718	263,820	4,166,519
November	382,840 p	3,410,370 p	269,212 p	4,062,422 p
December	382,024 p	3,401,211 p	263,653 p	4,046,888 p
<b>2016 Total</b>	<b>4,668,377 p</b>	<b>41,970,223 p</b>	<b>3,287,421 p</b>	<b>49,926,021 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 4

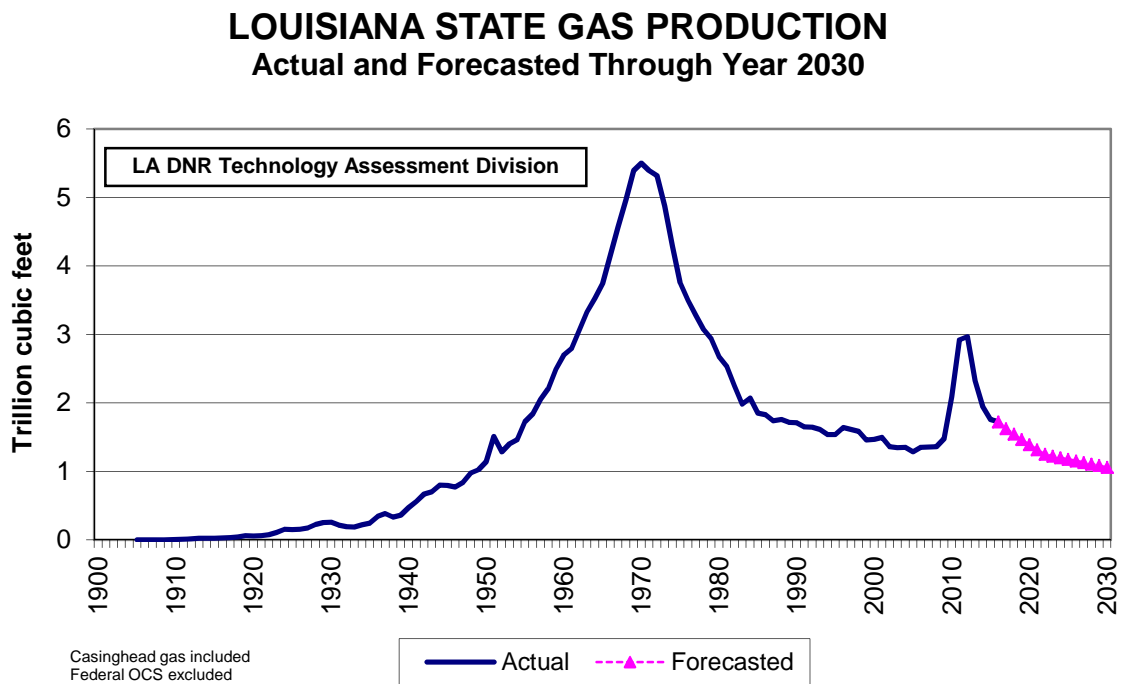


Figure 5

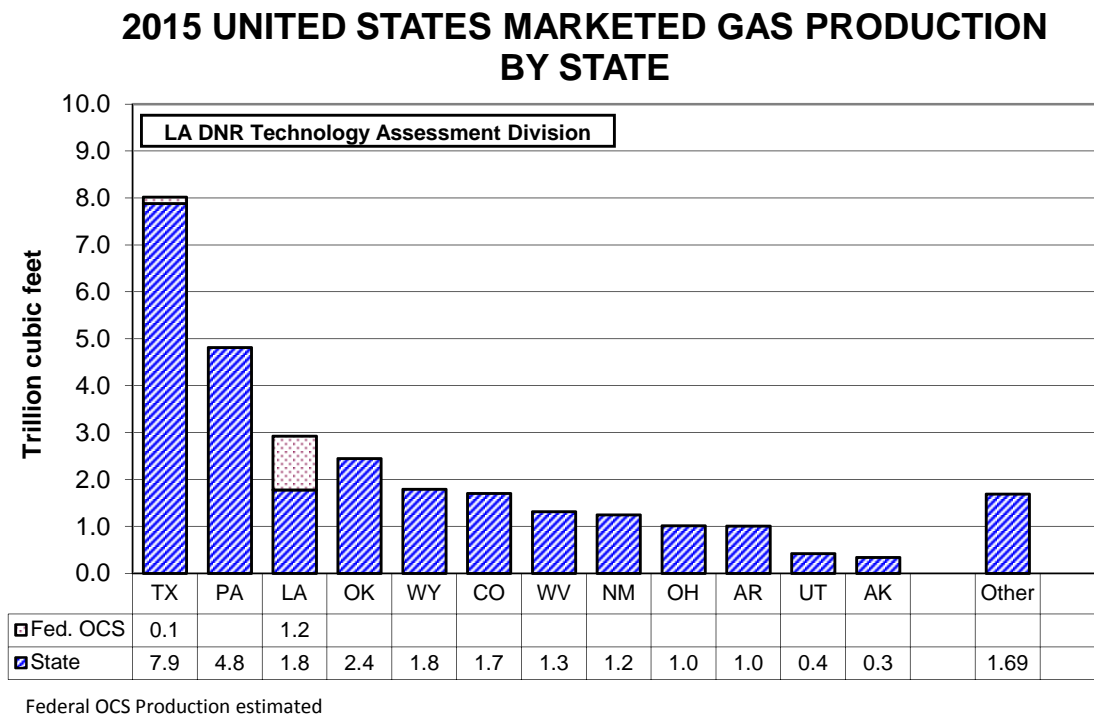


Table 11

## LOUISIANA STATE GAS PRODUCTION, WET AFTER LEASE SEPARATION

Natural Gas and Casinghead Gas, Excluding OCS

(Thousand Cubic Feet (MCF) at 15.025 psia and 60 degrees Fahrenheit)\*

DATE	NORTH	SOUTH	OFFSHORE	TOTAL
1996	415,280,446	1,064,407,257	159,500,151	1,639,187,854
1997	441,844,087	1,008,319,013	160,956,517	1,611,119,617
1998	429,257,932	1,008,712,261	144,320,869	1,582,291,062
1999	385,479,720	957,381,530	115,829,899	1,458,691,149
2000	381,407,678	978,585,376	107,546,713	1,467,539,767
2001	390,842,072	993,269,323	111,210,322	1,495,321,717
2002	387,069,536	876,556,069	98,236,172	1,361,861,777
2003	416,488,328	844,709,436	83,413,309	1,344,611,073
2004	475,425,191	806,165,872	68,134,157	1,349,725,220
2005	537,869,897	693,599,008	53,486,449	1,284,955,354
2006	571,855,790	710,839,849	67,273,125	1,349,968,764
2007	611,464,342	672,366,479	71,481,521	1,355,312,342
2008	684,054,142	591,428,816	83,936,258	1,359,419,216
2009	911,133,017	489,836,508	74,862,729	1,475,832,254
2010	1,610,269,087	408,220,740	68,472,242	2,086,962,069
2011	2,456,376,928 r	392,295,264	69,888,267	2,918,560,459 r
2012	2,512,134,036 r	375,838,655 r	76,839,040 r	2,964,811,731 r
2013	1,865,490,017 r	393,805,103 r	63,359,956 r	2,322,655,076 r
2014	1,532,743,490 r	362,994,396 r	47,938,598 r	1,943,676,484 r
January	118,890,730 r	28,624,576 r	3,812,029 r	151,327,335 r
February	109,779,858 r	25,162,195 r	3,432,399 r	138,374,452 r
March	118,896,939 r	28,290,288 r	3,639,661 r	150,826,888 r
April	116,335,238 r	28,254,188 r	3,309,411 r	147,898,837 r
May	121,383,112 r	29,243,418 r	3,322,342 r	153,948,872 r
June	110,601,849 r	28,800,303 r	3,002,352 r	142,404,504 r
July	115,168,413 r	29,594,406 r	3,028,625 r	147,791,444 r
August	114,639,186 r	29,110,367 r	2,739,546 r	146,489,099 r
September	114,075,989 r	27,383,362 r	2,731,060 r	144,190,411 r
October	116,166,190 r	27,530,525 r	2,616,175 r	146,312,890 r
November	112,380,074 r	26,255,949 r	2,524,893 r	141,160,916 r
December	118,066,135 r	26,983,149 r	2,735,081 r	147,784,365 r
<b>2015 Total</b>	<b>1,386,383,713 r</b>	<b>335,232,726 r</b>	<b>36,893,574 r</b>	<b>1,758,510,013 r</b>
January	121,755,376	24,605,543	2,680,647	149,041,566
February	115,205,094	22,359,910	2,451,058	140,016,062
March	119,912,868	24,349,505	2,537,480	146,799,853
April	122,614,807	23,179,636	2,234,714	148,029,157
May	120,881,811	22,652,816	2,327,785	145,862,412
June	113,436,502	21,746,382	2,380,327	137,563,211
July	125,942,196	22,430,909	2,340,174	150,713,279
August	119,567,436	21,437,392	2,247,637	143,252,465
September	115,737,109	21,145,337	2,120,897	139,003,343
October	117,028,037	20,931,880	2,242,838	140,202,755
November	116,900,101 p	21,337,638 p	2,216,434 p	140,454,174 p
December	117,584,367 p	21,256,643 p	2,184,365 p	141,025,375 p
<b>2016 Total</b>	<b>1,426,565,704 p</b>	<b>267,433,591 p</b>	<b>27,964,356 p</b>	<b>1,721,963,652 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

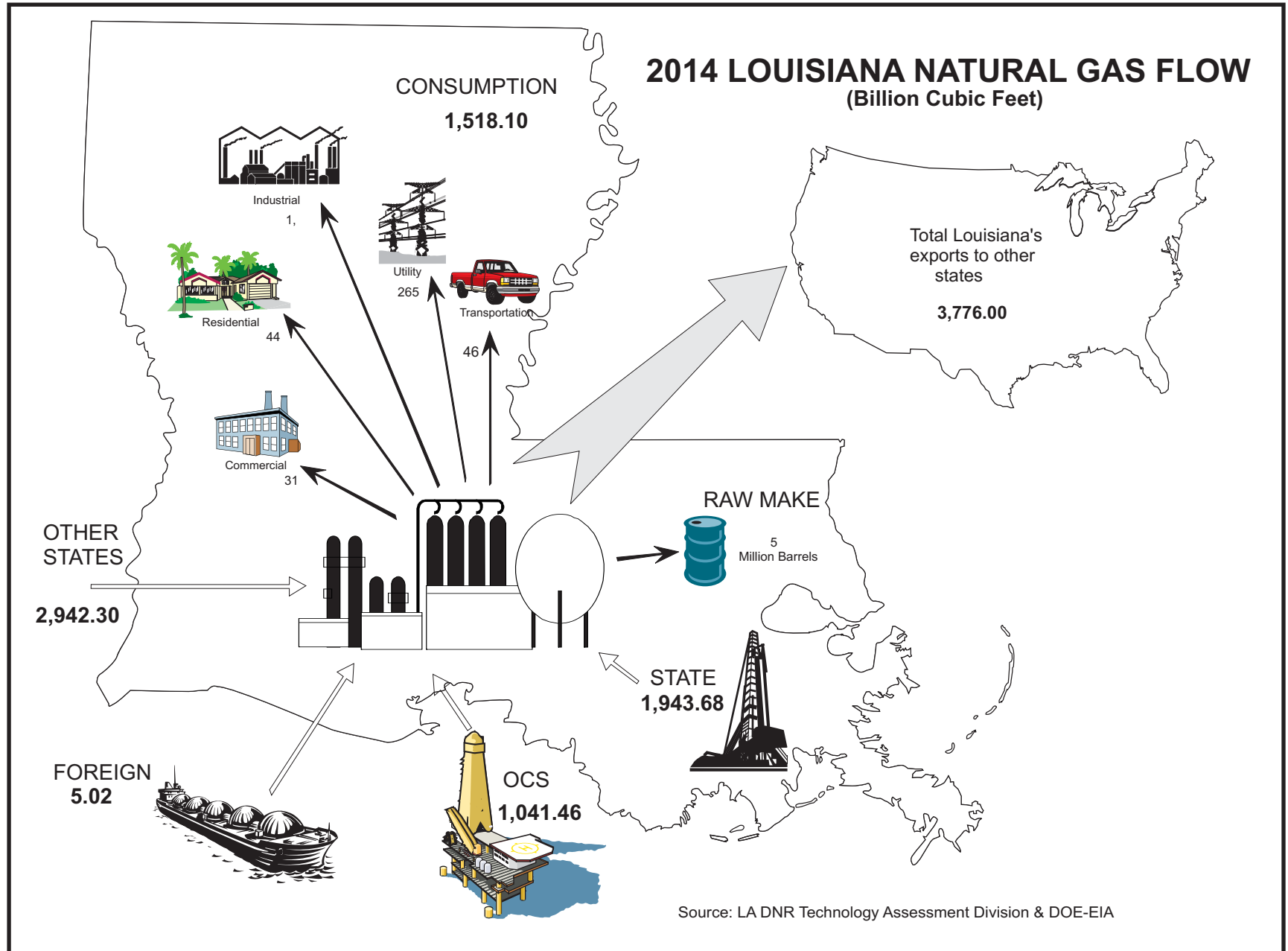
Table 12

**LOUISIANA and GOM CENTRAL NATURAL GAS and CASINGHEAD PRODUCTION**  
**Natural Gas and Casinghead Gas**  
 (Thousand Cubic Feet (MCF) at 15.025 psia and 60 degrees Fahrenheit)\*

DATE	ONSHORE	OFFSHORE		TOTAL
		State	GOM Central	
1996	1,479,687,703	159,500,151	3,948,719,003	5,587,906,857
1997	1,450,163,100	160,956,517	4,065,406,053	5,676,525,670
1998	1,437,970,193	144,320,869	4,050,232,219	5,632,523,281
1999	1,342,861,250	115,829,899	4,114,592,335	5,573,283,484
2000	1,359,993,054	107,546,713	4,039,065,859	5,506,605,626
2001	1,384,111,395	111,210,322	4,118,472,221	5,613,793,938
2002	1,263,625,605	98,236,172	3,711,664,200	5,073,525,977
2003	1,261,197,764	83,413,309	3,498,876,681	4,843,487,754
2004	1,281,591,063	68,134,157	3,048,397,242	4,398,122,462
2005	1,231,468,905	53,486,449	2,393,359,338	3,678,314,692
2006	1,282,695,639	67,273,125	2,272,400,259	3,622,369,023
2007	1,283,830,821	71,481,521	2,292,135,779	3,647,448,121
2008	1,275,482,958	83,936,258	1,930,267,479	3,289,686,695
2009	1,400,969,525	74,862,729	2,084,867,099	3,560,699,353
2010	2,018,489,827	68,472,242	1,943,658,414	4,030,620,483
2011	2,848,672,192 r	69,888,267	1,574,039,140	4,492,599,599 r
2012	2,887,972,691 r	76,839,040 r	1,317,720,101	4,282,531,832 r
2013	2,259,295,120 r	63,359,956 r	1,059,223,594 r	3,475,751,286 r
2014	1,895,737,886 r	47,938,598 r	1,041,464,626 r	3,081,085,904 r
January	147,515,306 r	3,812,029 r	96,403,844 r	247,731,179 r
February	134,942,053 r	3,432,399 r	84,406,306 r	222,780,758 r
March	147,187,227 r	3,639,661 r	85,656,843 r	236,483,731 r
April	144,589,426 r	3,309,411 r	98,148,141 r	246,046,978 r
May	150,626,530 r	3,322,342 r	100,160,115 r	254,108,987 r
June	139,402,152 r	3,002,352 r	95,356,310 r	237,760,814 r
July	144,762,819 r	3,028,625 r	105,425,241 r	253,216,685 r
August	143,749,553 r	2,739,546 r	108,364,366 r	254,853,465 r
September	141,459,351 r	2,731,060 r	105,577,106 r	249,767,517 r
October	143,696,715 r	2,616,175 r	100,573,851 r	246,886,741 r
November	138,636,023 r	2,524,893 r	91,715,318 r	232,876,234 r
December	145,049,284 r	2,735,081 r	98,296,507 r	246,080,872 r
<b>2015 Total</b>	<b>1,721,616,439 r</b>	<b>36,893,574 r</b>	<b>1,071,787,441 r</b>	<b>2,928,593,961 r</b>
January	146,360,919	2,680,647	95,018,014	244,059,580
February	137,565,004	2,451,058	88,290,436	228,306,498
March	144,262,373	2,537,480	96,512,563	243,312,416
April	145,794,443	2,234,714	89,662,586	237,691,743
May	143,534,627	2,327,785	96,936,768	242,799,180
June	135,182,884	2,380,327	81,886,485	219,449,696
July	148,373,105	2,340,174	87,895,168	238,608,447
August	141,004,828	2,247,637	85,996,488	229,248,953
September	136,882,446	2,120,897	79,878,771	218,882,114
October	137,959,917	2,242,838	84,220,191	224,422,946
November	138,237,739 p	2,216,434 p	82,049,481 p	222,503,655 p
December	138,841,010 p	2,184,365 p	83,134,836 p	224,160,211 p
<b>2016 Total</b>	<b>1,693,999,295 p</b>	<b>27,964,356 p</b>	<b>968,346,951 p</b>	<b>2,773,445,439 p</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 6



**Table 13**

**GULF OF MEXICO MARKETED GAS PRODUCTION<sup>3</sup>**  
**(Billion Cubic Feet (BCF) at 15.025 psia and 60 degrees Fahrenheit)**

<b>DATE</b>	<b>Alabama</b>	<b>Florida</b>	<b>Louisiana</b>	<b>Federal OCS GOM</b>	<b>Mississippi</b>	<b>Texas</b>
1973	11.0	33.2	8,080.6	N/A **	97.7	8,346.7
1974	27.3	37.4	7,601.4	N/A **	77.2	8,010.4
1975	37.1	43.5	6,951.4	N/A **	72.9	7,338.8
1976	40.6	42.3	6,869.0	N/A **	69.4	7,050.7
1977	56.1	47.2	7,073.3	N/A **	81.4	6,912.6
1978	83.9	50.6	7,329.7	N/A **	104.5	6,419.6
1979	84.1	49.2	7,123.6	N/A **	141.2	7,033.8
1980	64.0	39.8	6,803.7	N/A **	171.6	6,976.2
1981	77.7	31.8	6,647.1	N/A **	177.7	6,774.4
1982	73.5	22.1	6,050.5	N/A **	163.9	6,341.8
1983	89.0	20.6	5,227.4	N/A **	148.2	5,822.0
1984	99.8	12.3	5,710.7	N/A **	154.8	6,063.6
1985	105.2	10.3	4,915.3	N/A **	141.3	5,933.8
1986	105.1	8.7	4,799.3	N/A **	138.1	6,031.0
1987	114.9	8.1	5,021.9	N/A **	137.0	6,006.0
1988	127.0	7.3	5,078.6	N/A **	121.6	6,162.6
1989	125.9	7.4	4,978.4	N/A **	100.6	6,118.9
1990	132.6	6.4	5,139.1	N/A **	92.8	6,218.6
1991	167.5	4.8	4,935.5	N/A **	105.9	6,157.3
1992	348.1	6.5	4,817.8	N/A **	89.9	6,025.2
1993	380.4	6.9	4,893.1	N/A **	79.1	6,126.9
1994	505.2	7.3	5,068.2	N/A **	62.2	6,229.1
1995	509.5	6.3	5,008.1	N/A **	93.7	6,205.8
1996	520.4	5.9	5,185.9	N/A **	101.2	6,343.6
1997	381.0	6.0	1,475.5	5,103.8	105.2	5,065.9
1998	384.7	5.7	1,521.5	4,976.8	105.9	5,124.8
1999	374.2	5.8	1,536.2	4,931.0	108.8	4,955.2
2000	356.3	6.4	1,426.4	4,837.5	86.8	5,178.4
2001	349.8	5.6	1,472.6	4,928.9	105.4	5,179.0
2002	349.1	3.3	1,335.0	4,423.4	110.8	5,040.1
2003	339.3	3.0	1,323.9	4,319.9	131.3	5,140.6
2004	309.8	3.1	1,326.7	3,891.5	62.1	4,967.8
2005	290.7	2.6	1,270.6	3,070.6	51.9	5,172.8
2006	280.6	2.5	1,334.4	2,845.0	59.3	5,439.1
2007	265.1	1.7	1,338.5	2,743.8	72.0	6,003.0
2008	252.8	2.4	1,350.9	2,268.9	94.7	6,824.0
2009	231.4	0.3	1,518.2	2,381.2	86.4	6,685.1
2010	218.6	12.2	2,166.7	2,201.0	72.3	6,583.4
2011	191.7	14.8	2,969.7	1,776.7	79.9	6,973.2
2012	211.5	0.8	2,897.4	1,478.0	62.6	7,328.7
2013	192.5	0.3	2,313.9	1,283.5	58.1	7,483.7
2014	177.5	0.4	1,941.4	1,230.7	53.4	7,797.2
2015	N/A	N/A	1,894.9	1,304.8	N/A	7,715.2

e Estimated r Revised p Preliminary See footnote in Appendix B

\*\* Prior to 1997 Federal OCS GOM production was included in state productions

Table 14

**LOUISIANA STATE GAS PRODUCTION BY TAX RATES**  
**AS PUBLISHED IN SEVERANCE TAX REPORTS<sup>8</sup>**  
**(MCF at 15.025psia and 60 degrees Fahrenheit)**

DATE	FULL RATE	INCAPABLE GAS WELLS RATE	OTHER RATES	TAXED VOLUME
1996	1,354,105,430	52,368,159	11,191,715	1,417,665,304
1997	1,343,182,922	57,663,413	9,951,387	1,410,797,722
1998	1,191,471,607	60,242,544	11,733,098	1,263,447,249
1999	1,151,493,116	57,308,865	10,617,631	1,219,419,612
2000	1,217,171,149	53,797,867	8,195,799	1,279,164,815
2001	1,264,513,132	74,687,708	7,806,688	1,347,007,528
2002	1,068,512,639	75,724,074	7,748,258	1,151,984,971
2003	1,091,483,424	80,659,914	7,963,553	1,180,106,891
2004	1,139,626,885	83,441,736	5,507,456	1,235,308,986
2005	1,130,014,025	91,951,579	4,642,451	1,227,085,699
2006	1,134,544,485	113,490,843	5,545,802	1,253,870,355
2007	1,070,511,169	122,399,829	7,365,200	1,200,461,343
2008	1,044,876,723	137,853,642	6,398,792	1,189,129,157
2009	994,356,639	168,793,831	4,489,808	1,167,640,278
2010	874,590,391	177,946,449	7,737,200	1,060,274,040
2011	729,242,365	179,471,125	9,251,347	917,964,837
2012	854,908,764	176,578,354	6,655,754	1,038,142,872
2013	758,214,527	174,056,487	8,764,522	941,035,536
2014	1,122,007,861	164,803,849	7,760,331	1,294,572,041
January	91,984,992	11,480,332	1,015,031	104,480,355
February	96,831,401	12,565,611	673,115	110,070,127
March	119,623,889	14,908,014	608,230	135,140,133
April	86,485,781	10,648,973	591,896	97,726,650
May	105,931,011	11,931,408	619,908	118,482,327
June	94,379,404	11,554,785	501,421	106,435,610
July	102,256,122	11,874,545	572,402	114,703,069
August	84,695,270	12,353,589	556,640	97,605,499
September	93,679,674	13,424,845	539,985	107,644,504
October	81,967,174	12,707,062	489,959	95,164,195
November	98,096,287	12,436,644	856,397	111,389,328
December	104,331,399	10,520,239	667,676	115,519,314
<b>2015 Total</b>	<b>1,160,262,405</b>	<b>146,406,047</b>	<b>7,692,660</b>	<b>1,314,361,112</b>
January	85,268,695	11,091,940	666,378	97,027,013
February	67,253,948	10,500,395	243,118	77,997,461
March	36,443,903	8,035,684	153,879	44,633,466
April	123,124,372	12,924,835	1,271,814	137,321,021
May	64,332,658	9,833,684	507,856	74,674,198
June	78,544,396	18,412,642	581,141	97,538,179
July	47,236,056	10,870,704	591,275	58,698,035
August	87,604,233	14,085,281	516,409	102,205,923
September	N/A	N/A	N/A	N/A
October	N/A	N/A	N/A	N/A
November	N/A	N/A	N/A	N/A
December	N/A	N/A	N/A	N/A
<b>2016 Total</b>	<b>589,808,261</b>	<b>95,755,165</b>	<b>4,531,870</b>	<b>690,095,296</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 15**

**UNITED STATES OCS GAS PRODUCTION<sup>12</sup>**  
**Natural Gas and Casinghead Gas**  
**(MCF at 15.025 psia and 60 degrees Fahrenheit)\***

<b>YEAR</b>	<b>LOUISIANA</b>	<b>TEXAS</b>	<b>CALIFORNIA</b>	<b>TOTAL</b>
1971	2,582,297,962	124,857,371	15,363,786	2,722,519,119
1972	2,824,792,196	144,267,198	9,836,582	2,978,895,976
1973	2,995,634,220	145,754,588	7,143,485	3,148,532,293
1974	3,283,413,450	156,838,375	5,464,209	3,445,716,035
1975	3,266,745,456	120,166,178	3,874,047	3,390,785,681
1976	3,431,149,749	90,764,667	3,406,969	3,525,321,386
1977	3,575,898,616	85,236,246	5,417,963	3,666,552,825
1978	4,068,255,571	227,305,175	5,166,292	4,300,727,039
1979	4,076,873,552	501,546,069	5,431,822	4,583,851,442
1980	3,934,902,550	612,378,333	5,900,023	4,553,180,906
1981	4,025,867,929	715,937,640	12,763,307	4,754,568,877
1982	3,729,057,653	841,173,981	17,751,924	4,587,983,558
1983	3,111,576,348	834,112,318	24,168,292	3,969,856,958
1984	3,508,475,799	913,008,621	46,363,899	4,467,848,319
1985	3,055,687,773	818,533,627	64,558,213	3,938,779,613
1986	2,870,347,386	959,161,285	59,078,021	3,888,586,692
1987	3,117,669,167	1,180,839,487	54,805,158	4,353,313,812
1988	3,036,077,646	1,155,285,485	49,167,638	4,240,530,769
1989	2,947,545,132	1,142,237,197	50,791,912	4,140,574,242
1990	3,633,554,307	1,321,607,333	49,972,764	5,005,134,404
1991	3,225,373,562	1,161,671,524	51,855,577	4,438,900,663
1992	3,272,561,370	1,215,055,449	55,231,660	4,608,807,577
1993	3,320,312,261	1,007,755,289	52,150,277	4,455,275,861
1994	3,423,837,064	994,291,314	53,560,686	4,578,282,175
1995	3,564,677,663	890,682,224	54,790,061	4,619,222,806
1996	3,709,198,609	953,772,416	66,783,677	4,955,474,989
1997	3,825,354,038	946,381,458	73,344,546	5,010,736,875
1998	3,814,583,541	850,572,237	74,984,850	4,789,522,576
1999	3,836,619,562	798,140,396	77,809,430	4,935,623,726
2000	3,761,812,062	869,068,079	76,074,550	4,919,901,921
2001	3,818,657,416	898,035,393	70,946,682	5,145,905,423

	<b>GULF OF MEXICO<sup>12</sup></b>		<b>PACIFIC<sup>7</sup></b>	<b>TOTAL</b>
	<b>CENTRAL</b>	<b>WESTERN</b>		
2002	3,711,664,200	812,271,646	67,816,000	4,534,984,410
2003	3,498,876,681	930,004,249	58,095,000	4,439,929,494
2004	3,048,397,242	957,120,117	54,655,000	4,016,565,923
2005	2,393,359,338	762,118,570	54,134,794	3,166,526,472
2006	2,272,400,259	649,372,254	47,153,866	2,932,821,077
2007	2,292,135,779	520,160,276	45,589,671	2,823,344,619
2008	1,930,267,479	399,312,145	46,911,954	2,340,628,188
2009	2,084,867,099	365,965,839	41,233,149	2,461,881,502
2010	1,943,658,414	304,429,714	41,238,185	2,259,136,692
2011	1,574,039,140	252,180,858	36,579,269	1,837,268,562
2012	1,317,720,101	217,944,400	27,262,401	1,546,713,065
2013	1,152,879,863 r	175,025,382 r	27,453,674	1,327,905,245 r
2014	1,137,357,554 r	139,066,666 r	28,244,946	1,276,424,220 r
2015	1,167,639,378	137,449,194	N/A	1,305,088,572

NOTE: Starting in 2002 MMS has not formally published production by state adjacent areas  
e Estimated r Revised p Preliminary See footnote in Appendix B



Figure 7

LOUISIANA OIL PRODUCTION AND PRICE

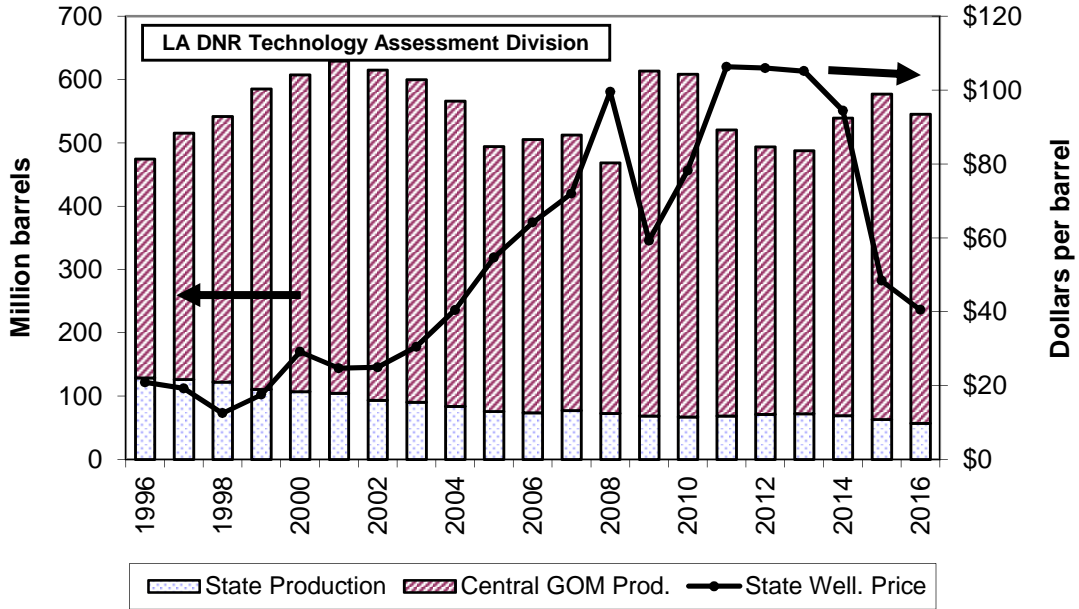


Figure 8

LOUISIANA GAS PRODUCTION AND PRICE

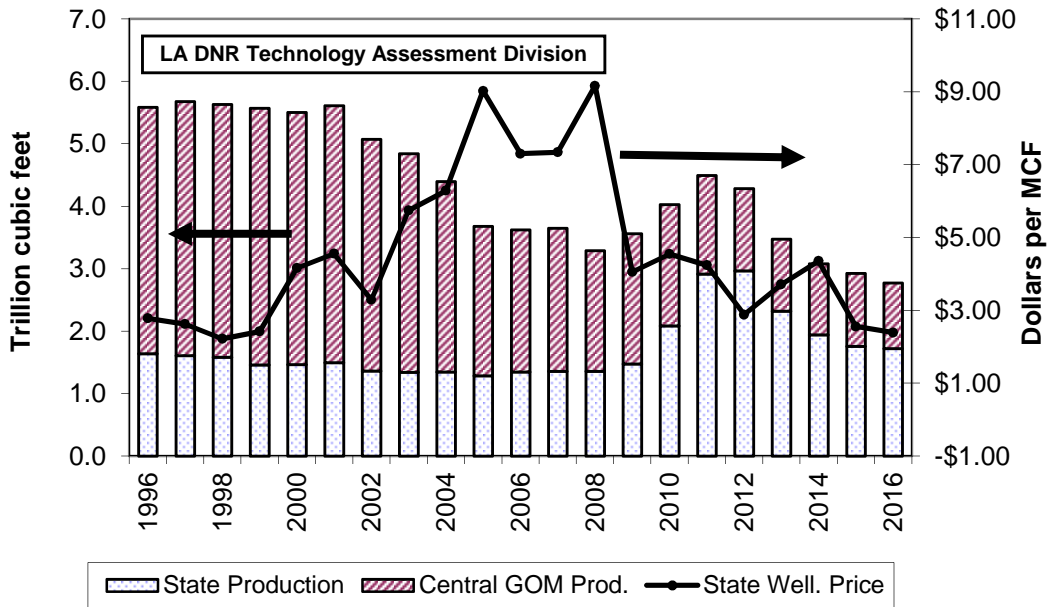


Table 16

**UNITED STATES NATURAL GAS AND CASINGHEAD GAS PRODUCTION <sup>3</sup>**  
**(Billion Cubic Feet (BCF) at 15.025 psia and 60 degrees Fahrenheit)\***

DATE	GROSS	WET AFTER LEASE SEPARATION	MARKETED	DRY	GROSS IMPORTS
1996	23,640	19,690	19,423	18,484	2,785
1997	23,737	19,727	19,475	18,531	2,880
1998	23,635	19,670	19,569	18,650	2,935
1999	23,355	19,524	19,416	18,462	3,090
2000	23,699	19,890	19,801	18,805	3,515
2001	24,020	20,261	20,166	19,231	3,707
2002	23,471	19,592	19,530	18,591	3,899
2003	23,645	19,678	19,582	18,724	3,937
2004	23,499	19,230	19,134	18,226	3,866
2005	22,996	18,672	18,555	17,696	4,175
2006	23,046	19,156	19,001	18,113	4,256
2007	24,108	19,940	19,626	18,714	4,104
2008	25,133	20,861	20,698	19,763	4,517
2009	25,545	21,385	21,223	20,219	3,906
2010	26,290	22,105	21,942	20,897	3,678
2011	27,920	23,770	23,564	22,452	3,667
2012	28,962	24,996	24,787	23,561	3,401
2013	28,943	25,316	25,060	23,730	3,076
2014	30,789 r	27,241 r	26,958 r	25,381 r	2,642
January	2,717 r	2,365 r	2,344 r	2,206 r	274
February	2,466 r	2,171 r	2,150 r	2,023 r	249
March	2,768 r	2,410 r	2,391 r	2,250 r	252
April	2,696 r	2,364 r	2,344 r	2,206 r	201
May	2,736 r	2,414 r	2,396 r	2,255 r	200
June	2,616 r	2,339 r	2,322 r	2,185 r	202
July	2,704 r	2,420 r	2,400 r	2,258 r	213
August	2,688 r	2,417 r	2,398 r	2,257 r	210
September	2,673 r	2,362 r	2,343 r	2,205 r	205
October	2,746 r	2,412 r	2,393 r	2,253 r	222
November	2,678 r	2,334 r	2,316 r	2,179 r	214
December	2,759 r	2,410 r	2,390 r	2,250 r	223
<b>2015 Total</b>	<b>32,249 r</b>	<b>28,419 r</b>	<b>28,188 r</b>	<b>26,528 r</b>	<b>2,665</b>
January	2,764	2,395	2,376	2,231	268
February	2,616	2,276	2,258	2,121	247
March	2,768	2,401	2,383	2,229	236
April	2,629	2,313	2,294	2,145	243
May	2,724	N/A	2,363	2,206	243
June	2,583	N/A	2,259	2,106	237
July	2,657	N/A	2,326	2,169	260
August	2,688	N/A	2,347	2,198	256
September	2,589	N/A	2,257	2,113	232
October	2,663	N/A	2,305	2,148	226
November	2,633	N/A	2,265	2,112	226
December	2,648	N/A	2,285	2,130	226
<b>2016 Total</b>	<b>31,962</b>	<b>N/A</b>	<b>27,717</b>	<b>25,909</b>	<b>2,900</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 17

**LOUISIANA AVERAGE CRUDE OIL PRICES**  
(Dollars per Barrel)

DATE	LIGHT LOUISIANA SWEET		ALL GRADES AT WELLHEAD			
	Spot Market <sup>10</sup>	Refinery Posted	State <sup>6</sup>	OCS Gulf <sup>6</sup>	Severance Tax <sup>8</sup>	State Royalty
1996	22.32	20.77	20.87	20.00	20.56	21.24
1997	20.69	18.90	19.23	18.63	19.80	19.22
1998	14.21	12.17	12.52	12.03	13.47	12.31
1999	19.00	16.73	17.55	16.46	16.09	17.22
2000	30.29	27.88	29.14	27.57	28.10	25.96
2001	25.84	23.23	24.70	23.36	26.23	19.81
2002	26.18	23.14	24.92	23.36	25.17	24.39
2003	31.20	27.88	30.50	28.69	30.28	29.77
2004	41.47	37.85	40.43	37.54	38.34	39.06
2005	56.86	52.75	54.68	50.97	54.62	52.20
2006	67.44	62.41	64.17	60.62	63.55	63.08
2007	74.60	68.96	71.98	67.62	64.14	71.87
2008	102.29	96.57	99.53	100.00	104.86	97.60
2009	64.28	59.04	59.27	57.57	52.78	57.54
2010	82.72	75.90	78.23	77.13	75.24	77.71
2011	112.24	93.61	106.30	106.19	101.40	108.89
2012	111.79	93.71	105.98	105.85	107.46	110.88 r
2013	107.35	93.99	105.16	103.50	106.75	107.09
2014	96.83	88.29	94.44	93.61	96.84	95.16
January	48.81	43.55	46.64	51.57	76.50	46.88 r
February	55.28	46.13	48.92	46.61	63.11	47.57 r
March	54.38	43.18	47.36	47.12	55.63	48.16 r
April	60.67	49.30	54.91	53.23	45.79	55.32 r
May	64.96	54.64	60.12	57.33	55.69	60.37 r
June	63.23	54.03	60.99	61.02	59.26	61.84 r
July	54.69	46.53	51.52	50.43	59.02	52.09 r
August	47.07	38.28	43.09	46.21	58.69	43.58 r
September	48.64	40.52	45.53	42.66	48.92	45.73 r
October	47.38	41.50	45.90	43.54	37.61	45.75 r
November	44.36	37.83	40.77	39.94	51.62	40.32 r
December	38.88	32.37 r	34.77	35.88	59.34	34.71 r
<b>2015 Average</b>	<b>52.36</b>	<b>43.99 r</b>	<b>48.38</b>	<b>47.96</b>	<b>55.93</b>	<b>48.53 r</b>
January	32.82	27.35	29.50	30.54	38.22	29.30
February	32.48	25.66	28.10	26.75	38.11	26.50
March	40.11	33.18	34.98	30.14	31.84	32.53
April	42.73	36.11	38.81	34.99	30.85	35.78
May	48.70	41.97	44.53	38.48	32.32	43.38
June	50.59	43.86	47.30	43.64	38.27	46.87
July	46.41	40.13	43.21	42.54	43.94	42.95
August	46.33	40.07	43.00	41.29	36.54	42.66
September	46.84	40.06	43.07	40.94	N/A	42.63
October	51.36	44.69	48.11	43.98	N/A	47.45
November	46.06	43.10 e	44.97	42.00	N/A	43.35 e
December	53.38	48.96 e	N/A	N/A	N/A	46.29 e
<b>2016 Average</b>	<b>44.82</b>	<b>38.76 e</b>	<b>40.51</b>	<b>37.75</b>	<b>36.26</b>	<b>39.97 e</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 9

**CRUDE OIL AVERAGE PRICES**

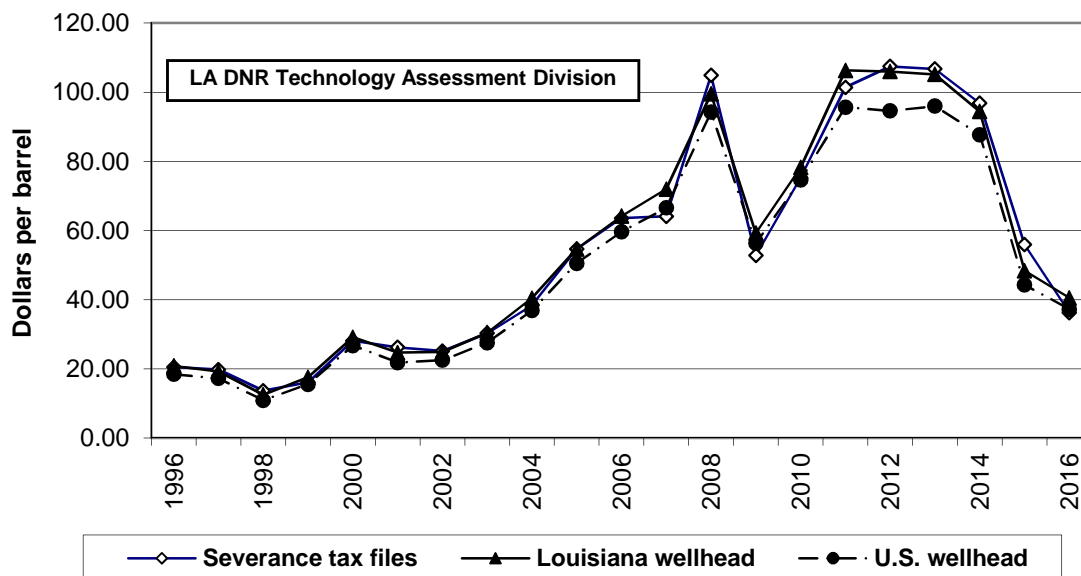


Figure 10

**NATURAL GAS AVERAGE PRICES**

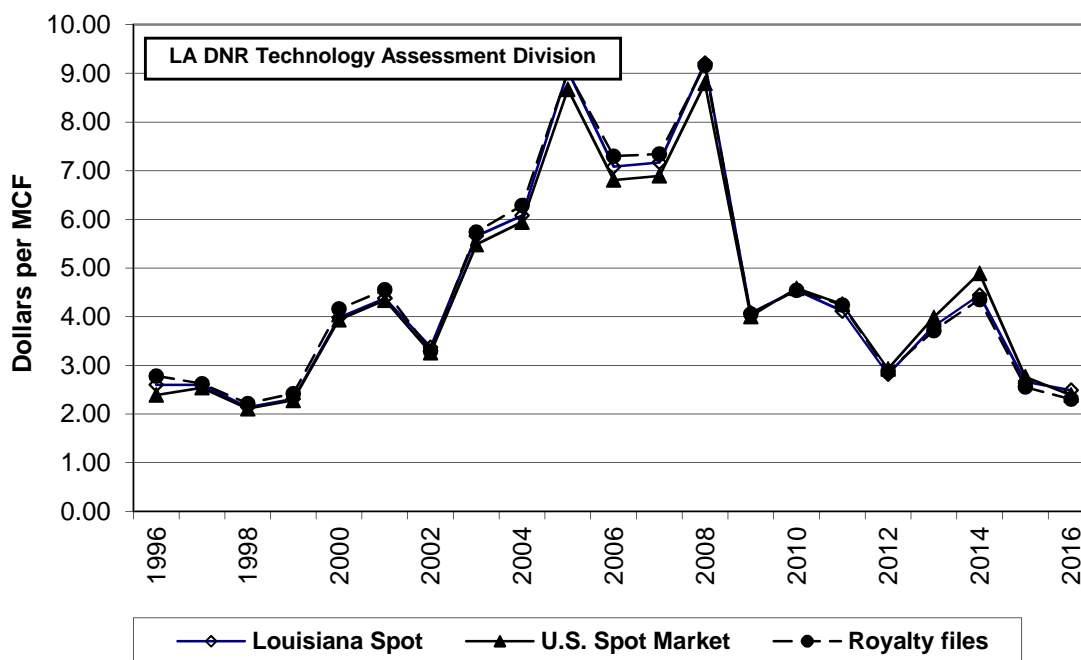


Table 18

**UNITED STATES AVERAGE CRUDE OIL PRICES<sup>2</sup>**  
(Dollars per Barrel)

DATE	REFINERY ACQUISITION		DOMESTIC WELLHEAD	IMPORTS LANDED	IMPORTS FOB	IMPORTS OPEC FOB
	Domestic	Imports				
	Costs	Costs				
1996	20.81	20.60	18.46	20.27	19.24	18.87
1997	19.65	18.55	17.23	18.14	16.98	16.33
1998	13.15	12.35	10.94	11.86	10.75	10.17
1999	17.64	17.27	15.53	17.38	16.48	16.01
2000	29.08	27.68	26.72	27.54	26.26	25.55
2001	24.34	21.99	21.90	21.77	20.45	19.56
2002	24.56	23.63	22.50	23.82	22.57	22.19
2003	29.78	27.87	27.54	27.83	26.06	25.61
2004	38.97	35.79	36.86	36.05	33.73	33.99
2005	53.05	48.93	50.53	49.41	47.74	49.75
2006	62.50	58.89	59.65	59.03	57.03	59.17
2007	69.56	67.13	66.56	67.86	66.12	68.98
2008	98.09	92.30	94.22	92.14	89.45	91.23
2009	58.95	59.37	56.31	60.30	58.12	58.92
2010	77.94	75.92	74.65	76.51	74.21	75.31
2011	100.62	102.50	95.69	102.92	101.65	105.30
2012	100.91	101.07	94.63	100.86	99.54	104.08
2013	102.93	98.03	96.00	96.90	96.51	100.54
2014	94.45	89.57	87.71	88.09	85.60	89.14
January	48.90	44.74	43.06	44.42 r	40.16 r	42.64
February	50.23 r	47.18 r	44.35	47.32 r	43.94 r	47.31 r
March	48.60 r	47.22 r	42.66	47.25 r	43.64 r	45.54 r
April	54.86	51.62 r	49.30	52.00 r	48.42 r	50.55 r
May	59.48 r	57.51 r	54.38	57.17 r	54.05 r	54.95 r
June	61.06	58.89 r	55.88	56.73 r	53.83 r	54.06 r
July	54.15	52.42	47.70	49.79 r	45.88 r	46.61 r
August	46.30	43.23	39.98	41.39 r	37.17	38.21
September	46.68	41.12 r	41.60	40.02	36.90	39.81
October	47.02	42.03	42.34 r	40.38 r	37.21	39.33
November	43.30	39.05 r	38.19	37.13 r	33.56 r	33.98 r
December	37.76 r	33.16 r	32.26	31.56 r	28.23 r	29.35 r
<b>2015 Average</b>	<b>49.86 r</b>	<b>46.51 r</b>	<b>44.31</b>	<b>45.43</b>	<b>41.92 r</b>	<b>43.53 r</b>
January	32.17	27.48	27.02	27.34	23.56	25.05
February	30.30	26.61	25.51	26.97	24.68	27.01
March	35.31	32.21	31.87	31.99	29.73	31.35
April	39.30	35.90	35.59	35.42	32.76	34.08
May	44.77	40.88	41.02	40.73	38.32	40.51
June	47.57	44.13	43.96	43.55	41.92	43.73
July	44.88	41.48	40.70	41.03	38.76	39.61
August	44.18	41.21	40.46	40.40	38.27	40.44
September	44.54	40.82	40.54	40.52	38.29	40.01
October	48.19	43.61	45.00	43.86	42.58	44.31
November	46.76	41.80	N/A	N/A	N/A	N/A
December	N/A	N/A	N/A	N/A	N/A	N/A
<b>2016 Average</b>	<b>41.63</b>	<b>37.83</b>	<b>37.17</b>	<b>37.18</b>	<b>34.89</b>	<b>36.61</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 19

## LOUISIANA NATURAL GAS WELLHEAD PRICES (MCF)

(Dollars/Thousand Cubic Feet)

DATE	GOM	DNR	HENRY HUB		SPOT MARKET <sup>5</sup>		
	Federal OCS <sup>12</sup>	State Royalty	Settled NYMEX	Cash Spot	Low	High	Average
1996	2.37	2.78	2.69	2.87	2.47	2.69	2.60
1997	2.63	2.62	2.69	2.63	2.54	2.67	2.60
1998	2.36	2.22	2.19	2.17	2.08	2.18	2.14
1999	2.18	2.42	2.36	2.36	2.25	2.36	2.31
2000	3.59	4.16	4.04	4.39	3.92	4.03	3.98
2001	4.05	4.55	4.44	4.11	4.27	4.47	4.38
2002	2.98	3.29	3.39	3.48	3.29	3.43	3.37
2003	5.12	5.74	5.61	5.71	5.32	5.92	5.66
2004	6.04	6.29	6.39	6.14	5.98	6.18	6.08
2005	6.84	9.03	8.96	9.19	8.84	9.26	9.05
2006	8.24	7.35	7.54	7.00	6.91	7.24	7.08
2007	6.86	7.39	7.13	7.26	7.08	7.29	7.17
2008	9.04	9.17	9.40	9.23	9.12	9.34	9.21
2009	5.03	4.05	4.15	4.11 r	3.98	4.16	4.07
2010	4.10	4.54	4.57	4.56 r	4.47	4.61	4.55
2011	4.48	4.24	4.20	4.16 r	4.04	4.17	4.11
2012	3.07	2.88	2.90	2.86 r	2.75	2.87	2.82
2013	3.58	3.71	3.80	3.87 r	3.68	3.92	3.80 r
2014	4.28 r	4.35	4.59	4.54 r	3.98	5.14	4.44
January	N/A	3.03 r	3.32	3.09 r	2.94	3.32	3.13
February	N/A	2.82	2.98	2.96 r	2.56	3.14	2.85
March	N/A	2.73	3.01	2.91 r	2.63	3.20	2.91
April	N/A	2.52	2.69	2.65 r	2.52	2.72	2.63
May	N/A	2.70	2.62	2.94 r	2.48	3.05	2.80
June	N/A	2.70	2.93	2.88 r	2.54	2.95	2.81
July	N/A	2.74	2.88	3.01 r	2.72	3.03	2.87
August	N/A	2.73	3.00	2.88 r	2.68	3.01	2.86
September	N/A	2.55	2.74	2.75 r	2.51	2.79	2.68
October	N/A	2.31 r	2.67	2.38 r	2.24	2.66	2.44
November	N/A	1.95 r	2.11	2.16 r	1.96	2.23	2.09
December	N/A	1.86 r	2.29	1.96 r	1.46	2.30	1.93
<b>2015 Average</b>	<b>3.33</b>	<b>2.55 r</b>	<b>2.77</b>	<b>2.71 r</b>	<b>2.44</b>	<b>2.87</b>	<b>2.67</b>
January	N/A	2.20	2.47	2.36	2.16	2.50	2.35
February	N/A	1.90	2.28	2.04	1.64	2.28	2.01
March	N/A	1.59	1.78	1.77	1.46	1.91	1.70
April	N/A	1.83	1.98	1.98	1.70	2.05	1.88
May	N/A	1.81	2.07	2.00	1.74	2.08	1.90
June	N/A	2.29	2.04	2.67	1.87	2.79	2.38
July	N/A	2.72	3.03	2.90	2.67	3.04	2.85
August	N/A	2.63	2.78	2.90	2.62	2.95	2.78
September	N/A	2.84	2.97	3.09	2.81	3.18	2.98
October	N/A	2.94	3.07	3.07	2.61	3.28	2.96
November	N/A	2.60	2.87	2.60	2.04	2.88	2.51
December	N/A	3.31	3.36	3.70	3.20	3.89	3.53
<b>2016 Average</b>	<b>2.26</b>	<b>2.39</b>	<b>2.56</b>	<b>2.59</b>	<b>2.21</b>	<b>2.74</b>	<b>2.49</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 19A

## LOUISIANA NATURAL GAS WELLHEAD PRICES (MMBTU)

(Dollars/MMBTU)

DATE	GOM	DNR	HENRY HUB		SPOT MARKET <sup>5</sup>		
	Federal	State	Settled	Cash	Low	High	Average
	OCS <sup>12</sup>	Royalty	NYMEX	Spot			
1996	2.28	2.67	2.59	2.76	2.37	2.58	2.50
1997	2.53	2.52	2.59	2.53	2.44	2.57	2.50
1998	2.27	2.13	2.10	2.08	2.00	2.10	2.05
1999	2.10	2.33	2.27	2.27	2.17	2.27	2.22
2000	3.45	4.00	3.88	4.23	3.77	3.88	3.83
2001	3.89	4.28	4.27	3.95	4.11	4.30	4.21
2002	2.87	3.16	3.26	3.35	3.16	3.30	3.24
2003	4.92	5.52	5.40	5.49	5.11	5.69	5.44
2004	5.81	6.04	6.15	5.90	5.75	5.95	5.85
2005	6.58	8.68	8.62	8.83	8.50	8.90	8.70
2006	7.92	7.07	7.25	6.73	6.64	6.96	6.81
2007	6.60	7.11	6.86	6.98	6.80	7.01	6.89
2008	8.69	8.81	9.03	8.88	8.77	8.99	8.86
2009	4.84	3.90	3.99	3.95 r	3.82	4.00	3.92
2010	3.94	4.37	4.39	4.39 r	4.30	4.44	4.37
2011	4.31	4.08	4.04	4.00 r	3.88	4.01	3.96
2012	2.95	2.77	2.79	2.75 r	2.64	2.76	2.71
2013	3.44	3.57	3.65	3.72 r	3.54	3.77	3.65
2014	4.12 r	4.18 r	4.41	4.37 r	3.82	4.95	4.27
January	N/A	2.92	3.19	2.97 r	2.82	3.19	3.01
February	N/A	2.71 r	2.87	2.85 r	2.46	3.02	2.74
March	N/A	2.62 r	2.89	2.80 r	2.53	3.08	2.80
April	N/A	2.42	2.59	2.55 r	2.42	2.62	2.53
May	N/A	2.60	2.52	2.83 r	2.38	2.93	2.69
June	N/A	2.60	2.82	2.77 r	2.44	2.84	2.70
July	N/A	2.64	2.77	2.89 r	2.62	2.91	2.76
August	N/A	2.63	2.89	2.77 r	2.58	2.89	2.75
September	N/A	2.45	2.64	2.64 r	2.41	2.68	2.58
October	N/A	2.22 r	2.56	2.29 r	2.15	2.56	2.35
November	N/A	1.88 r	2.03	2.08 r	1.88	2.14	2.01
December	N/A	1.79 r	2.21	1.88 r	1.40	2.21	1.85
<b>2015 Average</b>	<b>3.20</b>	<b>2.46 r</b>	<b>2.66</b>	<b>2.61 r</b>	<b>2.34</b>	<b>2.76</b>	<b>2.56</b>
January	N/A	2.12	2.37	2.27	2.08	2.40	2.26
February	N/A	1.83	2.19	1.96	1.58	2.19	1.93
March	N/A	1.53	1.71	1.70	1.40	1.84	1.64
April	N/A	1.76	1.90	1.90	1.63	1.97	1.81
May	N/A	1.74	2.00	1.92	1.67	2.00	1.83
June	N/A	2.20	1.96	2.57	1.80	2.68	2.29
July	N/A	2.61	2.92	2.79	2.57	2.92	2.74
August	N/A	2.53	2.67	2.79	2.52	2.84	2.68
September	N/A	2.73	2.85	2.97	2.71	3.06	2.86
October	N/A	2.83	2.95	2.95	2.51	3.15	2.84
November	N/A	2.50	2.76	2.50	1.96	2.77	2.42
December	N/A	3.18	3.23	3.56	3.08	3.74	3.39
<b>2016 Average</b>	<b>2.17</b>	<b>2.30</b>	<b>2.46</b>	<b>2.49</b>	<b>2.13</b>	<b>2.63</b>	<b>2.39</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 20

**LOUISIANA AVERAGE NATURAL GAS PRICES  
DELIVERED TO CONSUMER <sup>3</sup> (MCF)  
(Dollars/Thousand Cubic Feet)**

DATE	CITY GATES	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	UTILITY
1996	3.13	6.76	6.09	2.84	2.94
1997	3.04	7.16	6.22	2.87	2.79
1998	2.33	6.68	5.64	2.31	2.37
1999	2.70	6.83	5.73	2.54	2.59
2000	4.61	8.34	7.41	4.03	4.55
2001	5.55	10.47	8.58	5.04	4.30
2002	4.07	8.06	6.74	3.69	3.63
2003	5.78	10.29	8.81	5.53	5.94
2004	6.56	11.20	9.56	6.58	6.50
2005	8.56	13.26	11.41	9.11	9.14
2006	7.67	14.66	11.84	7.42	7.66
2007	7.22	14.20	11.83	7.08	7.53
2008	9.58	15.49	13.52	9.32	10.01
2009	5.96	13.15	10.46	4.31	4.35
2010	5.35	13.65	9.82	4.64	4.82
2011	5.76	13.34	9.41	4.27	4.45
2012	3.41	12.34	8.25	2.97	3.09
2013	4.14	12.50 r	8.63	3.87	3.93
2014	4.86	12.97 r	9.03	4.67	4.67
January	4.15	9.34	8.76	3.87	3.33
February	3.86	9.21	8.55	3.66	3.24
March	3.69	8.83	8.07	3.48	3.12
April	3.08	11.26	7.76	3.22	3.04
May	3.04	13.55	7.65	2.93	w
June	3.22	14.98	7.83	3.39	3.07
July	3.48	15.46	7.87	3.44	w
August	3.28	16.50	7.85	3.47	3.20
September	3.08	15.86	7.74	3.29	w
October	2.95	15.07	7.77	3.14	w
November	2.62	13.82	7.80	2.74	w
December	2.95	10.90	8.01	2.98	w
<b>2015 Average</b>	<b>3.28</b>	<b>12.90</b>	<b>7.97</b>	<b>3.30</b>	<b>3.17</b>
January	3.51	9.43	8.10	3.06	w
February	3.49	8.70	7.77	2.92	w
March	3.32	10.51	7.77	2.39	w
April	3.03	11.33	7.19	2.48	w
May	2.99	13.40	7.33	2.55	w
June	3.16	14.16	7.26	2.47	2.63
July	4.00	16.27	N/A	3.37	3.08
August	3.85	16.97	8.35	3.15	w
September	4.07	16.17	8.37	3.33	w
October	3.98	N/A	8.55	3.50	w
November	4.23	15.24	8.30	N/A	w
December	N/A	N/A	N/A	N/A	N/A
<b>2016 Average</b>	<b>3.60</b>	<b>13.22</b>	<b>7.90</b>	<b>2.92</b>	<b>2.86</b>

w = Withheld to avoid disclosure of individual company data

e Estimated r Revised p Preliminary See footnote in Appendix B



**Table 20A**

**LOUISIANA AVERAGE NATURAL GAS PRICES  
DELIVERED TO CONSUMER <sup>3</sup> (MMBTU)  
(Dollars/MMBTU)**

<b>DATE</b>	<b>CITY GATES</b>	<b>RESIDENTIAL</b>	<b>COMMERCIAL</b>	<b>INDUSTRIAL</b>	<b>UTILITY</b>
1996	3.01	6.50	5.86	2.73	2.83
1997	2.92	6.88	5.98	2.76	2.68
1998	2.24	6.42	5.42	2.22	2.28
1999	2.60	6.57	5.51	2.44	2.49
2000	4.43	8.02	7.13	3.88	4.38
2001	5.34	10.07	8.25	4.85	4.13
2002	3.91	7.75	6.48	3.55	3.49
2003	5.56	9.89	8.47	5.32	5.71
2004	6.31	10.77	9.19	6.33	6.25
2005	8.23	12.75	10.97	8.76	8.79
2006	7.38	14.10	11.38	7.13	7.37
2007	6.94	13.65	11.38	6.81	7.24
2008	9.21	14.89	13.00	8.96	9.63
2009	5.73	12.64	10.06	4.14	4.18
2010	5.14	13.13	9.44	4.46	4.63
2011	5.54	12.83	9.05	4.11	4.28
2012	3.28	11.87	7.94	2.85	2.98
2013	3.98	12.02	8.30	3.72	3.77
2014	4.67	12.47	8.68	4.49	4.49
January	3.99	8.98	8.42	3.72	3.20
February	3.71	8.86	8.22	3.52	3.12
March	3.55	8.49	7.76	3.35	3.00
April	2.96	10.83	7.46	3.10	2.92
May	2.92	13.03	7.36	2.82	w
June	3.10	14.40	7.53	3.26	2.95
July	3.35	14.87	7.57	3.31	w
August	3.15	15.87	7.55	3.34	3.08
September	2.96	15.25	7.44	3.16	w
October	2.84	14.49	7.47	3.02	w
November	2.52	13.29	7.50	2.63	w
December	2.84	10.48	7.70	2.87	w
<b>2015 Average</b>	<b>3.16</b>	<b>12.40</b>	<b>7.67</b>	<b>3.17</b>	<b>3.04</b>
January	3.38	9.07	7.79	2.94	w
February	3.36	8.37	7.47	2.81	w
March	3.19	10.11	7.47	2.30	w
April	2.91	10.89	6.91	2.38	w
May	2.88	12.88	7.05	2.45	w
June	3.04	13.62	6.98	2.38	2.53
July	3.85	15.64	N/A	3.24	2.96
August	3.70	16.32	8.03	3.03	w
September	3.91	15.55	8.05	3.20	w
October	3.83	N/A	8.22	3.37	w
November	4.07	14.65	7.98	N/A	w
December	N/A	N/A	N/A	N/A	N/A
<b>2016 Average</b>	<b>3.46</b>	<b>12.71</b>	<b>7.60</b>	<b>2.81</b>	<b>2.75</b>

w = Withheld to avoid disclosure of individual company data

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 21

**UNITED STATES AVERAGE NATURAL GAS PRICES (MCF)**  
**(Dollars/Thousand Cubic Feet)**

DATE	SPOT	FOREIGN	CITY	DELIVERED TO	
	MARKET <sup>5</sup>	IMPORTS <sup>3</sup>	GATES <sup>3</sup>	RESIDENTIAL <sup>3</sup>	INDUSTRIAL <sup>3</sup>
1996	2.39	1.96 r	3.32 r	6.97	3.34 r
1997	2.54	2.15 r	3.57 r	6.94	3.53 r
1998	2.11	1.97	3.06 r	7.45	3.09 r
1999	2.28	2.23 r	3.17 r	7.34	3.08 r
2000	3.94	3.88 r	4.66 r	8.51	4.45
2001	4.34	4.36 r	5.24 r	9.91	5.08 r
2002	3.26	3.14 r	4.10 r	8.58 r	4.02
2003	5.48	5.18 r	5.84 r	10.62	5.91 r
2004	5.94	5.78 r	6.61 r	11.64	6.51 r
2005	8.67	8.09 r	8.72 r	13.72	8.67 r
2006	6.81	6.87	8.28 r	14.16	7.82 r
2007	6.89	6.87 r	8.06 r	14.23 r	7.65 r
2008	8.80	8.77 r	9.59 r	15.76 r	9.66 r
2009	4.00	4.14 r	6.14 r	12.91	5.23 r
2010	4.58	4.46 r	6.07 r	12.91	5.44 r
2011	4.26	4.22 r	5.73 r	12.57	5.12 r
2012	2.93	2.88	4.71 r	12.03 r	3.85 r
2013	3.98	3.82 r	5.07 r	12.15	4.64
2014	4.89	5.38	5.70	12.95	5.58 r
January	3.56	4.75	4.48	9.50	4.87 r
February	3.87	5.46	4.57 r	9.08 r	4.71 r
March	3.27	3.90	4.36 r	9.28	4.43 r
April	2.54	2.59	3.93	10.44 r	3.94 r
May	2.69	2.52	4.24	12.73 r	3.56 r
June	2.67	2.56	4.44 r	15.07	3.74 r
July	2.71	2.66	4.65	16.28 r	3.73 r
August	2.75	2.74	4.59 r	16.89 r	3.77 r
September	2.62	2.75	4.56 r	16.40 r	3.63 r
October	2.41	3.23	4.00	12.60 r	3.52 r
November	2.14	2.40	3.68	10.02 r	3.26 r
December	1.96	2.28	3.75 r	9.27 r	3.45 r
<b>2015 Average</b>	<b>2.76</b>	<b>3.15</b>	<b>4.27</b>	<b>12.30 r</b>	<b>3.88 r</b>
January	2.54	2.80	3.39	8.30	3.62
February	2.10	2.43	3.48	8.38	3.63
March	1.65	1.73	3.49	9.21	3.04
April	1.81	1.61	3.22	9.65	3.00
May	1.84	1.55	3.45	11.61	2.91
June	2.25	1.90	3.98	14.47	2.88
July	2.70	2.35	4.45	16.58	3.56
August	2.66	2.42	4.37	17.63	3.58
September	2.74	2.47	4.59	16.80	3.73
October	2.71	2.59	4.19	13.74	3.87
November	2.30	2.70	3.88	10.76	3.86
December	3.38	N/A	N/A	N/A	N/A
<b>2016 Average</b>	<b>2.39</b>	<b>2.23</b>	<b>3.86</b>	<b>12.47</b>	<b>3.43</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 21A

UNITED STATES AVERAGE NATURAL GAS PRICES (MMBTU)  
(Dollars/MMBTU)

DATE	SPOT	FOREIGN	CITY	DELIVERED TO	
	MARKET <sup>5</sup>	IMPORTS	GATES	RESIDENTIAL	INDUSTRIAL
1996	2.30	1.88 r	3.19 r	6.70	3.29 r
1997	2.44	2.07 r	3.44 r	7.16	3.45 r
1998	2.03	1.89	2.94 r	7.16	3.02 r
1999	2.19	2.15 r	3.04 r	7.06	3.00 r
2000	3.79	3.73 r	4.48 r	8.18	4.28
2001	4.17	4.19 r	5.04 r	9.53	5.04 r
2002	3.14	3.02 r	3.94 r	8.25 r	3.87
2003	5.27	4.98 r	5.62 r	10.21	5.66 r
2004	5.71	5.56 r	6.35 r	11.19	6.28 r
2005	8.34	7.77 r	8.38 r	13.19	8.23 r
2006	6.55	6.60	7.96 r	13.62	7.57 r
2007	6.63	6.61 r	7.72 r	13.64 r	7.38 r
2008	8.46	8.44 r	9.22 r	14.85 r	9.28 r
2009	3.85	3.98 r	5.91 r	12.41	5.13 r
2010	4.40	4.29 r	5.84 r	12.41	5.28 r
2011	4.09	4.06 r	5.51 r	12.09	4.93 r
2012	2.81	2.77	4.53 r	11.57 r	3.70 r
2013	3.83	3.67 r	4.87 r	11.68	4.46
2014	4.70	5.17	5.48	12.46	5.36 r
January	3.42	4.57	4.31	9.13	4.68 r
February	3.72	5.25	4.39 r	8.73 r	4.53 r
March	3.14	3.75	4.19 r	8.92	4.26 r
April	2.44	2.49	3.78	10.04 r	3.79 r
May	2.58	2.42	4.08	12.24 r	3.42 r
June	2.57	2.46	4.27 r	14.49	3.60 r
July	2.61	2.56	4.47	15.65 r	3.59 r
August	2.65	2.63	4.41 r	16.24 r	3.63 r
September	2.52	2.64	4.38 r	15.77 r	3.49 r
October	2.31	3.11	3.85	12.12 r	3.38 r
November	2.06	2.31	3.54	9.63 r	3.13 r
December	1.88	2.19	3.61 r	8.91 r	3.32 r
<b>2015 Average</b>	<b>2.66</b>	<b>3.03</b>	<b>4.11</b>	<b>11.82 r</b>	<b>3.73 r</b>
January	2.44	2.69	3.26	7.98	3.48
February	2.02	2.34	3.35	8.06	3.49
March	1.59	1.66	3.36	8.86	2.92
April	1.74	1.55	3.10	9.28	2.88
May	1.77	1.49	3.32	11.16	2.80
June	2.17	1.83	3.83	13.91	2.77
July	2.60	2.26	4.28	15.94	3.42
August	2.56	2.33	4.20	16.95	3.44
September	2.64	2.38	4.41	16.15	3.59
October	2.61	2.49	4.03	13.21	3.72
November	2.21	2.60	3.73	10.35	3.71
December	3.25	N/A	N/A	N/A	N/A
<b>2016 Average</b>	<b>2.30</b>	<b>2.15</b>	<b>3.71</b>	<b>11.99</b>	<b>3.29</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 22

**LOUISIANA STATE OIL AND GAS DRILLING PERMITS ISSUED BY TYPE**  
**Excluding OCS**

DATE	DEVELOPMENTAL + WILDCATS	= TOTAL =	OFFSHORE + ONSHORE
1995	979	1,065	997
1996	1,248	1,381	1,260
1997	1,424	1,562	1,477
1998	1,171	1,286	1,190
1999	908	1,017	938
2000	1,363	1,453	1,302
2001	1,277	1,365	1,269
2002	902	1,025	935
2003	1,152	1,264	1,181
2004	1,535	1,633	1,576
2005	1,882	1,996	1,922
2006	2,040	2,137	2,076
2007	2,082	2,150	2,116
2008	2,296	2,374	2,334
2009	1,335	1,365	1,353
2010	1,914	1,956	1,924
2011	1,638	1,676	1,640
2012	1,543	1,581	1,553
2013	1,549	1,578	1,541
2014	1,379	1,408	1,400
January	39	40	39
February	37	37	36
March	49	50	50
April	49	53	53
May	62	64	63
June	69	69	69
July	70	77	77
August	41	44	43
September	75	77	77
October	71	72	72
November	32	32	32
December	27	28	28
<b>2015 Total</b>	<b>621</b>	<b>643</b>	<b>639</b>
January	28	28	28
February	33	33	33
March	18	19	19
April	30	32	32
May	30	31	31
June	34	35	35
July	51	52	52
August	48	53	53
September	60	60	60
October	40	42	42
November	56	58	58
December	31	32	32
<b>2016 Total</b>	<b>459</b>	<b>475</b>	<b>475</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 11

**LOUISIANA STATE DRILLING PERMITS ISSUED**  
Federal OCS Excluded

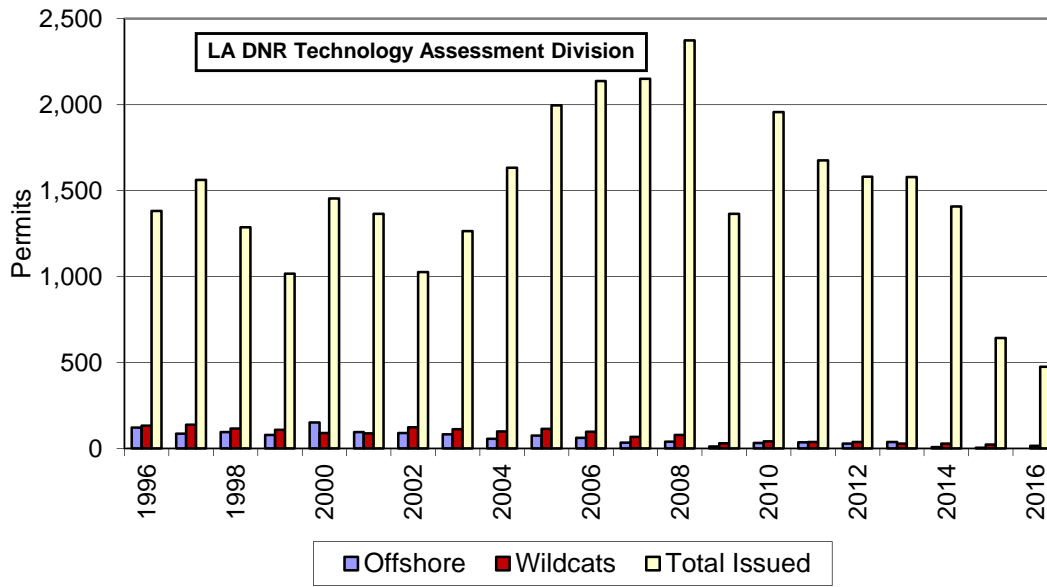


Figure 12

**LOUISIANA AVERAGE ACTIVE RIGS**

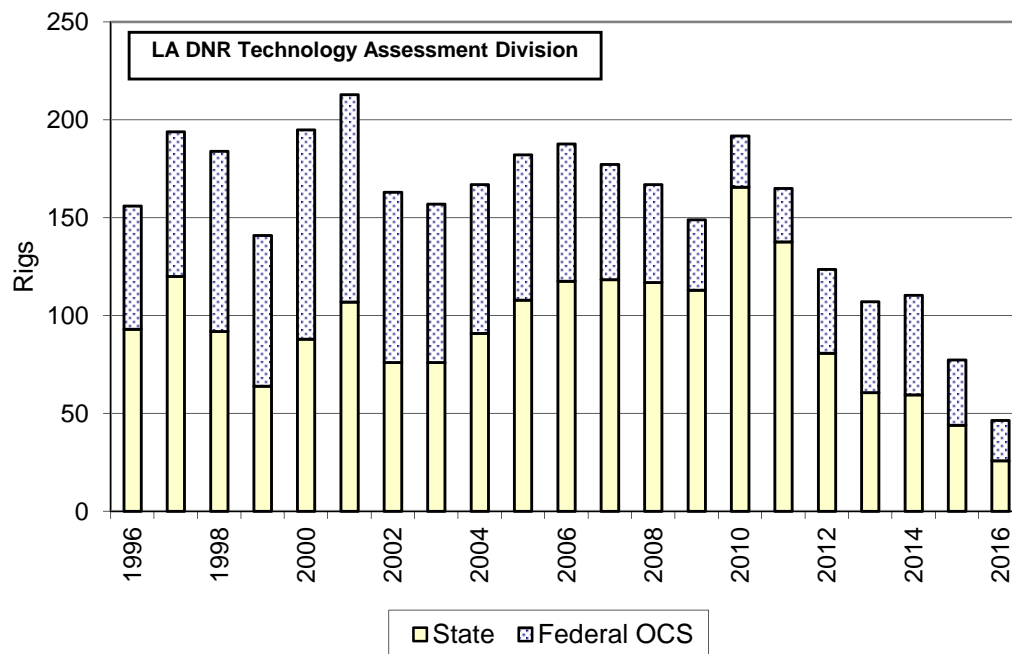


Table 23

## LOUISIANA AVERAGE RIGS RUNNING

DATE	State North <sup>4</sup>	State South Inland		State Offshore	Total State	Federal Offshore	Total Offshore <sup>4</sup> (State+OCS)	LA <sup>4</sup> TOTAL
		Water <sup>4</sup>	Land <sup>4</sup>					
1996	19	19	31	25	93	63	88	156
1997	21	23	48	28	120	74	102	194
1998	19	21	38	14	93	92	106	184
1999	16	16	21	12	65	76	88	141
2000	24	16	37	10	86	108	118	195
2001	30	20	44	10	104	108	119	213
2002	23	16	32	5	76	87	92	163
2003	29	14	29	4	76	81	85	157
2004	39	18	30	3	91	76	79	167
2005	48	23	32	4	108	74	79	182
2006	57	19	38	3	118	70	73	188
2007	58	24	34	2	118	59	61	177
2008	68	20	26	3	117	50	53	167
2009	89	8	15	1	113	36	38	150
2010	134	13	16	2	166	26	28	192
2011	97	17	22	2	138	28	29	165
2012	36	18	26	1	81	43	44	124
2013	24	20	15	2	61	47	49	108
2014	28	15	16	1	60	51	51	110
January	30	12	16	1	59	49	50	108
February	33	8	17	1	59	48	49	107
March	27	6	12	0	45	40	40	85
April	26	4	10	0	40	30	30	70
May	27	3	10	0	40	30	30	70
June	26	5	12	0	43	28	28	71
July	25	4	14	0	43	31	31	74
August	29	5	11	0	45	32	32	77
September	30	4	9	0	42	30	30	72
October	28	2	7	0	37	32	32	69
November	29	3	6	0	37	30	30	67
December	29	2	8	0	38	21	21	59
<b>2015 Average</b>	<b>28</b>	<b>5</b>	<b>11</b>	<b>0</b>	<b>44</b>	<b>33</b>	<b>33</b>	<b>77</b>
January	24	1	7	0	32	23	23	55
February	18	1	5	0	24	23	23	47
March	17	3	5	0	25	24	24	49
April	15	4	5	0	24	23	23	47
May	15	4	4	0	23	22	22	45
June	15	4	6	0	25	20	20	45
July	16	4	6	0	26	19	19	44
August	15	4	7	0	26	16	16	42
September	15	4	4	0	23	17	17	40
October	17	2	6	0	25	21	21	46
November	22	2	6	0	30	21	21	51
December	23	1	3	1	28	20	21	48
<b>2016 Average</b>	<b>18</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>26</b>	<b>21</b>	<b>21</b>	<b>47</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 24**

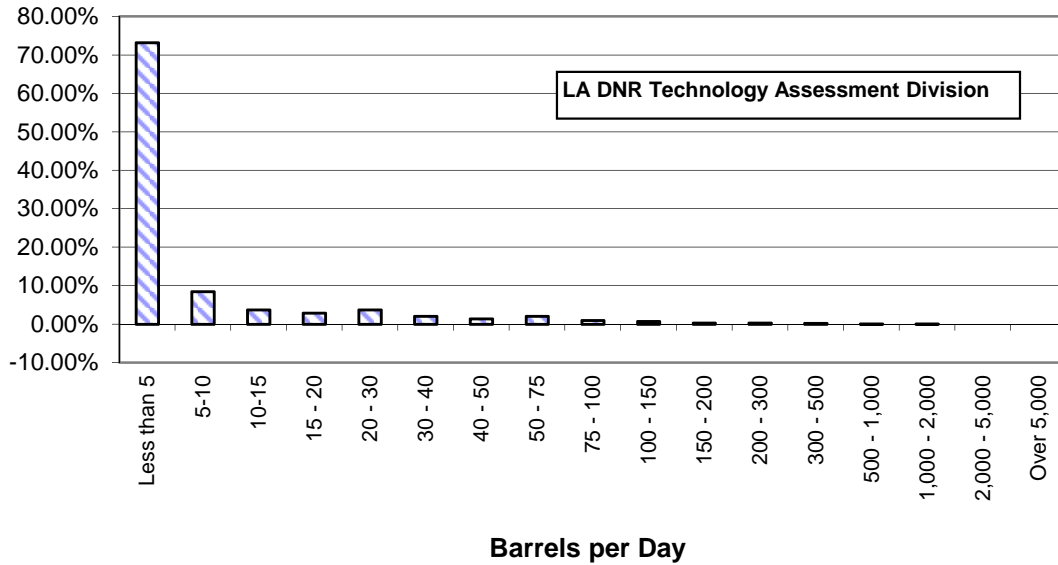
**LOUISIANA STATE PRODUCING CRUDE OIL WELLS**  
**Excluding OCS**

<b>DATE</b>	<b>NORTH</b>	<b>SOUTH</b>	<b>OFFSHORE</b>	<b>TOTAL</b>
1971	12,889	9,626	1,107	23,623
1972	12,475	8,912	1,048	22,436
1973	11,698	8,249	1,025	20,972
1974	11,984	8,262	985	21,230
1975	12,259	8,094	936	21,288
1976	12,393	7,730	1,073	21,196
1977	12,915	7,444	1,067	21,425
1978	13,019	7,219	1,086	21,324
1979	12,961	6,859	1,078	20,898
1980	13,981	6,832	1,073	21,885
1981	15,084	6,777	1,105	22,966
1982	15,540	6,608	1,112	23,259
1983	16,299	6,374	1,037	23,710
1984	17,544	6,300	1,038	24,882
1985	18,794	6,223	1,014	26,031
1986	19,346	6,061	1,001	26,408
1987	18,630	5,768	945	25,343
1988	17,953	5,698	964	24,615
1989	16,849	5,474	927	23,250
1990	17,369	5,215	906	23,490
1991	17,731	5,143	868	23,742
1992	17,449	5,155	842	23,446
1993	16,810	5,015	814	22,640
1994	15,904	4,682	805	21,392
1995	15,260	4,451	769	20,479
1996	15,148	4,295	719	20,163
1997	14,573	4,165	619	20,358
1998	13,975	3,962	546	18,484
1999	13,747	3,971	546	18,264
2000	16,795	3,914	408	21,117
2001	16,494	4,257	393	21,144
2002	16,531	4,071	423	21,026
2003	16,516	3,583	467	20,566
2004	16,148	3,485	462	20,095
2005	17,153	3,648	317	21,117
2006	17,072	3,615	241	20,928
2007	16,994	3,711	262	20,966
2008	N/A	N/A	N/A	21,146
2009	N/A	N/A	N/A	20,852
2010	N/A	N/A	N/A	19,367
2011	14,333	4,045	411	18,789
2012	14,217	4,275	436	18,928
2013	16,691	3,646	240	20,577
2014	12,557	3,156	228	16,941
2015	13,007	4,151	447	17,605
2016	12,908	3,743	477	17,128

e Estimated r Revised p Preliminary See footnote in Appendix B

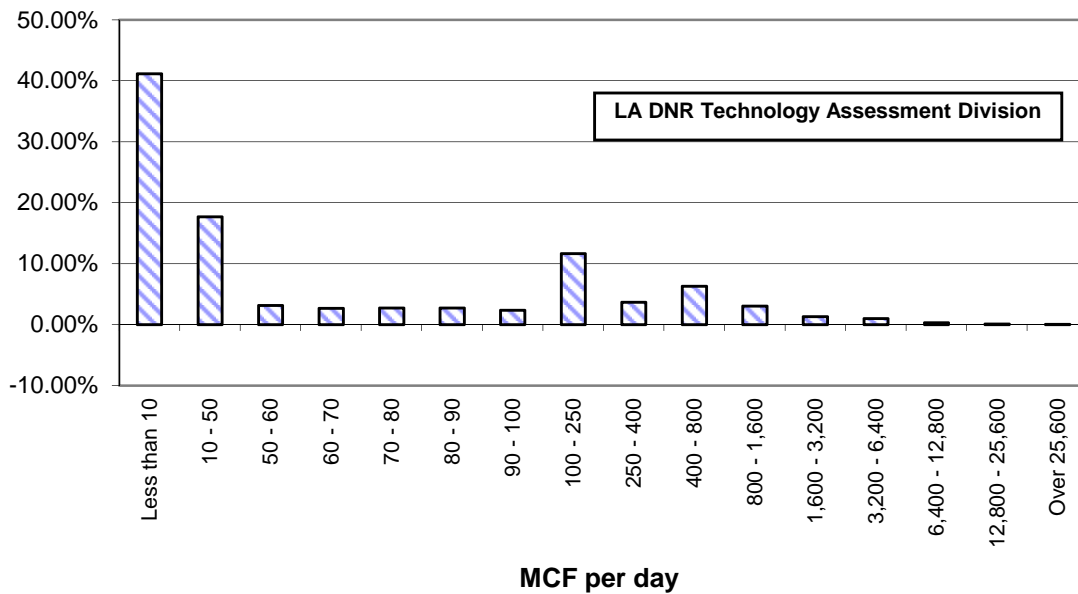
**Figure 13**

**2015 Percentage of Louisiana Oil Wells by Production Rates**



**Figure 14**

**2015 Percentage of Louisiana Gas Wells by Production Rates**





**Table 25**

**LOUISIANA STATE PRODUCING NATURAL GAS WELLS**  
**Excluding OCS**

<b>DATE</b>	<b>NORTH</b>	<b>SOUTH</b>	<b>OFFSHORE</b>	<b>TOTAL</b>
1971	4,449	3,389	327	8,164
1972	4,664	3,397	316	8,378
1973	4,927	3,449	332	8,707
1974	5,159	3,458	313	8,929
1975	5,373	3,331	308	9,012
1976	5,851	3,289	362	9,502
1977	6,343	3,331	449	10,123
1978	6,915	3,253	472	10,640
1979	7,372	3,214	514	11,100
1980	8,360	3,277	551	12,188
1981	9,479	3,226	557	13,262
1982	10,154	3,136	564	13,855
1983	10,502	3,065	549	14,115
1984	10,812	2,955	532	14,299
1985	11,026	2,887	511	14,424
1986	11,049	2,730	436	14,216
1987	10,726	2,635	413	13,774
1988	10,813	2,539	445	13,796
1989	10,861	2,474	501	13,836
1990	10,802	2,407	512	13,721
1991	10,702	2,261	496	13,459
1992	10,498	2,149	496	13,143
1993	10,506	2,192	490	13,189
1994	10,596	2,260	473	13,329
1995	10,452	2,200	335	12,987
1996	10,376	2,148	274	12,799
1997	10,446	2,149	296	12,891
1998	10,579	1,995	259	12,833
1999	10,581	2,010	262	12,853
2000	13,704	3,194	333	17,231
2001	13,054	3,369	311	16,734
2002	13,438	3,309	344	17,092
2003	13,607	2,952	384	16,944
2004	13,924	3,005	398	17,327
2005	13,996	2,977	258	17,231
2006	14,478	3,066	204	17,748
2007	14,707	3,211	227	18,145
2008	N/A	N/A	N/A	18,984
2009	N/A	N/A	N/A	19,009
2010	N/A	N/A	N/A	19,384
2011	18,542	1,851	159	20,552
2012	19,125	1,734	144	21,003
2013	18,184	1,295	104	19,583
2014	16,114	1,003	72	17,189
2015	19,273	1,424	87	20,784
2016	18,929	1,116	54	20,099

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 26**

**LOUISIANA STATE WELL COMPLETION BY TYPE AND BY REGION**  
**Excluding OCS**

	YEAR	OFFSHORE	SOUTH	NORTH	TOTAL
<b>C R O U I D L E</b>	2002	5	91	89	185
	2003	1	106	53	160
	2004	2	106	69	177
	2005	1	86	113	200
	2006	4	137	164	305
	2007	3	125	149	277
	2008	5	101	228	334
	2009	1	63	90	154
	2010	9	114	167	290
	2011	4	122	144	270
	2012	3	258	422	683
	2013	3	123	267	393
	2014	9	126	225	360
	2015	19	194	39	252
	2016	0	36	17	53
	<b>N A T G U A R S A L</b>	2002	15	215	249
2003		15	194	383	592
2004		7	186	649	842
2005		9	197	769	975
2006		6	190	826	1,022
2007		5	104	923	1,032
2008		9	97	984	1,090
2009		3	39	707	749
2010		9	73	958	1,040
2011		4	37	198	239
2012		1	54	203	258
2013		2	28	55	85
2014		6	66	303	375
2015		9	172	307	488
2016		0	31	213	244
<b>D H R O Y L E</b>		2002	4	122	147
	2003	6	166	134	306
	2004	10	144	105	259
	2005	12	166	142	320
	2006	5	197	165	367
	2007	3	164	116	283
	2008	4	94	121	219
	2009	1	63	75	139
	2010	2	61	76	139
	2011	0	36	52	88
	2012	1	57	92	150
	2013	0	33	71	104
	2014	0	11	3	14
	2015	0	2	1	3
	2016	0	2	0	2

Table 27

**LOUISIANA STATE MINERAL BONUS, RENTAL AND  
ROYALTY OVERRIDE REVENUES, Excluding OCS**

(Million Dollars)

DATE	BONUSES	OVERRIDE ROYALTY	RENTALS	TOTAL
1996	39.63	-0.27	18.40	57.76
1997	38.27	0.84	25.00	64.11
1998	42.27	0.69	25.86	68.82
1999	14.17	0.45	20.27	34.89
2000	21.12	1.13	14.16	36.41
2001	29.70	1.89	13.75	45.34
2002	24.74	2.29	14.26	41.28
2003	19.54	3.36	12.93	35.83
2004	29.79	5.05	9.47	44.31
2005	35.78	2.03	13.75	51.56
2006	33.49	2.05	21.64	57.18
2007	45.91	3.35	22.59	71.85
2008	171.28	5.89	23.09	200.26
2009	17.70	4.26	25.13	47.09
2010	32.01	4.60	19.35	55.96
2011	19.48	8.42	16.36	44.27
2012	17.48	9.80	11.72	39.00
2013	18.92	11.31	11.14	41.38
2014	8.98	7.72	11.11	27.80
January	2.68	0.41	0.44	3.54
February	0.13	-6.11	0.21	-5.77
March	0.29	-5.50	0.49	-4.72
April	0.02	0.25	1.05	1.32
May	0.00	0.29	0.18	0.48
June	0.01	0.44	0.53	0.98
July	0.01	0.45	0.30	0.76
August	0.05	0.48	0.42	0.95
September	0.48	-5.96	0.23	-5.25
October	0.10	0.09	0.90	1.08
November	0.22	1.22	0.23	1.67
December	0.25	0.23	0.11	0.59
<b>2015 Total</b>	<b>4.25</b>	<b>-13.71</b>	<b>5.10</b>	<b>-4.36</b>
January	0.04	0.14	0.37	0.56
February	0.51	0.20	0.10	0.81
March	0.05	1.17	0.18	1.40
April	0.14	0.20	0.09	0.43
May	0.21	0.92	0.04	1.17
June	0.03	0.22	0.48	0.73
July	0.06	0.09	0.44	0.59
August	0.01	0.94	0.14	1.08
September	0.12	0.20	0.50	0.82
October	0.01	0.20	0.17	0.38
November	0.13	1.06	0.37	1.56
December	0.31	0.38	0.10	0.79
<b>2016 Total</b>	<b>1.62</b>	<b>5.73</b>	<b>2.98</b>	<b>10.33</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

Table 28

**LOUISIANA STATE MINERAL ROYALTY REVENUE**  
**Excluding OCS**  
**(Million Dollars)**

<b>DATE</b>	<b>OIL</b>	<b>GAS</b>	<b>PLANT LIQUIDS</b>	<b>OTHER</b>	<b>TOTAL</b>
1997	112.76	154.62	5.93	0.00	273.31
1998	68.85	121.17	2.58	0.00	192.60
1999	91.52	115.10	2.05	0.00	208.66
2000	145.80	212.71	3.46	0.00	361.97
2001	122.16	252.68	6.33	0.00	381.17
2002	100.10	165.24	8.03	0.00	273.37
2003	127.61	288.91	9.31	0.00	425.83
2004	143.84	274.64	14.82	0.00	433.30
2005	149.97	279.03	10.51	0.00	439.50
2006	201.71	287.24	14.23	0.00	503.19
2007	288.57	305.62	18.98	0.00	613.18
2008	372.30	419.94	32.16	0.00	824.41
2009	210.54	153.86	14.91	0.00	379.31
2010	272.57	162.50	22.52	0.00	457.59
2011	381.35	173.52	32.48	0.00	587.34
2012	376.98 r	121.89 r	24.78 r	0.00	523.64 r
2013	382.37 r	158.56 r	27.85 r	0.00	568.79 r
2014	320.26 r	166.82 r	23.74 r	0.00	510.83 r
January	12.93 r	9.77 r	0.77 r	0.00	23.48 r
February	12.39 r	7.24 r	0.76 r	0.00	20.39 r
March	12.82 r	7.65 r	0.74 r	0.00	21.21 r
April	14.37 r	7.16 r	0.78 r	0.00	22.32 r
May	15.78 r	8.17 r	0.80 r	0.00	24.74 r
June	15.48 r	7.97 r	0.69 r	0.00	24.13 r
July	13.14 r	7.98 r	0.66 r	0.00	21.77 r
August	11.08 r	7.69 r	0.50 r	0.00	19.28 r
September	10.74 r	6.53 r	0.57 r	0.00	17.84 r
October	10.99 r	6.12 r	0.59 r	0.00	17.70 r
November	9.25 r	4.75 r	0.60 r	0.00	14.59 r
December	8.05 r	4.51 r	0.54 r	0.00	13.10 r
<b>2015 Total</b>	<b>147.02 r</b>	<b>85.53 r</b>	<b>8.01 r</b>	<b>0.00</b>	<b>240.56 r</b>
January	6.09	5.28	0.42	0.00	11.80
February	5.86	4.18	0.41	0.00	10.45
March	7.93	3.62	0.59	0.00	12.13
April	8.87	3.95	0.53	0.00	13.35
May	10.19	4.16	0.58	0.00	14.93
June	10.50	5.11	0.63	0.00	16.24
July	9.63	6.25	0.58	0.00	16.46
August	9.36	5.62	0.53	0.00	15.51
September	8.86	6.01	0.54	0.00	15.40
October	9.46	4.16 e	0.44 e	0.00	14.06 e
November	8.84 e	4.68 e	0.55 e	0.00	14.07 e
December	8.62 e	4.45 e	0.51 e	0.00	13.58 e
<b>2016 Total</b>	<b>104.21 e</b>	<b>57.46 e</b>	<b>6.33 e</b>	<b>0.00</b>	<b>168.00 e</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 29**

**LOUISIANA STATE MINERAL SEVERANCE TAX REVENUE<sup>8</sup>**

**Excluding OCS  
(Million Dollars)**

<b>DATE</b>	<b>OIL</b>	<b>GAS</b>	<b>OTHER MINERALS</b>	<b>SEVERANCE TOTAL</b>
1996	270.36	98.60	1.88	370.84
1997	257.13	118.27	1.85	377.25
1998	148.96	120.98	1.40	271.34
1999	171.29	102.48	1.82	275.60
2000	337.51	104.33	1.50	443.34
2001	281.95	165.77	1.65	449.38
2002	235.84	173.51	1.33	410.67
2003	316.70	152.13	1.70	470.53
2004	359.77	216.73	1.73	578.23
2005	439.00	243.62	1.61	681.50
2006	506.31	331.40	1.69	839.41
2007	529.75	354.11	1.67	885.52
2008	842.94	293.66	1.65	1138.25
2009	377.51	292.18	1.63	671.32
2010	516.90	224.18	1.58	742.67
2011	677.56	97.61	1.34	776.51
2012	736.78	135.23	1.31	873.32
2013	761.75	99.45	1.38	862.58
2014	685.68	147.70	1.24	834.61
January	37.03	15.59	0.15	52.78
February	35.26	15.92	0.11	51.29
March	41.15	19.75	0.16	61.05
April	23.56	14.12	0.08	37.76
May	27.75	17.86	0.10	45.71
June	30.03	15.71	0.13	45.87
July	30.41	16.67	0.13	47.20
August	31.93	14.35	0.13	46.40
September	26.32	14.87	0.11	41.30
October	13.23	13.53	0.11	26.86
November	24.74	16.20	0.16	41.10
December	37.55	15.73	0.10	53.39
<b>2015 Total</b>	<b>358.96</b>	<b>190.30</b>	<b>1.46</b>	<b>550.72</b>
January	20.75	13.02	0.12	33.89
February	19.38	9.64	0.09	29.11
March	16.80	7.23	0.07	24.10
April	16.19	18.26	0.05	34.50
May	16.94	11.89	0.17	29.00
June	21.84	14.04	0.15	36.03
July	21.24	9.74	0.12	31.11
August	18.86	12.22	0.10	31.19
September	N/A	N/A	N/A	N/A
October	N/A	N/A	N/A	N/A
November	N/A	N/A	N/A	N/A
December	N/A	N/A	N/A	N/A
<b>2016 Total</b>	<b>152.00</b>	<b>96.05</b>	<b>0.87</b>	<b>248.92</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 30**

**STATE REVENUE FROM LOUISIANA'S OUTER CONTINENTAL SHELF<sup>13</sup>**

(Dollars)

YEAR	RENTALS	BONUSES	ROYALTIES	OTHERS REVENUE	GOMESA	TOTAL
1987	148,578	3,150,519	11,043,115	574,520,000		588,862,212
1988	153,561	5,528,006	8,708,079	2,520,000		16,909,646
1989	175,817	2,890,298	7,163,105	2,520,000		12,749,220
1990	430,198	5,570,375	6,239,368	2,520,000		14,759,941
1991	303,824	2,220,094	8,461,261	2,520,000		13,505,179
1992	258,787	1,189,989	6,405,279	5,880,000		13,734,055
1993	235,250	965,504	7,373,550	5,880,000		14,454,304
1994	1,016,932	1,913,682	11,780,932	5,880,000		20,591,546
1995	255,213	890,002	8,012,718	5,880,000		15,037,933
1996	292,445	4,666,400	12,283,395	5,880,000		23,122,240
1997	686,051	5,689,689	11,855,454	8,400,000		26,631,194
1998	412,229	1,744,928	9,621,860	8,400,000		20,179,017
1999	357,379	241,659	6,284,879	8,400,000		15,283,917
2000	321,695	1,268,244	12,690,937	15,254,978		22,680,876
2001	303,675	2,148,111	30,454,058	7,735,941		40,641,785
2002	94,841	0	11,768,383	28,363		11,891,587
2003	284,563	2,842,662	26,447,045	21,775		29,596,045
2004	490,745	7,620,500	30,145,237	6,613		38,256,482
2005	374,717	2,521,931	27,995,948	7,849		30,900,445
2006	494,362	5,947,411	24,325,787	1,304,257		32,071,817
2007	196,129	-2,695,489	25,498,932	89,134		23,088,706
2008	412,813	6,196,386	36,547,175	2,607,022		45,763,396
2009	339,802	463,332	21,433,896	80,201	6,347,321	28,664,552
2010	355,697	2,892,749	19,321,141	35,844	699,757	23,305,188
2011	268,106	0	20,325,825	93,441	222,725	20,910,097
2012	N/A	N/A	N/A	N/A	80,770	19,845,947
2013	N/A	N/A	N/A	N/A	75,621	24,533,076
2014	N/A	N/A	N/A	N/A	1,119,942	20,586,591
2015	N/A	N/A	N/A	N/A	653,383	12,579,284
2016	N/A	N/A	N/A	N/A	82,196	6,395,879

e Estimated r Revised p Preliminary See footnote in Appendix B

**Table 31**

**LOUISIANA STATE TOTAL MINERAL REVENUE  
(Dollars)**

<b>YEAR</b>	<b>FEDERAL OCS<sup>13</sup></b>	<b>FEDERAL ONSHORE<sup>13</sup></b>	<b>STATE BOUNDARIES</b>	<b>TOTAL</b>
1986	68,699,504	555,000	832,406,385	901,660,889
1987	588,862,212	517,000	746,675,897	1,336,055,109
1988	16,909,646	545,000	660,959,699	678,414,345
1989	12,749,220	452,000	678,301,987	691,503,207
1990	14,759,941	542,000	779,963,703	795,265,644
1991	13,505,179	328,000	751,117,246	764,950,425
1992	13,734,055	376,000	680,527,788	694,637,843
1993	14,454,304	782,000	639,182,812	654,412,032
1994	20,591,546	532,000	560,371,998	581,495,544
1995	15,037,933	728,000	638,942,698	654,708,631
1996	23,122,240	943,209	770,137,601	794,203,050
1997	26,631,194	817,329	714,672,685	742,121,208
1998	20,179,017	996,000	532,755,940	553,930,957
1999	15,283,917	1,276,465	519,144,200	535,704,582
2000	22,680,876	1,024,730	839,883,694	863,589,300
2001	40,641,785	1,481,176	875,887,102	918,010,063
2002	11,891,587	730,156	725,323,377	737,945,120
2003	29,596,045	1,182,451	932,191,569	962,970,065
2004	38,256,482	1,364,965	1,055,838,962	1,095,460,408
2005	30,900,445	1,569,882	1,166,491,860	1,198,962,188
2006	32,071,817	1,170,670	1,395,971,977	1,429,214,465
2007	23,088,706	940,888	1,545,321,941	1,569,351,535
2008	45,763,396	3,703,240	2,162,918,035	2,212,384,671
2009	28,664,552	914,421	1,097,717,147	1,127,296,119
2010	23,305,188	3,123,211	1,256,220,286	1,282,648,686
2011	20,910,097	17,982,455	1,408,117,556	1,447,010,108
2012	19,845,947	6,914,439	1,436,769,322	1,463,529,708
2013	24,533,076	2,607,490	1,472,614,331	1,499,754,898
2014	20,586,591	3,417,220	1,371,527,259	1,395,531,070
2015	12,579,284	1,734,869	786,918,399 e	801,232,552 e
2016	6,395,879	904,498	427,201,887 p	434,502,264 p

e Estimated r Revised p Preliminary See footnote in Appendix B

**Federal OCS:** See footnotes on Appendix B "OCSLA" & "GOMESA"

**Federal Onshore:** Revenue distributed to the state under section 35 of the Mineral Leasing Act (MLA). MLA provides to the state 50% of mineral revenue from federal lands located within the state boundaries. Revenues came from royalties, rents and bonuses. It is fiscal year data. Oil and gas produced on federal onshore pay severance tax to the state by the producer on the non-royalty share of the production, and the royalty share of the production is exempted.

**State Boundaries:** Revenue from mineral production such as bonuses, override royalties, rents, royalties and severance taxes within state boundaries.

**Table 32**

**REVENUE TO FEDERAL GOVERNMENT COLLECTED FROM OIL AND GAS  
LEASES IN THE LOUISIANA OUTER CONTINENTAL SHELF<sup>12</sup>**

(Area beyond the state's 3-mile offshore boundary)

(Dollars)

<b>YEAR</b>	<b>BONUS PAYMENTS</b>	<b>RENTAL PAYMENTS</b>	<b>OTHER REVENUES</b>	<b>PRODUCTION ROYALTIES</b>	<b>TOTAL<sup>a</sup> COLLECTION</b>
1981	3,308,009,881	8,205,515	1,211,959	2,825,271,285	6,142,698,640
1982	1,110,172,751	7,288,316	1,349,850	3,166,294,042	4,285,104,959
1983	3,796,644,766	13,620,158	2,540,294	2,764,348,600	6,577,153,818
1984	1,154,495,009	16,323,567	2,010,462	3,195,995,282	4,368,824,320
1985	830,710,260	33,756,447	2,139,530	2,940,519,737	3,807,125,974
1986	113,731,609	34,110,029	3,199,547	2,006,205,199	2,157,246,384
1987	247,344,486	52,115,828	19,239,027	1,803,208,740	2,121,908,081
1988	388,730,457	35,752,757	8,727,373	1,571,981,500	2,005,192,087
1989	386,710,637	48,498,402	26,261,190	1,618,163,065	2,079,633,294
1990	421,375,632	55,568,777	16,028,740	2,068,487,831	2,561,460,980
1991	276,234,849	59,126,732	15,444,167	1,857,392,914	2,208,198,662
1992	53,716,797	49,087,621	33,533,897	1,848,599,157	1,984,937,472
1993	61,454,861	29,268,366	119,445,091	2,009,644,653	2,219,812,971
1994	256,271,643	30,003,884	141,190,812	1,888,953,102	2,316,419,441
1995	296,254,733	62,526,069	19,803,444	1,764,875,791	2,143,460,037
1996	24,330,068	53,231,380	40,394,227	2,549,759,516	3,154,940,691
1997	1,169,790	55,761,920	65,651,370	2,857,126,443	3,789,383,151
1998	9,207,972	51,518,286	-14,452,431	2,267,502,514	2,313,776,341
1999	1,169,790	40,463,226	49,219,184	2,228,250,265	2,319,102,465
2000	83,630,219	32,710,256	167,647,231	3,045,847,943	3,329,835,649
2001	160,037,859	30,078,009	177,773,259	5,126,344,201	5,494,233,328
<b>GULF OF MEXICO TOTAL</b>					
2001	632,482,979	188,455,045	3,126,962	6,674,371,634	7,498,436,619
2002	138,423,162	153,303,576	3,252,702	3,841,164,517	4,136,143,958
2003	1,147,014,322	245,963,859	4,983,819	4,535,938,009	5,933,900,009
2004	523,416,154	214,303,045	2,570,343	4,607,776,092	5,348,065,634
2005	518,426,651	221,784,370	1,897,501	5,313,350,455	6,055,458,976
2006	865,262,735	224,006,816	2,839,550	6,514,658,836	7,606,767,938
2007	373,930,998	200,993,255	3,166,689	6,441,214,179	7,019,305,120
2008	6,818,747,137	231,026,391	3,105,849	7,850,622,155	14,903,501,532
2009	1,181,075,491	226,229,847	3,013,594	4,161,415,445	5,571,734,377
2010	979,569,294	236,631,251	-3,531,170	3,743,286,144	4,955,955,519
2011	36,751,111	219,119,868	2,153,134	5,960,501,525	6,218,525,638
2012	663,714,729	217,669,757	31,841,893	5,626,212,490	6,539,438,869
2013	2,675,653,773	244,699,154	34,646,396	5,778,759,396	8,733,758,719
2014	967,365,328	229,741,396	46,262,768	5,846,709,902	7,090,079,394
2015	642,044,899	215,683,828	-36,545,638	4,109,252,603	4,930,435,692
2016	155,161,660	159,864,463	-4,001,659	2,435,585,537	2,746,610,002

<sup>a</sup> Total collection, including state 8G shares.

e Estimated r Revised p Preliminary See footnote in Appendix B



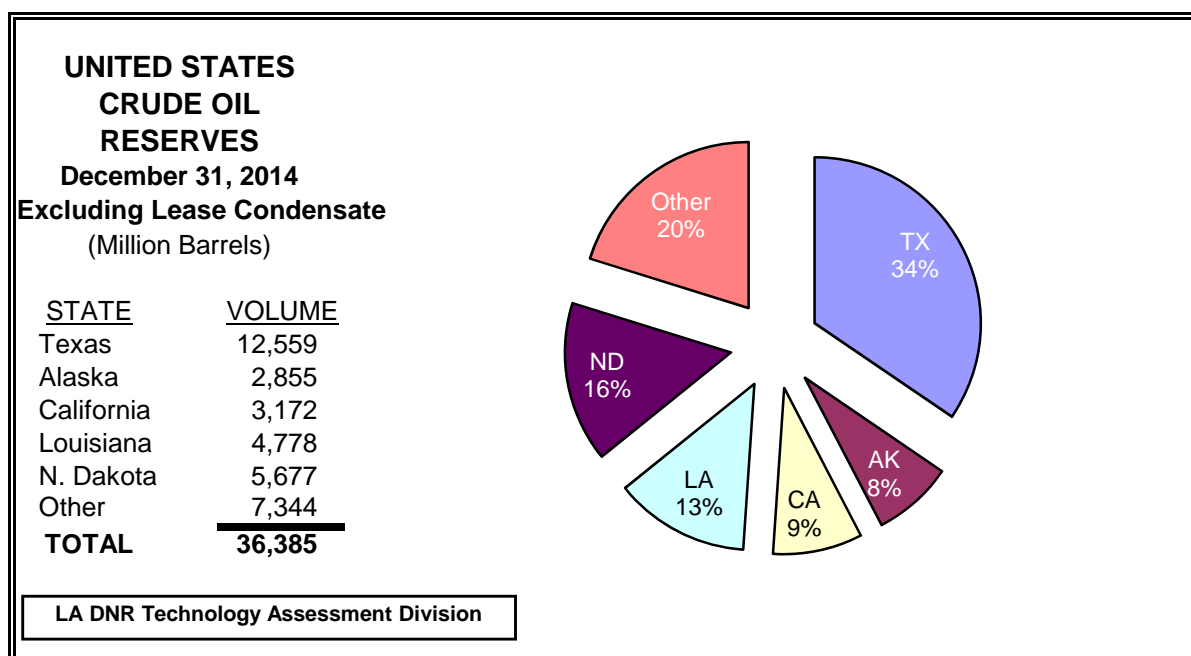
Table 33

**LOUISIANA ESTIMATED CRUDE OIL PROVED RESERVES <sup>9</sup>**  
**EXCLUDING LEASE CONDENSATE**  
 As of December 31st of Each Year  
 (Million Barrels)

YEAR	North	South Onshore	South Offshore	Federal OCS	Total Louisiana	TOTAL US
1994	108	391	150	1,922	2,571	22,457
1995	108	387	142	2,269	2,906	22,351
1996	128	382	148	2,357	3,015	22,017
1997	136	427	151	2,587	3,301	22,546
1998	101	357	97	2,483	3,038	21,034
1999	108	384	108	2,442	3,042	21,765
2000	97	310	122	2,751	3,280	22,045
2001	87	341	136	3,877	4,441	22,446
2002	75	335	91	4,088	4,589	22,677
2003	66	314	72	4,251	4,703	21,891
2004	58	304	65	3,919	4,346	21,371
2005	68	299	65	3,852	4,284	21,757
2006	68	312	48	3,500	3,928	20,972
2007	76	326	56	3,320	3,778	21,317
2008	60	277	51	3,388	3,776	19,121
2009	55	269	46	3,570	3,940	20,682
2010	104	274	46	3,914	4,338	23,267
2011	103	264	50	4,438	4,855	26,544
2012	100	300	63	4,504	4,967	30,529
2013	120	328	55	4,503	5,006	33,371
2014	118	349	67	4,244	4,778	36,385

e Estimated r Revised p Preliminary See footnote in Appendix B

**Figure 15**



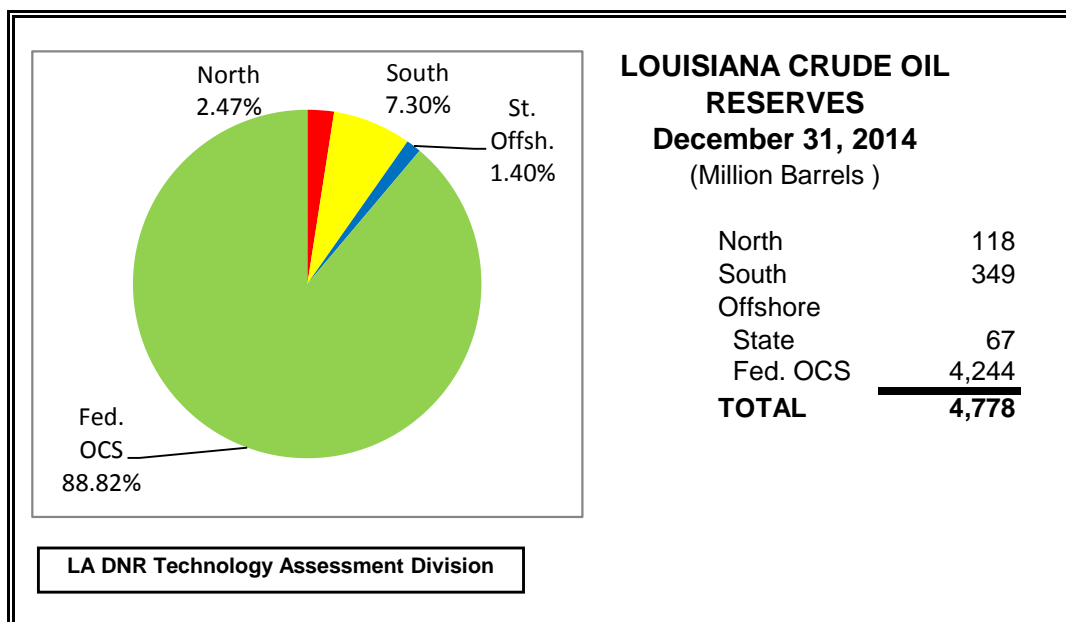
**Table 34**

**LOUISIANA ESTIMATED LEASE CONDENSATE PROVED RESERVES<sup>9</sup>**  
**As of December 31st of Each Year**  
**(Million Barrels)**

YEAR	North	South Onshore	South Offshore	Federal OCS	Total Louisiana	TOTAL US
1994	21	123	9	233	386	1,147
1995	24	136	11	305	476	1,197
1996	24	127	11	422	584	1,307
1997	30	134	12	433	609	1,341
1998	23	138	16	435	612	1,336
1999	25	134	15	435	609	1,295
2000	22	130	17	437	606	1,333
2001	27	141	19	325	512	1,398
2002	19	107	11	300	437	1,346
2003	19	82	11	251	363	1,215
2004	21	66	9	205	301	1,221
2005	23	72	9	228	332	1,218
2006	29	65	10	185	289	1,339
2007	31	69	11	180	291	1,415
2008	27	64	8	151	250	1,433
2009	26	74	10	134	244	1,633
2010	27	68	11	129	235	1,914
2011	33	64	11	129	237	2,406
2012	38	70	13	98	219	2,874
2013	39	68	12	88	207	3,149
2014	48	56	11	108	223	3,548

e Estimated r Revised p Preliminary See footnote in Appendix B

**Figure 16**



**Table 35**

**LOUISIANA ESTIMATED DRY NATURAL GAS PROVED RESERVES<sup>9</sup>**  
**As of December 31st of Each Year**  
**(Billion Cubic Feet, at 14.73 psia and 60 degrees Fahrenheit)**

YEAR	North	South Onshore	South Offshore	Federal OCS	Total Louisiana	TOTAL US
1994	2,537	6,251	960	20,835 c	30,583 c	163,837
1995	2,788	5,648	838	21,392 c	30,666 c	165,146
1996	3,105	5,704	734	21,856 c	31,399 c	166,474
1997	3,093	5,855	725	21,934 c	31,607 c	167,223
1998	2,898	5,698	551	20,774 c	29,921 c	164,041
1999	3,079	5,535	628	19,598 c	28,840 c	167,406
2000	3,298	5,245	696	19,788 c	29,027 c	177,427
2001	3,881	5,185	745	19,721 c	29,532 c	183,460
2002	4,245	4,224	491	18,500 c	27,460 c	186,946
2003	5,074	3,746	506	16,728 c	26,054 c	189,044
2004	5,770	3,436	382	14,685 c	24,273 c	192,513
2005	6,695	3,334	418	13,665 c	24,112 c	204,385
2006	6,715	3,335	424	11,824 c	22,298 c	211,085
2007	6,344	3,323	378	11,090 c	21,135 c	237,726
2008	7,876	2,799	898	10,450 c	22,023 c	244,656
2009	17,146	2,844	701	9,362 c	30,053 c	272,509
2010	26,030	2,876	371	8,896 c	38,173 c	304,625
2011	27,337	2,519	502	8,156 c	38,514 c	334,067
2012	18,418	3,029	502	7,291 c	29,240 c	308,036
2013	17,044	2,718	402	6,482 c	26,646 c	328,264
2014	19,722	2,926	327	6,890 c	29,865 c	368,704

<sup>c</sup> Includes Federal Offshore Alabama

**Figure 17**

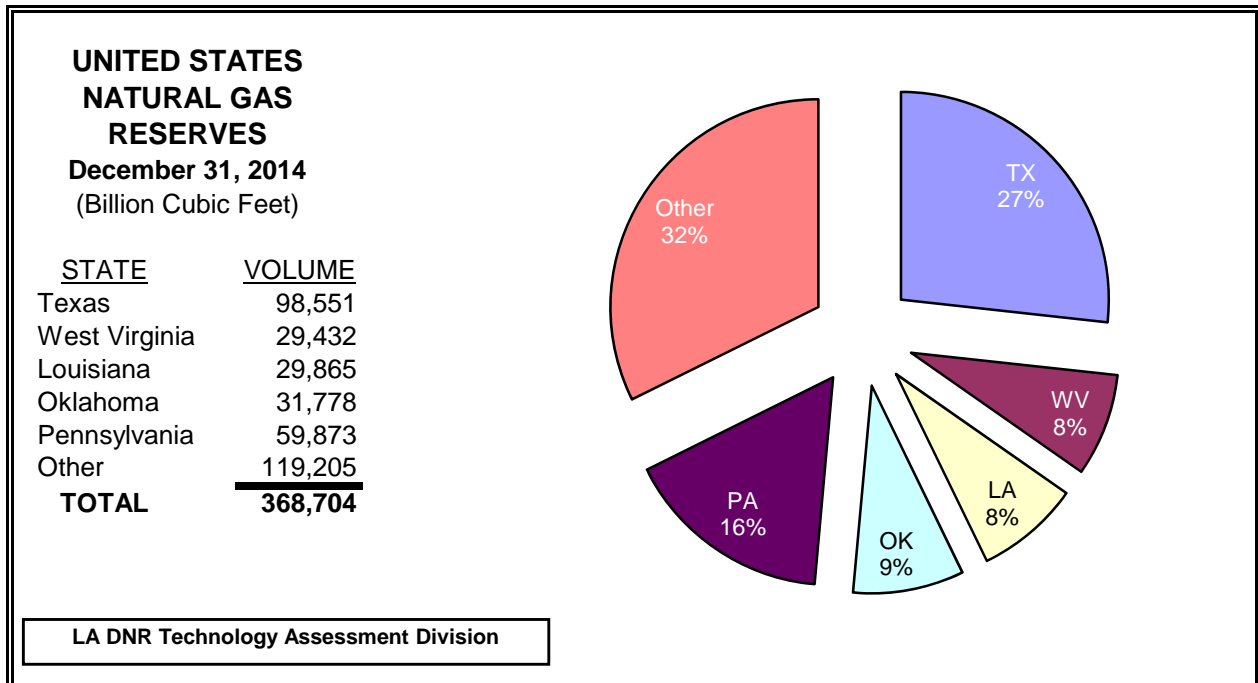


Table 36

**LOUISIANA ESTIMATED NATURAL GAS PLANT LIQUIDS  
IN TOTAL NATURAL GAS PROVED RESERVES<sup>9</sup>**  
As of December 31st of Each Year  
(Million Barrels)

YEAR	North	South Onshore	South Offshore	Federal OCS	Total Louisiana	TOTAL US
1994	48	214	19	267 c	548 c	6,023
1995	55	359	16	191 c	621 c	6,202
1996	61	284	36	199 c	580 c	6,516
1997	50	199	12	352 c	613 c	6,632
1998	34	187	13	341 c	575 c	6,188
1999	36	222	23	403 c	684 c	6,503
2000	35	178	28	487 c	728 c	6,873
2001	35	128	41	460 c	664 c	6,595
2002	30	119	37	483 c	669 c	6,648
2003	48	100	35	347 c	530 c	6,244
2004	53	87	27	410 c	577 c	6,707
2005	57	103	31	407 c	598 c	6,903
2006	60	94	22	390 c	566 c	7,133
2007	69	97	25	365 c	556 c	7,648
2008	68	78	55	313 c	514 c	7,842
2009	98	90	43	301 c	532 c	8,557
2010	79	113	24	340 c	556 c	9,809
2011	54	94	44	354 c	546 c	10,825
2012	35	134	20	369 c	558 c	10,777
2013	52	144	16	292 c	504 c	11,943
2014	83	145	15	367 c	610 c	15,029

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 18

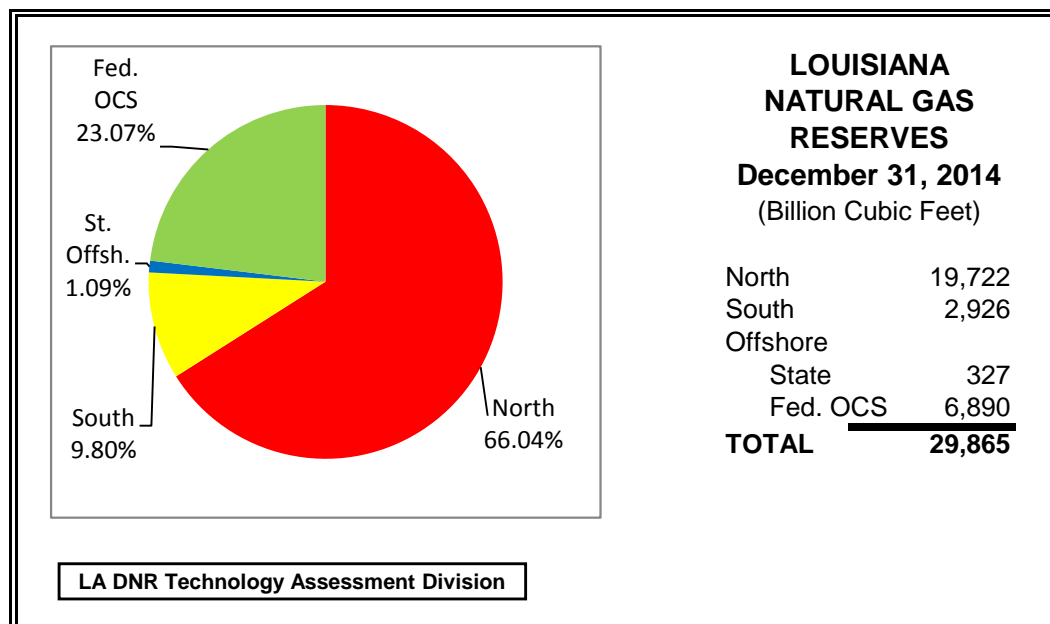


Table 37

LOUISIANA NONAGRICULTURAL EMPLOYMENT <sup>1</sup>

DATE	OIL & GAS PRODUCTION	CHEMICAL INDUSTRY	PETROLEUM MANUFACTURING	ALL PIPELINE*	TOTAL EMPLOYMENT
1996	46,885	30,096	11,262	789	1,757,619
1997	51,559	29,935	11,038	792	1,797,225
1998	54,875	30,196	10,984	702	1,837,505
1999	44,645	28,898	11,046	693	1,846,026
2000	45,714	28,335	10,345	724	1,872,494
2001	47,009	27,337	10,643	2,417	1,868,902
2002	43,839	25,694	10,566	2,306	1,848,656
2003	42,339	24,558	10,395	2,334	1,851,570
2004	40,249	23,516	9,958	2,122	1,866,870
2005	41,179	23,269	10,240	2,179	1,843,237
2006	44,394	22,188	10,310	2,347	1,810,667
2007	46,764	22,612	10,764	2,454	1,869,965
2008	49,990	22,772	11,225	2,543	1,889,138
2009	47,500	22,529	11,356	2,463	1,856,385
2010	47,916	22,533	11,423	2,667	1,833,888
2011	49,239	23,168	11,163	2,778	1,846,761
2012	50,963	23,029	11,276	2,862	1,868,317
2013	50,221	23,299	11,561	2,853	1,890,051
January	50,256	23,747	11,693	2,981	1,886,297
February	50,249	23,753	11,662	2,978	1,896,510
March	50,534	23,777	11,766	2,959	1,910,404
April	49,452	23,810	11,783	2,958	1,917,866
May	49,986	23,915	11,869	2,972	1,929,739
June	49,935	24,183	12,001	3,009	1,921,632
July	50,349	24,333	12,099	3,005	1,906,332
August	50,172	24,364	12,197	3,006	1,923,732
September	49,881	24,156	12,137	2,990	1,928,031
October	50,082	24,296	12,165	2,935	1,947,618
November	49,805	24,349	12,179	2,954	1,953,209
December	49,681	24,348	12,231	2,960	1,953,992
<b>2014 Average</b>	<b>50,064</b>	<b>24,062</b>	<b>11,959</b>	<b>2,977</b>	<b>1,920,125</b>
January	48,552	24,848	11,970	3,181	1,918,689
February	46,358	24,879	11,994	3,153	1,923,772
March	45,067	24,668	11,472	3,176	1,925,841
April	44,957	24,813	11,962	3,114	1,933,532
May	44,631	24,794	12,008	3,136	1,940,858
June	43,546	24,959	12,193	3,161	1,930,179
July	43,589	25,072	12,171	3,160	1,910,770
August	43,392	25,205	12,275	3,135	1,923,657
September	42,169	25,089	12,135	3,068	1,924,689
October	40,799	25,206	12,084	3,039	1,945,024
November	39,640	25,375	12,141	3,059	1,942,415
December	39,208	25,387	12,167	3,084	1,938,377
<b>2015 Average</b>	<b>43,882</b>	<b>24,992</b>	<b>12,037</b>	<b>3,126</b>	<b>1,929,039</b>

\* Natural Gas Pipeline employment is included in 2001 forward but excluded in prior years.

e Estimated r Revised p Preliminary See footnote in Appendix B

Figure 19

LOUISIANA ENERGY CONSUMPTION BY SOURCE

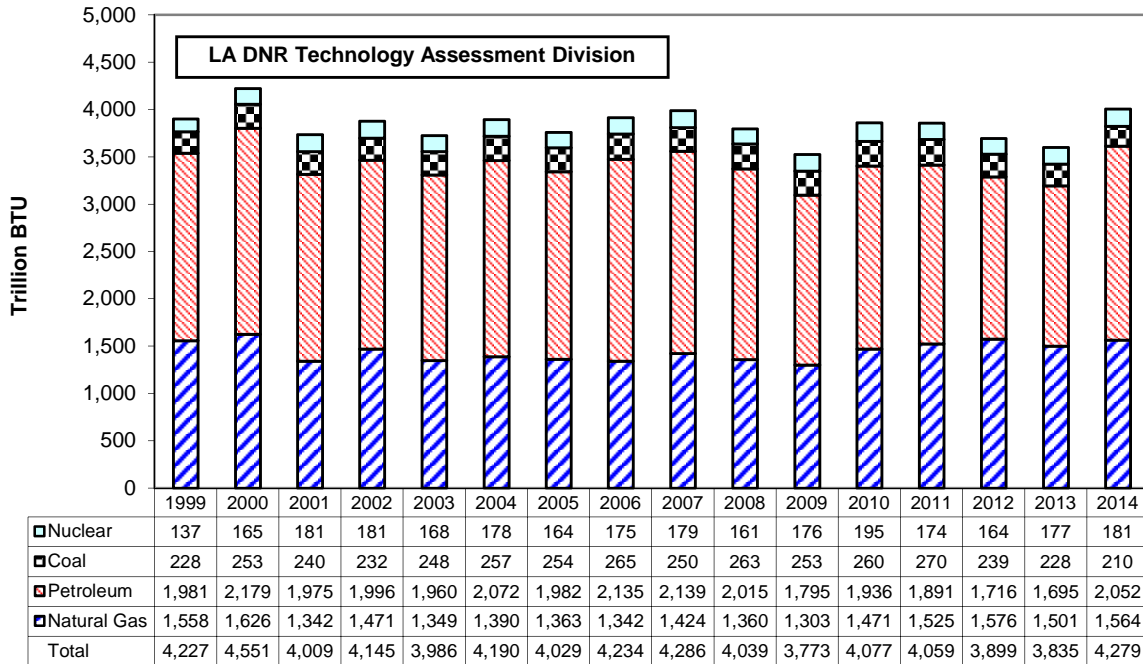
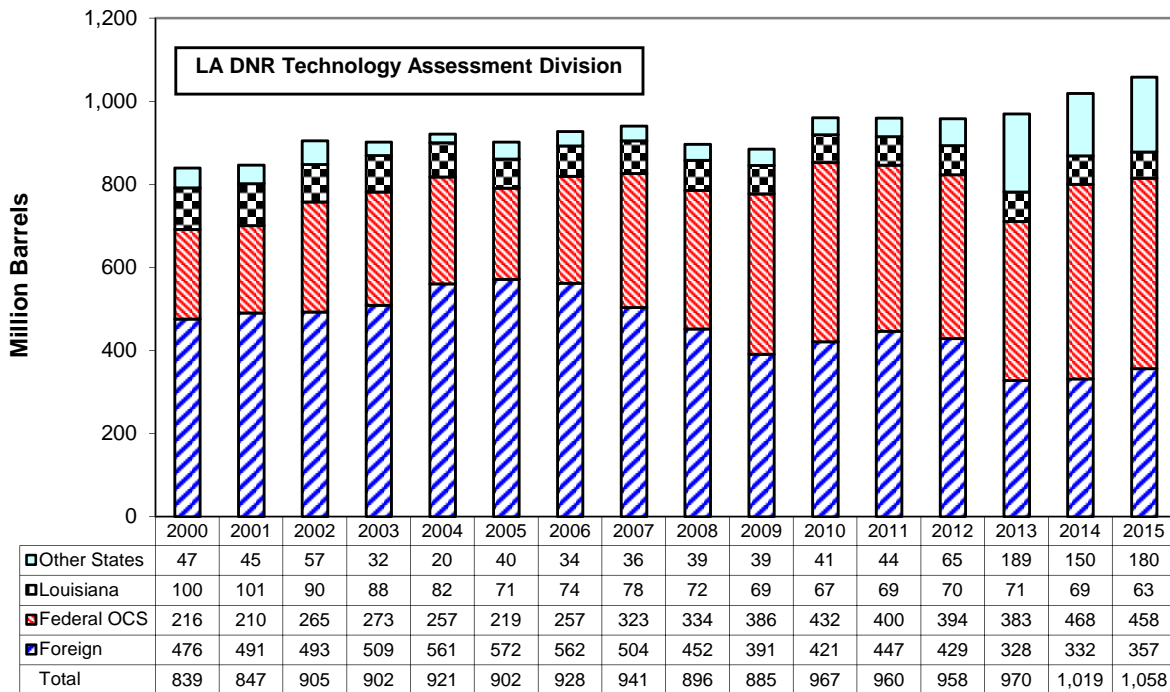


Figure 20

LOUISIANA REFINERY CRUDE OIL INPUT BY SOURCE



**Table 38**

**LOUISIANA ENERGY CONSUMPTION ESTIMATES BY SOURCE<sup>11</sup>**

Year	Total Energy (TBTU)	Total Natural Gas (BCF)	Total Petroleum (MBBLS)	Total Coal (MST)	Total Nuclear (Million KWH)	Hydroelectric Power (Million KWH)
1974	3,414	2,008	242,545	0	0	0
1975	3,113	1,789	230,872	0	0	0
1976	3,542	2,044	260,930	0	0	0
1977	3,943	2,191	299,549	79	0	0
1978	4,102	2,249	312,231	172	0	0
1979	4,051	1,978	351,467	118	0	0
1980	3,914	1,794	345,640	111	0	0
1981	3,970	1,782	351,404	1,363	0	0
1982	3,648	1,556	329,383	3,724	0	0
1983	3,443	1,413	307,978	6,154	0	0
1984	3,584	1,594	283,675	6,855	0	0
1985	3,349	1,386	280,304	9,217	2,457	0
1986	3,507	1,439	292,730	10,459	10,637	0
1987	3,569	1,501	286,809	10,391	12,324	0
1988	3,607	1,446	300,896	12,848	13,785	0
1989	3,764	1,556	297,765	12,471	12,391	0
1990	3,858	1,588	304,516	12,547	14,197	656
1991	3,847	1,525	312,517	12,965	13,956	656
1992	3,966	1,551	329,450	13,674	10,356	656
1993	4,034	1,579	334,556	13,676	14,398	1,232
1994	4,170	1,586	358,274	14,100	12,779	972
1995	4,210	1,679	350,162	13,357	15,686	952
1996	4,389	1,616	374,722	12,534	15,765	964
1997	4,496	1,661	361,782	13,874	13,511	1,036
1998	4,227	1,569	348,208	13,891	16,428	1,063
1999	4,227	1,495	381,195	13,953	13,112	802
2000	4,551	1,537	428,363	15,737	15,796	532
2001	4,009	1,307	377,607	14,934	17,336	732
2002	4,145	1,426	383,119	14,676	17,305	891
2003	3,986	1,308	363,307	15,592	16,126	892
2004	4,190	1,346	384,677	16,059	17,080	1,099
2005	4,029	1,310	366,578	15,856	15,676	811
2006	4,234	1,293	396,178	16,410	16,735	713
2007	4,286	1,377	396,182	15,524	17,078	827
2008	4,039	1,314	374,490	16,409	15,371	1,064
2009	3,773	1,266	339,481	15,736	16,782	1,236
2010	4,077	1,437	364,867	16,240	18,639	1,109
2011	4,059	1,497	357,528	16,792	16,615	1,044
2012	3,899	1,553	329,441	14,893	15,659	680
2013	3,835	1,475	330,391	13,934	16,954	1,045
2014	4,279	1,518	431,300	12,800	17,300	1,100

e Estimated r Revised p Preliminary See footnote in Appendix B

TBTU = Trillion BTU

BCF = Billion Cubic Feet

KWH = Kilowatt-hours

MBBLS = Thousand Barrels

MST = Thousand Short Tons

Table 39

## LOUISIANA REFINERY CRUDE OIL STATISTICS

DATE	AVERAGE STOCK ON HAND (Barrels)	DAILY AVERAGE RUNS TO STILL (Barrels)	LICENSED REFINERIES
1996	14,462,108	2,252,573	19
1997	14,275,221	2,257,275	19
1998	14,965,117	2,312,239	19
1999	15,467,674	2,414,781	17
2000	14,818,774	2,334,842	16
2001	15,425,670	2,480,357	17
2002	16,335,210	2,470,556	18
2003	15,246,004	2,469,756	17
2004	15,938,390	2,543,087	18
2005	16,217,856	2,458,189	18
2006	16,741,544	2,528,319	17
2007	16,108,022	2,687,658	17
2008	16,248,826	2,440,984	18
2009	13,019,604	2,412,848	19
2010	14,183,752	2,632,282	19
2011	13,473,779	2,743,681	19
2012	13,596,335	2,754,173	18
2013	14,611,002	2,750,860	18
2014	14,160,947	2,831,181	17 r
January	14,529,402	2,631,833	17 r
February	14,309,619	2,674,617	17 r
March	13,747,351	2,821,628	17 r
April	13,386,532	2,909,983	17 r
May	13,930,134	2,984,691	17 r
June	13,867,553	2,950,444	17 r
July	14,222,873 r	3,028,778 r	17 r
August	15,326,593 r	3,098,508 r	17 r
September	15,392,250 r	3,053,141 r	17 r
October	14,186,759 r	2,989,875 r	17 r
November	14,107,265 r	3,033,323 r	18
December	14,380,537 r	3,116,680 r	18
<b>2015 Average</b>	<b>14,282,239 r</b>	<b>2,941,125 r</b>	<b>17 r</b>
January	14,680,493	2,886,971	18
February	15,056,906	3,049,115	18
March	14,444,181	2,951,173	18
April	13,832,535	3,014,031	18
May	13,916,983	3,047,211	18
June	15,037,677	3,017,772	18
July	14,149,815	2,916,164	18
August	15,032,705	2,885,244	18
September	14,772,091	2,957,116	18
October	14,327,572 e	2,628,979 e	18
November	14,107,265 e	2,978,443 e	18
December	14,380,537 e	2,694,299 e	18
<b>2016 Average</b>	<b>14,478,230 e</b>	<b>2,918,877 e</b>	<b>18</b>

e Estimated r Revised p Preliminary See footnote in Appendix B

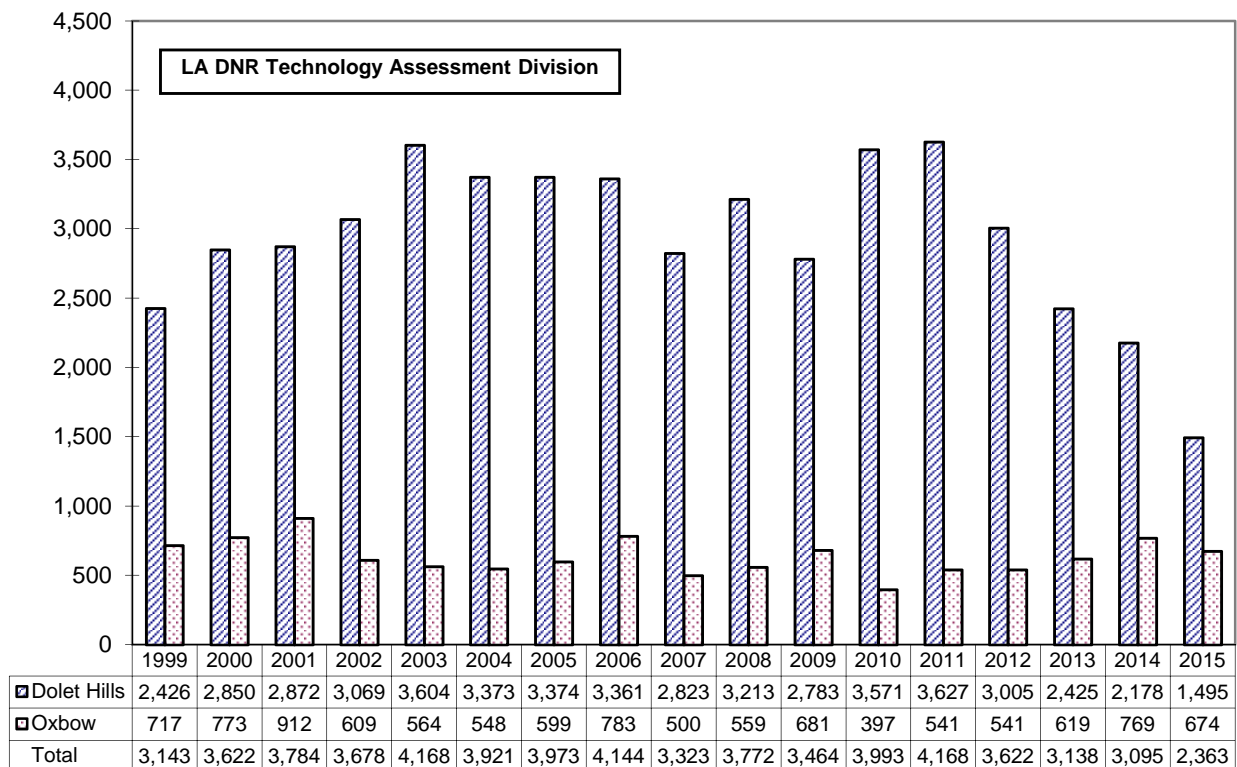




Exxon-Mobil Refinery - Baton Rouge

Figure 21

**LOUISIANA LIGNITE PRODUCTION BY MINE SOURCE**  
(Thousand Tons Shipped)



**Table 40**

**LOUISIANA ELECTRIC UTILITIES NET ELECTRICITY GENERATION <sup>14</sup>  
BY FUEL TYPE  
(Million KWH)**

<b>YEAR</b>	<b>COAL</b>	<b>OIL</b>	<b>GAS</b>	<b>NUCLEAR</b>	<b>TOTAL</b>
1975	0	3,257	35,967	0	39,224
1976	0	7,773	37,343	0	45,116
1977	0	13,255	35,196	0	48,451
1978	0	14,568	36,935	0	51,503
1979	0	8,259	38,396	0	46,655
1980	0	4,787	40,952	0	45,739
1981	1,529	2,634	39,947	0	44,110
1982	4,998	940	35,594	0	41,532
1983	8,377	356	28,311	0	37,044
1984	9,830	140	29,360	0	39,330
1985	13,968	100	27,736	2,457	44,261
1986	12,642	419	26,202	10,637	52,784
1987	12,176	60	23,823	12,324	51,309
1988	14,372	272	24,286	13,785	56,774
1989	14,227	298	21,900	12,391	52,670
1990	13,890	130	26,041	14,197	58,168
1991	14,786	45	24,245	13,956	57,158
1992	15,613	483	24,554	10,356	55,188
1993	15,794	1,838	23,751	14,398	59,353
1994	15,761	680	26,586	12,779	60,170
1995	14,632	49	30,867	15,686	65,555
1996	14,630	273	23,972	15,765	58,643
1997	16,453	646	26,010	13,511	61,120
1998	16,131	600	28,318	16,428	66,107
1999	16,386	397	30,162	13,112	64,837
2000	14,484 *	625	26,696	15,796	57,601 *
2001	10,917 *	1,722	20,402	17,336	50,378 *
2002	12,259 *	68	25,086	17,305	54,922 *
2003	11,020 *	1,008	15,094	16,126	43,485 *
2004	11,324 *	3,694	15,139	17,080	47,604 *
2005	11,416 *	3,378	13,688	15,676	44,158 *
2006	11,545 *	1,757	10,854	16,735	40,891 *
2007	10,736 *	1,977	13,872	17,078	43,523 *
2008	11,213 *	1,901	14,680	15,371	43,164 *
2009	11,025 *	1,460	14,325	16,782	43,592 *
2010	11,226 *	2,891 r	18,924 r	18,639 r	51,681 *
2011	11,860 *	4,378 r	22,071 r	16,615 r	54,924 *
2012	11,163 *	2,701 r	22,525 r	15,659 r	52,048 *
2013	9,843 *	4,476 r	24,227 r	16,954 r	56,226 * r
2014	8,538 *	4,791 r	27,878 r	17,311 r	58,518 * r
2015	9,125 *	4,021	37,283	15,301	65,730 *

\* Cajun Electric Power Cooperative's purchase by Louisiana Generating LLC changed their classification from electric utility to independent power producer.

e Estimated r Revised p Preliminary See footnote in Appendix B

# APPENDICES

Abbreviations .....A-1

Data Sources .....B-1

Glossary .....C-1

Louisiana Energy Briefs and Topics .....D-1



The Sol of New Orleans II  
The University of New Orleans's solar powered car

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## Appendix A

### Abbreviations

BCF	Billion Cubic Feet
BTU	British Thermal Unit
DNR	Louisiana Department of Natural Resources
DOE	United States Department of Energy
DOI	United States Department of the Interior
EIA	Energy Information Administration, DOE
FOB	Free on Board
GOM	Gulf of Mexico
KWH	Kilowatt-hours
MBBLS	Thousand Barrels
MCF	Thousand Cubic Feet
MMB	Million Barrels
MMS	Minerals Management Service, DOI
MST	Thousand Short Tons
NGC	Natural Gas Clearinghouse
OCS	Outer Continental Shelf
OPEC	Organization of Petroleum Exporting Countries
RAC	Refinery Acquisition Costs
SLS	South Louisiana Sweet Crude Oil
SPR	Strategic Petroleum Reserve
TBTU	Trillion BTU
TCF	Trillion Cubic Feet

### State Abbreviations Used in the Louisiana Energy Facts Annual

AL	Alabama	MS	Mississippi
AK	Alaska	MT	Montana
AR	Arkansas	ND	North Dakota
CA	California	NM	New Mexico
CO	Colorado	OK	Oklahoma
IL	Illinois	PA	Pennsylvania
KS	Kansas	TX	Texas
LA	Louisiana	UT	Utah
MI	Michigan	WY	Wyoming

## Appendix B

### Data Sources\*

1. EMPLOYMENT AND TOTAL WAGES PAID BY EMPLOYERS SUBJECT TO LOUISIANA EMPLOYMENT SECURITY LAW, Baton Rouge, LA: Louisiana Department of Labor, Office of Employment Security, Research and Statistics Unit.
2. MONTHLY ENERGY REVIEW and ANNUAL ENERGY REVIEW, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
3. NATURAL GAS MONTHLY and NATURAL GAS ANNUAL, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
4. BAKER HUGHES ROTARY RIGS COUNT, Houston, TX: Baker Hughes Inc.
5. October 2002 to Present, NATURAL GAS WEEK, Washington, D.C.: Energy Intelligence Group. Prior, SURVEY OF DOMESTIC SPOT MARKET PRICES, Houston, TX: Dynegy Inc. (formerly Natural Gas Clearinghouse).
6. PETROLEUM MARKETING MONTHLY and PETROLEUM MARKETING ANNUAL, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
7. PETROLEUM SUPPLY MONTHLY and PETROLEUM SUPPLY ANNUAL, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
8. SEVERANCE TAX, Baton Rouge, LA: Louisiana Department of Revenue, Severance Tax Section. The severance tax reported production volumes are different from actual production due to reporting time lag and well tax exemptions.
9. U.S. CRUDE OIL, NATURAL GAS and NATURAL GAS LIQUIDS RESERVES, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
10. THE WALL STREET JOURNAL, Gulf Coast Edition, Beaumont, TX: Dow Jones and Company.
11. STATE ENERGY DATA REPORT, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.
12. FEDERAL OFFSHORE STATISTICS, Washington, D.C.: U.S. Department of the Interior, Bureau of Ocean Energy Management.
13. NATURAL RESOURCES REVENUE, Denver, CO: U.S. Department of the Interior, Office of Natural Resources Revenue.
14. ELECTRIC POWER MONTHLY, Washington, D.C.: U.S. Department of Energy, Energy Information Administration.

- Unless otherwise specified, data is from the Louisiana Department of Natural Resources.

## **An Explanation of Changes in Oil and Gas Statistics**

### **Note # 1**

Current production data and all future reports will reflect changes due to modifications in the reporting system by the Department of Natural Resources Office of Conservation, Production Audit Section. Only the oil and gas production data in state jurisdiction is affected.

The new data for oil will not include crude oil, condensate or raw make recovered from natural gas processing plants. In the past, these products were added to the state production as crude oil or condensate.

A separate report on gas plants liquids production is not available at the present.

In addition, the gas data system has been adjusted to reflect reporting production on the date produced. Previously, it had been reported on the date first purchased.

The new reporting system should produce more accurate and timely data.

The Technology Assessment Division is not the source of these data sets, but merely reports data provided to us by the Office of Conservation. However, we understand that users of our time series data need consistency over time. For that reason, our time series has been adjusted backwards to 1980 using these new definitions.

### **Note # 2**

Producing oil and gas well data since 2000 reflect changes due to modifications in the reporting system by the Department of Natural Resources Office of Conservation.

The new data for oil and natural gas producing wells count them as productive if they had any production in the month, previous system counted only the producing wells at the end of the month. The new reporting system should produce more accurate and timely data.

The Technology Assessment Division is not the source of these data sets, but merely reports data provided to us by the Office of Conservation. However, we understand that users of our time series data need consistency over time, but due to lack of accurate information the time series has been adjusted backwards to 2000 using the new system.

Other factors that affected the big increase on wells numbers are the big jump on energy prices around 2000, and the inactive wells

## Outer Continental Shelf Lands Act (OCSLA)

The OCSLA of 1953 (67 Stat. 462), as amended (43 U.S.C. 1331 et seq. (1988)) established Federal jurisdiction over submerged lands on the Outer Continental Shelf (OCS) seaward of State boundaries. Under the OCSLA, the Secretary of the Interior is responsible for the administration of mineral exploration and development of the OCS. The Act empowers the Secretary to grant leases to the highest qualified responsible bidder(s) on the basis of sealed competitive bids and to formulate such regulations as necessary to carry out the provisions of the Act. The Act, as amended, provides guidelines for implementing an OCS oil and gas exploration and development program. The basic goals of the Act include the following:

1. To establish policies and procedures for managing the oil and natural gas resources of the OCS that are intended to result in expedited exploration and development of the OCS in order to achieve national economic and energy policy goals, assure national security, reduce dependence on foreign sources, and maintain a favorable balance of payments in world trade.
2. To preserve, protect, and develop oil and natural gas resources of the OCS in a manner that is consistent with the need
  - (a) to make such resources available to meet the nation's energy needs as rapidly as possible;
  - (b) to balance orderly resource development with protection of the human, marine, and coastal environments;
  - (c) to ensure the public a fair and equitable return on the resources of the OCS;
  - (d) to preserve and maintain free enterprise competition.
3. To encourage development of new and improved technology for energy resource production, this will eliminate or minimize risk of damage to the human, marine, and coastal environments.

Royalty revenues from Federal offshore leases on the OCS are distributed to the Land and Water Conservation Fund, the Historic Preservation Fund, and the General Fund of the U.S. Treasury. Transfers are made in each fiscal year from OCS royalties, rentals and bonuses in order to maintain the Land and Water Conservation Fund's annual authorization of \$900 million. Annually, \$150 million is put into the Historic Preservation Fund. The balance of offshore revenue receipts is directed to the General Fund of the U.S. Treasury.

Section 8(g) of the OCSLA Amendments of 1978 provided that the states were to receive a "fair and equitable" division of revenues generated from the leasing of lands within 3 miles of the seaward boundary of a coastal state that contains one or more oil and gas pools or fields underlying both the OCS and lands subject to the jurisdiction of the state. The states and the federal government, however, were unable to reach agreement concerning the meaning of the term "fair and equitable." Revenues



generated in the 3-mile boundary zone were subsequently placed into an escrow fund in August 1979.

Congress resolved the dispute over the meaning of "fair and equitable" in the Outer Continental Shelf Lands Act Amendments of 1985, Public Law 99-272. The amendments required that the affected coastal state will receive 27 percent of the revenues generated from the leasing and development of oil and natural gas resources located in the Federal 8(g) zone. The law provided for the following distribution of revenues to Louisiana under section 8(g):

Before 1986: Louisiana did not receive any shared revenue from OCS production prior to 1986.

1986: Louisiana received a payment of \$68.7 million from royalties, rentals and bonuses collected in 1986 and prior years.

1998-2000: In 1987 Louisiana received an initial settlement payment of \$572 million from the escrow funds. A series of annual settlement payments have been disbursed to the states over a 15-year period along with an annual disbursement of 27 percent of royalty, rental, and bonus revenues received within each affected state's 8(g) zone. The annual settlement payments are: From 1987 through 1991, Louisiana received an annual settlement payment of \$2.52 million per year. From 1992 through 1996, the state received an annual settlement payment of \$5.88 million per year. Beginning in 1997 until the last payment in 2001, Louisiana will receive an annual settlement payment of approximately \$8.40 million per year.

2002 and After: No further settlement payments; states receive only a recurring annual disbursement of 27 percent of royalty, rental, and bonus revenues received within each affected state's 8(g) zone. Louisiana will receive an annual disbursement of 27 percent of royalty, rental, and bonus revenues received within Louisiana's affected 8(g) zone.

## **Gulf of Mexico Energy Security Act (GOMESA)**

On December 20, 2006, the President signed into law the GOMESA of 2006 (Pub. Law 109-432). The Act significantly enhances OCS oil and gas leasing activities and revenue sharing in the Gulf of Mexico (GOM). The Act:

- A. Stipulated that 8.3 million acres be offered for oil and gas leases. This acreage is included in both the Central Gulf Planning Area and the Eastern Gulf Planning Area. The 8.3 million acres consist of approximately 2 million acres in the Central Gulf, it was the first that was offered for lease after enactment of the law and was included in Lease Sale 205 in October 2007; additional .5 million acres in the Eastern Gulf received additional environmental review and was offered in

Lease Sale 224 in March 2008; and the remaining 5.8 million acres in the Central Gulf was offered for leasing at Lease Sale 208 in March 2009.

- B. Updated moratoria (bans) areas in the Gulf. Those tracts in the Eastern Gulf of Mexico that are within 125 miles of Florida, all tracts east of the Military Mission Line, and tracts in the Central Gulf of Mexico within 100 miles of Florida that are included in the moratorium area which extends until 2022.
- C. Created revenue sharing provisions for four Gulf oil and gas producing States – Alabama, Louisiana, Mississippi and Texas, and their coastal political subdivisions. There are two phases in the GOMESA revenue sharing.
  - a. Phase 1: Beginning in Fiscal Year 2007, 37.5 percent of all qualified OCS revenues, including bonus bids, rentals and production royalty, will be shared among the four States and their coastal political subdivisions from those new leases issued in the 181 Area in the Eastern planning area (also known as the 224 Sale Area) and the 181 South Area. Additionally, 12.5 percent of revenues are allocated to the Land and Water Conservation Fund (LWCF). The final regulations for Phase I revenue sharing were issued on December 23, 2008 and specify that the Bureau intends to disburse funds on or before March 31st of the fiscal year following the fiscal year to which the qualified OCS revenues were attributed..
  - b. Phase 2: The second phase of GOMESA revenue sharing begins in Fiscal Year 2017. It expands the definition of qualified OCS revenues to include receipts from GOM leases issued either after December 20, 2006, in the 181 Call Area, or, in 2002–2007 GOM Planning Areas subject to withdrawal or moratoria restrictions. A revenue sharing cap of \$500 million per year for the four Gulf producing States, their CPS's and the LWCF applies from fiscal years 2016 through 2055. The \$500 million cap does not apply to qualified revenues generated in those areas associated with Phase I of the GOMESA program. The Bureau will address the second phase of GOMESA revenue sharing in a subsequent rulemaking.
- D. Allowed for the exchange of existing leases in the moratorium areas for bonus or royalty credit to be used in the Gulf of Mexico. A credit will be provided to lessees who relinquish certain eligible leases in the Gulf of Mexico. Leases are considered eligible if they lie within 125 miles of the Florida Coast in the Eastern Planning Area or within 100 miles of the Florida Coast in the Central Planning Area. The lessees will be allowed to use the credits in lieu of monetary payment for either a lease bonus bid or royalty due on oil and gas production from most other leases in the Gulf of Mexico or transfer the credits to other Gulf of Mexico lessees for their use.

## Appendix C

### Glossary

**Bonus.** A cash payment by the lessee for the execution of a lease. A lease is a contract that gives a lessee the right: (a) To search for minerals, (b) to develop the surface for extraction, and (c) to produce minerals within the area covered by the contract.

**Casinghead Gas.** All natural gas released from oil during the production of oil from underground reservoirs.

**City-Gate.** A point or measuring station at which a gas distribution company receives gas from a pipeline company or transmission system.

**Commercial Consumption.** Gas used by non-manufacturing organizations such as hotels, restaurants, retail stores, laundries, and other service enterprises. This also includes gas used by local, state, and federal agencies engaged in non-manufacturing activities.

**Condensate.** (See Lease Condensate)

**Crude Oil.** A mixture of hydrocarbons that existed in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.

#### CRUDE OIL PRICES

**Domestic Wellhead.** The average price at which all domestic crude oil is first purchased.

**Imports FOB.** The price actually charged at the producing country's port of loading. It is the responsibility of the buyer to arrange for transportation and insurance.

**Imports Landed.** The dollar per barrel price of crude oil at the port of discharge. It includes crude oil landed in the U.S. and U.S. company-owned refineries in the Caribbean, but excludes crude oil from countries that export only small amounts to the United States. The landed price does not include charges incurred at the port of discharge.

**Imports OPEC FOB.** The average price actually charged by OPEC at their country's port of loading. This price does not include transportation or insurance.

**OCS Gulf.** The average price at which all offshore, Outer Continental Shelf, Central Gulf region crude oil is first purchased as reported by the U.S. Department of Energy, Energy Information Administration.

**Refinery Acquisition Costs (RAC).** The average price paid by refiners in the U.S. for crude oil booked into their refineries in accordance with accounting procedures generally accepted and consistently and historically applied by the refiners.

a) **Domestic.** The average price of crude oil produced in the United States or from the Outer Continental Shelf of the U.S.

b) **Imports.** The average price of any crude oil not reported as domestic.

**Refinery Posted.** The average price from a survey of selected refiners' postings for Light Louisiana Sweet (LLS) crude, which is effective at the middle and at the end of the month.

**Severance Tax.** The average wellhead price calculated from oil severance taxes paid to the Louisiana Department of Revenue and Taxation.

**Spot Market.** The spot market crude oil price is the average of daily Light Louisiana Sweet (LLS) crude price futures traded in the month and usually includes transportation from the producing field to the St. James, Louisiana terminal.

**State.** The average price at which all Louisiana crude oil, excluding Louisiana OCS, is first purchased as reported in a survey by the U.S. Department of Energy, Energy Information Administration.

**State Royalty.** The average wellhead price from its royalty share of oil produced in state lands or water bottoms. The price is calculated by the ratio of received oil royalty gross revenue divided by royalty volume share reported to the Louisiana Department of Natural Resources.

**Developmental Well.** Wells drilled within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

**Dry Gas.** (See Natural Gas, "Dry")

**Dry Hole.** An exploratory or developmental well found to be incapable of producing either oil or gas in sufficient quantities to justify completion as an oil or gas well.

**Electric Utility Consumption.** Gas used as fuel in electric utility plants.

**Exploratory Well.** A well drilled to find and produce oil or gas in an unproved area, to find a new reservoir in an old field, or to extend the limits of a known oil or gas reservoir.

**Exports.** Crude oil or natural gas delivered out of the Continental United States and Alaska to foreign countries.

**Extraction Loss.** The reduction in volume of natural gas resulting from the removal of natural gas liquid constituents at natural gas processing plants.

**Federal Offshore or Federal OCS.** (See Louisiana OCS)

**Federal Onshore.** They are lands in the United States for which ownership is claimed by the U.S. federal government, pursuant to Article Four, section 3, clause 2 of the United States Constitution.

**FOB Price** (Free on board). The price actually charged at the producing country's port of loading. The reported price includes deductions for any rebates and discounts or additions of premiums where applicable and should be the actual price paid with no adjustment for credit terms.

**Gate.** (See City-Gate)

**Gross Revenue.** Amount of money received from a purchaser, including charges for field gathering, transportation from wellhead to purchaser receiving terminal, and state production severance tax.

**Gross Withdrawals.** (See Natural Gas, Gross Withdrawals)

**Imports.** Crude oil or natural gas received in the Continental United States, Alaska, and Hawaii from foreign countries.

**Industrial Consumption.** Natural gas used by manufacturing and mining establishments for heat, power, and chemical feedstock.

**Lease Condensate.** A mixture consisting primarily of pentane and heavier hydrocarbons that is recovered as a liquid from natural gas in lease or field separation facilities, exclusive of products recovered at natural gas processing plants or facilities.

**Lease Separator.** A facility installed at the surface for the purpose of: (a) Separating gases from produced crude oil and water at the temperature and pressure conditions of the separator, and/or (b) separating gases from that portion of the produced natural gas stream which liquefies at the temperature and pressure conditions of the separator.

**Louisiana OCS.** Submerged lands under federal regulatory jurisdiction that comprise the Continental Margin or Outer Continental Shelf adjacent to Louisiana and seaward of the Louisiana Offshore region.

**Louisiana Offshore.** A 3-mile strip of submerged lands under state regulatory jurisdiction located between the State coast line and the OCS region.

**Louisiana Onshore.** Region defined by the State boundary and the coast line.

**Major Pipeline Company.** A company whose combined sales for resale, and gas transported interstate or stored for a fee, exceeded 50 million thousand cubic feet in the previous year.

**Marketed Production.** (See Natural Gas, Marketed Production)

**Natural Gas.** A mixture of hydrocarbon compounds and small quantities of various non-hydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs at reservoir conditions. The principal hydrocarbons usually contained in the mixture are methane, ethane, propane, butanes and pentanes. Typical non-hydrocarbon gases that may be present in reservoir natural gas are carbon dioxide, helium, hydrogen sulfide and nitrogen. Under reservoir conditions, natural gas and the liquefiable portions occur either in a single gaseous phase in the reservoir or in solution with crude oil, and are not distinguishable at the time as separated substances.

**Natural Gas, "Dry".** The actual or calculated volume of natural gas which remains after: (a) The liquefiable hydrocarbon portion has been removed from the gas stream, and (b) any volumes of non-hydrocarbon gases have been removed where they occur in sufficient quantity to render the gas unmarketable.

**Natural Gas, Gross Withdrawals.** It is the full well-stream volume, including all natural gas plant liquids and all non-hydrocarbon gases, but excluding lease condensate.

**Natural Gas Liquids.** Lease condensate plus natural gas plant liquids.

**Natural Gas, Marketed Production.** Gross withdrawals less gas used for pressurizing, quantities vented and flared, and non-hydrocarbon gases removed in treating or processing operations. It includes all quantities of gas used in field and processing operations.

**Natural Gas, OCS Gas.** OCS gas volume is as reported. Most are "dry" gas, though some are "wet" gas.

**Natural Gas Plant Liquids.** Those hydrocarbons remaining in a natural gas stream after field separation and later separated and recovered at a natural gas processing plant or cycling plant through the processes of absorption, adsorption, condensation, fractionation or other methods. Generally such liquids consist of propane and heavier hydrocarbons and are commonly referred to as condensate, natural gasoline, or liquefied petroleum gases. Where hydrocarbon components lighter than propane (e.g., ethane) are recovered as liquids, these components are included with natural gas liquids.

## NATURAL GAS PRICES

**Henry Hub Settled NYMEX.** The last trading day price for the month before delivery posted in the New York Mercantile Exchange for natural gas at Henry Hub.

**Spot Market.** The average price of natural gas paid at the regional spot market receipt points or zones as reported by the Energy Intelligence Group's NATURAL GAS WEEK. The data are a volume weighted average and reflect market activity information gathered during the entire month before the publication date, regardless of delivery date. The data are not an arbitrary weighting by production zone, but a true deal-by-deal volume weighting of prices gathered. Data prior to October 2002 were from Dynegey's survey of the domestic natural gas spot market receipt points or zones located in Louisiana. The new and old points or zones are as follows:

### NATURAL GAS PIPELINES AND SALES POINTS FOR PRICES

<u>Dynegey</u>	<u>Natural Gas Week</u>
ANR	ANR
Eunice, LA	Patterson, LA
COLUMBIA GULF	COLUMBIA GULF TRANSMISSION CO.
Average Louisiana onshore laterals	Average of Erath, Rayne, and Texaco Henry Plant in Louisiana
LOUISIANA INTRASTATES	LOUISIANA INTRASTATES
Average of Faustina, Bridgeline, LIG, and Monterrey pipelines	Average of LIG, Bridgeline, LRC, and Acadian pipelines
SOUTHERN NATURAL	SONAT
South Louisiana	Saint Mary Parish, LA
TENNESSEE GAS	TENNESSEE GAS
Vinton, LA	Average Zone 1 of 500 & 800
TEXAS GAS TRANSMISSION	TEXAS GAS TRANSMISSION
Zone 1 (North Louisiana)	Zone 1 (North Louisiana)
GULF SOUTH PIPELINE	TRUNKLINE GAS CO.
	HENRY HUB

**OCS.** The average wellhead price calculated from sales and volumes from Louisiana OCS natural gas as reported by the U.S. Department of Interior, Office of Natural Resources Revenue.

**State Royalty.** The average wellhead price calculated from revenue received and volumes reported to the Louisiana Department of Natural Resources.

**State Wells.** The average price of gas sold at Louisiana wellhead. This price includes: (a) Value of natural gas plant liquids subsequently removed from the gas, (b) gathering and compression charges, and (c) state production, severance, and/or similar charges.

## **MAJOR PIPELINES PURCHASES.**

a) **Domestic Producers.** The average price of natural gas produced in the United States or from the Outer Continental Shelf of the U.S.

b) **Foreign Imports.** The average price of any natural gas not reported as domestic.

**Wellhead.** The wellhead sales price including: (a) Value of natural gas plant liquids subsequently removed from the gas, (b) gathering and compression charges, and (c) state production, severance, and/or similar charges.

**Natural Gas Plant Liquids (NGPL).** NGPL are those hydrocarbons in natural gas that are separated as liquids at natural gas processing, fractionating, and cycling plants. Products obtained include ethane, liquefied petroleum gases (propane, normal butane, and isobutene), and natural gasoline. Component products may be fractionated or mixed. Lease condensate and plant condensate are excluded. Cycling plants are classified as gas processing plants or facilities designed to recover natural gas liquids from a stream of natural gas that may or may not have passed through lease separators and/or field separation facilities. These facilities control the quality of the natural gas to be marketed. Note: Some EIA publications categorize NGPL production as field production, in accordance with definitions used prior to January 2014.

**Natural Gas, Wet After Lease Separation.** The volume of natural gas, if any, remaining after: (a) Removal of lease condensate in lease and/or field separation facilities, and (b) exclusion of non-hydrocarbon gases where they occur in sufficient quantities to render the gas unmarketable. Also excludes gas returned to formation in pressure maintenance and secondary recovery projects and gas returned to earth from cycling and/or gasoline plants. Natural gas liquids may be recovered from volumes of natural gas, wet after lease separation, at natural gas processing plants.

**Organization of Petroleum Exporting Countries (OPEC).** Countries that have organized for the purpose of negotiating with oil companies on matters of oil production, prices, and future concession rights. Current members are Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

**Outer Continental Shelf (OCS).** All submerged lands that comprise the Continental Margin adjacent to the U.S. and seaward of the state offshore lands. Production in the OCS is under federal regulatory jurisdiction and ownership.

**Processing Plant.** A facility designed to recover natural gas liquids from a stream of natural gas which may or may not have passed through lease separators and/or field separation facilities. Another function of natural gas processing plants is to control the quality of the processed natural gas stream.



**Proved Reserves of Crude Oil.** As of December 31 of the report year, the estimated quantities of all liquids defined as crude oil which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions. Volumes of crude oil in underground storage are not considered proved reserves.

**Proved Reserves of Lease Condensate.** The volumes of lease condensate as of December 31 of the report year expected to be recovered in future years in conjunction with the production of proved reserves of natural gas as of December 31 of the report year.

**Proved Reserves of Natural Gas.** The estimated quantities of natural gas as of December 31 of the report year which analysis of geologic and engineering data demonstrates with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions. Volumes of natural gas in underground storage are not considered proved reserves.

**Proved Reserves of Natural Gas Liquids.** The volumes of natural gas liquids (including lease condensate) as of December 31 of the report year, which analysis of geologic and engineering data demonstrates with reasonable certainty to be separable in the future from proved natural gas reserves under existing economic and operating conditions.

**Rental.** Money paid by the lessee to maintain the lease after the first year if it is not producing. A lease is considered expired when rental is not paid on time on an unproductive lease.

**Reservoir.** A porous and permeable underground formation containing an individual and separate natural accumulation of producible hydrocarbons (oil and/or gas) which is confined by impermeable rock or water barriers and is characterized by a single natural pressure system. Reservoirs are considered proved if economic producibility is supported by actual production or conclusive formation tests (drill stem or wire line), or if economic producibility is supported by core analysis and/or electric or other log interpretations. The area of a gas or oil reservoir considered proved includes: (a) That portion delineated by drilling and defined by gas-oil and/or gas-water contacts, if any; and (b) the immediately adjoining portions not yet drilled, but which can be reasonably judged as economically productive on the basis of available geological and engineering data.

**Residential Consumption.** Gas used in private dwellings, including apartments, for heating, cooking, water heating, and other household uses.

**Royalty Interest.** Those interests which entitle their owner(s) to a share of the mineral production from a property or to a share of the proceeds from there. These interests do

not contain the rights and obligations of operating the property and normally do not bear any of the costs of exploration, development, or operation of the property.

**Royalty Override (Or Overriding Royalty).** An overriding royalty interest is a percentage of oil and gas revenue from a producing well free of all drilling and producing costs. It is carved out of the lessee's or working interest owner and paid by the lessee or working interest owner. It is limited in duration to the terms of an existing lease, not subject to any of the expenses of development, operation or maintenance, and not connected to an ownership of minerals under the ground, and it is royalty in addition to the usual landowner's royalty reserved to the lessor.

**Severance Tax.** It is levied on production of natural resources taken from land or water bottoms within the territorial boundaries of the state. The state collects no severance from production in federal waters in the Gulf which start three miles from the Louisiana coastline. Natural resources are all forms of timber, including pulp woods, and turpentine and other forest products; minerals such as oil, gas, natural gasoline, distillate, condensate, casinghead gasoline, sulphur, salt, coal, lignite, and ores; also marble, stone, gravel, sand, shells, and other natural deposits; and the salt content in brine.

**State Offshore.** (See Louisiana Offshore)

**Wet After Lease Separation.** (See Natural Gas, Wet After Lease Separation)

**Wildcat Well.** (See Developmental Well)

# Appendix D

## Louisiana Energy Topics

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# QUADRENNIAL ENERGY REVIEW: SECTOR-SPECIFIC APPENDICES

by  
Patty Nussbaum

The U.S. Department of Energy (DOE) published four sector-specific appendices with the first Quadrennial Energy Review (QER), which was published in April 2015<sup>1</sup>, and focuses on the nation's infrastructure for transporting, transmitting, and delivering energy. The QER appendices address liquid fuels, natural gas and electricity, and outline the emergency authority of the Federal Government.

## Appendix A - Liquid Fuels

In 2014, the U.S. became the world's largest producer of liquid fuels. The liquid fuel component is varied and complex. The infrastructure includes oil refineries, crude oil pipelines, oil product pipelines, oil rail terminals, oil ports, waterborne transport, storage terminals, petroleum reserves, alternative fuels production facilities, and alternative fuel transportation.

Increases in waterborne transport for energy-related demands have put the focus on the ports. Investment in ports, harbors, and waterways will be essential to meet the demand. Historically, refineries primarily received foreign crude by barge; however, in 2012 and 2013, refineries received more domestic than foreign crude by barge. The Mississippi River provides a route for barges to Gulf Coast refineries, but during the times of the year when sections of the river are shutdown or traffic is limited (e.g., hurricanes, flooding, drought, accidents, oil spills), barge shipments will be severely disrupted.

Over the past 10 years, three hurricanes have impacted the petroleum product supplies. The most severe impact was damage to the Gulf Coast refineries (lost refinery capacity). Responsibility for resiliency of privately held infrastructure lies with state public utility commissions and federal regulators.

## Appendix B - Natural Gas

U.S. natural gas production increased 33 percent between 2005 and 2013. Natural gas produced from shale formations has increased tenfold and accounts for about half of the U.S. natural gas production. The continental United States has a robust natural gas infrastructure. Between 2008 and 2013, approximately 4,000 miles of interstate pipelines were constructed. The natural gas prices at Henry Hub (benchmark for U.S. gas prices) fell 55 percent between 2005 and 2013.

Natural gas demand is projected to increase by 2030. Three factors contribute to that projection:

1. Electric power generation – Plentiful supply and low price of natural gas, plus the recent environmental standards encouraging fuels with lower emissions profiles.
2. Industrial use - The availability of low cost gas in the U.S. has increased consumption and increased investment in projects able to use that gas. Four hundred twenty-four industrial projects have been announced.
3. Exports – By 2030, export terminals are projected to demand between 5.1 and 8.3 billion cubic feet per day. Also projecting that new pipelines and permitting will be required.

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<sup>1</sup> U.S. Department of Energy QER website ( <http://energy.gov/qer> )

## Appendix C - Electricity

The grid is the core of the electricity system. The grid is generation, transmission, distribution, and storage, as well as the information infrastructure that monitors and coordinates. The system exists to serve the load, that is, the demand from customers. In the early days, the electric power industry was local, but today it is an interconnected system that spans the country. However, at the state level, the differences in resource mix and priorities remain.

The grid of the future must adapt to change. Current drivers of that change include:

- The growing use of natural gas to power electricity generation
- Low load growth
- Distributed generation
- Increasing deployment of renewable energy and the retirement of coal and nuclear generation
- Growing interaction at the federal, state, and local level.

There is an emerging interdependence between the natural gas and electric infrastructure. Plentiful supply and historically low gas prices have changed the economics of the electric power markets and gas fired electricity generation increased 73 percent from 2003 to 2013. Information technology infrastructure and electricity system hardware have become more interdependent over the past two decades. The network and software technologies have enhanced situational awareness and enhanced operational efficiencies, but they have also made the electric system more susceptible to cyber threats.

## Appendix D - Federal Emergency Authorities and Policy Directives

The Federal Government has authority and powers regarding the energy sector in the event of an emergency. Following is a sample of the emergency authorities and power directives:

- Federal Power Act (FPA), 16 U.S.C. § 791a et seq.: Provides the Secretary of Energy authority to order temporary interconnections of facilities and to request the generation, delivery, interchange, or transmission of electric energy necessary to meet an emergency.
- Natural Gas Policy Act (NGPA), 15 U.S.C. § 717 et seq.: Authorizes the President to allocate supplies of natural gas to help alleviate an existing or imminent severe natural gas shortage.
- Powerplant and Industrial Fuel Use Act (FUA), 42 U.S.C. § 8301 et seq.: Provides the President authority in times of a severe energy supply interruption to allocate coal to power plants or to order a switch to a fuel other than natural gas or petroleum.
- Federal and state agencies have access to waiver authorities to enable action in response to events that impact fuel diversity, such as:
  - DOT waiver used for hazardous materials specifications that relaxes standards for vehicles used to ship fuel
  - EPA waiver used for vapor recovery that allows fuel terminals to forego the use of vapor recovery equipment
  - State waiver for biofuel blending that allows the lifting of blending fuel quotas
  - State waiver for retail labeling requirements that allows the sale of fuels that don't contain the mixture labeled at the pump.

Today's aging infrastructure is vulnerable as we move liquid fuels and electricity from supply areas to demand areas and the costs and timing are affected by congestion in ports, waterways, and rail systems. The QER appendices provide analyses of the key U.S. fuels/energy carriers.

# THE DEPARTMENT OF ENERGY'S RECOMMENDED EXPANSION OF LNG EXPORTS

by  
Edward O'Brien, III, MBA, M.Ec.

On December 28, 2015, the Department of Energy (DOE) released a macroeconomic study on the impacts of increased Liquefied Natural Gas (LNG) exports. With new LNG export capacity coming online in 2016 (Cheniere), and further expansion to the export capability in the future (Magnolia, Sempra, Cameron, Freeport, Sabine), coupled with the greater natural gas production in the U.S. over the last ten years due to refinements in hydraulic fracturing technology, Louisiana has a direct link to supplying Louisiana produced natural gas to the LNG facilities being built along Louisiana and the Gulf Coast.

The DOE report highlights five main points:

1. Increased domestic production needed for expansion of LNG exports.
2. Natural gas prices are based on regional prices rather than global, and with increased exports, it is expected that domestic natural gas prices will increase, closing the U.S. and global price gap for natural gas and LNG.
3. With higher natural gas production in the U.S., it will have an overall net positive for U.S. GDP (\$7-\$21 billion annually).
4. Industries that are energy intensive will feel some pressure with increased natural gas prices.
5. Overall, increasing the allowed export of LNG from the U.S. is a net positive for the country.

Louisiana natural gas production has the opportunity to exploit the proximity of the LNG facilities. With the mature natural gas fields in Southern Louisiana, coupled with the Haynesville Shale natural gas production, Louisiana has the ability to supply the LNG producers with ample regional natural gas, which keeps transportation costs low. In fact, there is infrastructure in place to exploit these fields and get the natural gas to LNG plants via existing pipelines. Utilizing the existing pipelines will help defray some of the costs and also allow new pipelines to overlap in the existing pipelines footprint.

Looking at the LNG/natural gas economics, one would expect the regional price of natural gas to rise, which would help stimulate additional production. It is my estimate that initial production (planned production from the Cheniere plant) will increase prices between three and five percent, based on Henry Hub pricing, with expansion to 20 BCF/day estimated to have a 4-11% increase.<sup>1</sup> Exporting LNG would also have an economic affect globally, decreasing regional prices for natural gas around the globe, eventually reaching equilibrium, much like the oil market. Currently with natural gas, there is a variance of natural gas prices globally, with the United States enjoying some of the lowest global prices and Asian countries with the highest. Local producers will have the opportunity to take advantage of higher natural gas prices in Asia and capitalize on the need for natural gas to supply the LNG facilities.

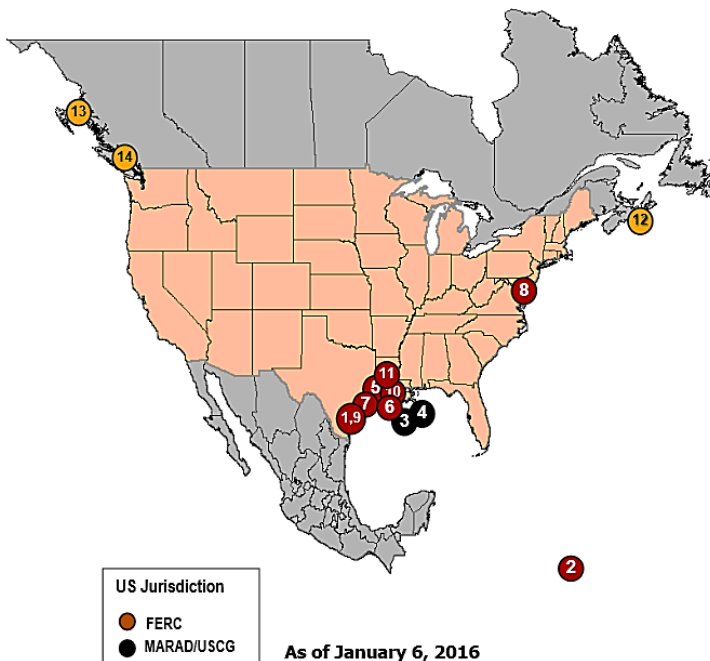
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<sup>1</sup> <http://www.forbes.com/sites/judeclemente/2016/01/10/world-benefits-from-u-s-liquefied-natural-gas-exports/#26dccb6a2b71>

While the increase in the natural gas price will stimulate production, it will also provide an economic benefit to Louisiana and the United States. The DOE estimates that the additional production will increase the U.S. gross domestic product from anywhere between \$7 billion and \$21 billion annually, depending on additional production and prices, and the market can handle an extra 8 billion cubic feet (BCF) per day of LNG exports. This increase could have a negligible effect on industries that rely heavily on natural gas usage, particularly the chemical and power generation industries, due to those higher prices for natural gas.

Increasing the amount of LNG exported from the U.S., particularly the Gulf Coast, is a net positive for both the U.S. and Louisiana. Liquefiers can take advantage of the ample resources in Louisiana, transport Louisiana natural gas to the new liquefaction plants in Southwestern Louisiana, and be capable of receiving economic benefits from the expansion of LNG exports, without disruption in the domestic natural gas market. Increasing LNG exports will also be a job creator for Louisiana, with construction, operation, and production jobs needed to fulfill the global demand for LNG.

## North American LNG Import/Export Terminals Approved



### Import Terminals

#### U.S.

##### APPROVED - UNDER CONSTRUCTION - FERC

1. Corpus Christi, TX: 0.4 Bcfd (Cheniere – Corpus Christi LNG) (CP12-507)

##### APPROVED – NOT UNDER CONSTRUCTION - FERC

2. Salinas, PR: 0.6 Bcfd (Aguirre Offshore GasPort, LLC) (CP13-193)

##### APPROVED - NOT UNDER CONSTRUCTION - MARAD/Coast Guard

3. Gulf of Mexico: 1.0 Bcfd (Main Pass McMoRan Exp.)
4. Gulf of Mexico: 1.4 Bcfd (TORP Technology-Bienville LNG)

### Export Terminals

#### U.S.

##### APPROVED - UNDER CONSTRUCTION - FERC

5. Sabine, LA: 2.76 Bcfd (Cheniere/Sabine Pass LNG) (CP11-72 & CP14-12)
6. Hackberry, LA: 1.7 Bcfd (Sempra-Cameron LNG) (CP13-25)
7. Freeport, TX: 1.8 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509)
8. Cove Point, MD: 0.82 Bcfd (Dominion-Cove Point LNG) (CP13-113)
9. Corpus Christi, TX: 2.14 Bcfd (Cheniere – Corpus Christi LNG) (CP12-507)
10. Sabine Pass, LA: 1.40 Bcfd (Sabine Pass Liquefaction) (CP13-552) ★

##### APPROVED – NOT UNDER CONSTRUCTION - FERC

11. Lake Charles, LA: 2.2 Bcfd (Southern Union – Lake Charles LNG) (CP14-120)

#### Canada

##### APPROVED – NOT UNDER CONSTRUCTION

12. Port Hawkesbury, NS: 0.5 Bcfd (Bear Head LNG)
13. Kitimat, BC: 3.23 Bcfd (LNG Canada)
14. Squamish, BC: 0.29 Bcfd (Woodfibre LNG Ltd)

SOURCE: <https://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf>



# 2016 STATE OIL AND GAS: PRODUCTION AND PRICE PROJECTIONS

by  
Manuel Lam

Louisiana has produced oil and gas for more than a century. Oil and gas production are intimately linked with the economy of our state. Presently, Louisiana is the ninth largest producer of crude oil and the fourth largest producer of natural gas in the U.S., excluding the federal Outer Continental Shelf (OCS) production. Louisiana is also the third in per capita energy consumption. The petrochemical and petroleum refining industries located in the state are the main reason for Louisiana's high-energy use. They are extremely energy intensive and rely on Louisiana's abundance of natural resources and historically low energy prices. Despite the location of these industries, the bulk of the final consumption of their products is in other states as well as overseas.

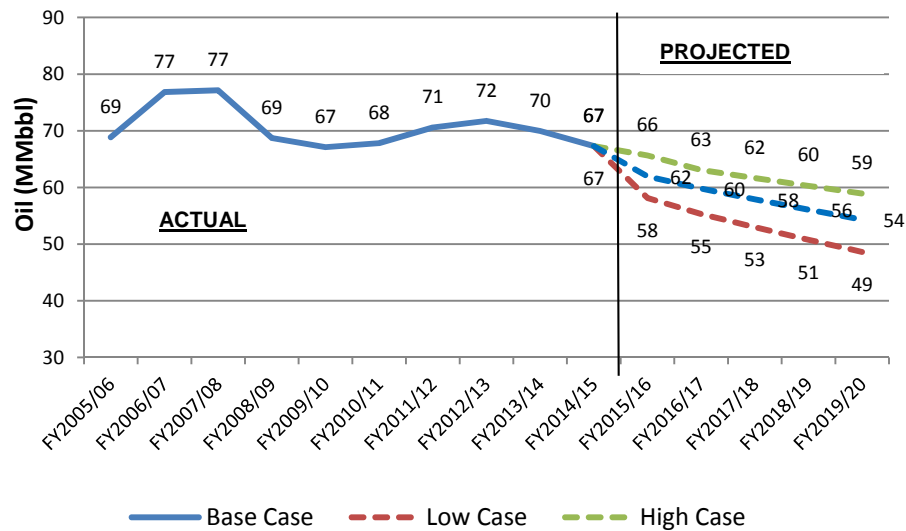
Following are other interesting benchmarks in the Louisiana oil and gas production history. In 1910, the first freestanding, above-water platform was used in Caddo Lake, near Shreveport. In 1938, the first well over water was completed in the Gulf of Mexico near Creole, offshore Cameron Parish. In 1947, the first offshore oil well was completed out of sight from land in Ship Shoal Block 32 (south of Morgan City, Saint Mary Parish). In 1951, the first concrete-coated pipeline was laid in the Gulf of Mexico. In 1954, the state started to produce more natural gas (in terms of barrels of oil equivalents) than crude oil. In 2006, the Haynesville Shale started producing natural gas, making gas a predominate factor in new production. In 2010, Louisiana oil production slowly reversed its declining trend due to production from oil shale formations and enhanced recovery in mature fields. Since 2014, Louisiana oil and gas productions are declining due to falling oil and gas prices, cheaper production costs in other U.S. oil and gas shale fields, gas plays containing higher gas liquids, and being closer to the consumer market.

## Production Projections

### *Crude Oil*

The Louisiana state oil production, excluding federal OCS, showed an average decline of 1.8% per year over the past ten years, but actual year-to-year change varies widely. Hurricanes Katrina and Rita caused a 17.57% decline in oil production in FY2005/06; the recovery from the weather disaster and rising oil prices caused increases in production volumes in FY2006/07 and FY2007/08. Hurricanes Gustav and Ike caused a 10.91% decline in FY2008/09. A plunge in oil prices in FY2009/10 kept the production declining. The delayed recovery from weather disasters and new production from enhanced oil recovery in old oil fields increased FY2010/11 production. Production from enhanced oil recovery fields, initial production from oil shale formations, and high oil prices increased production in FY2011/12. In FY2012/13, the falling oil prices slowed the production increase. In FY2013/14, the continuously falling oil prices and production difficulties in the oil shale formations reversed the increase in oil production trends, and in FY2014/15, the decline continued, due to low prices, lower demand, and high oil inventory in stock. The Department of Natural Resources (DNR) Technology Assessment Division short-term model projects a decline in oil production over the next five years, if crude oil prices stay below \$45 per barrel and no major weather disruptions occur. Figure 1 shows the projections for the next five years. If prices go over \$45 per barrel for an extended period, the projections will be closer to the high case trend.

Figure 1: Louisiana Historical and Projected Crude Oil Productions



### Natural Gas

Similar to oil, gas production varies from year-to-year, reflecting the severity of weather patterns and prices. In FY2006/07, the Haynesville Shale dry gas field appeared and changed the pattern. For example, the high decline in oil production in FY2008/09 was due to Hurricanes Gustav and Ike, while gas production showed a slight increase. If there had been no hurricanes that year, the percentage of increase in production would have been higher. From FY2008/09 through FY2011/12, Louisiana state gas production more than doubled to around 3.0 TCF. In FY2012/13, gas production dropped to 2.7 TCF, caused by a drop in drilling activities. In FY2013/14, production dropped to 2.1 TCF due to low prices and competition from other gas shale plays. In FY2014/15 production declined to 1.9 TCF due to continuous low gas prices and low consumption. Figure 2 shows the DNR Technology Assessment Division short-term model projections for the next five years. The projections assume that the weather will be mild without major disruptions and the average gas prices are above \$2.00 per MCF.

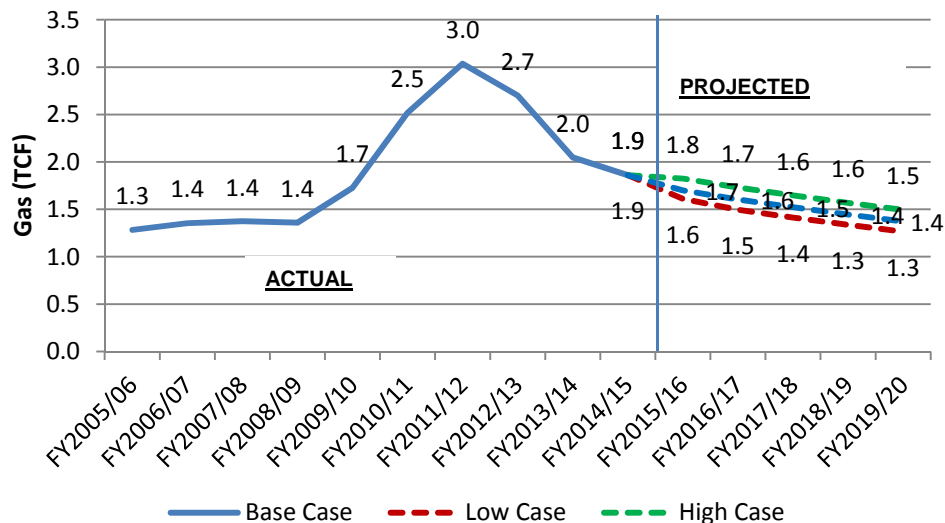
In 2012, the gas price fell below \$3 per MCF causing a slowdown in drilling activities in the Haynesville Shale areas. There were 93 active rigs in Haynesville areas in January 2012, dropping to 16 active rigs by January 2013, an 82.8% decline. The drop in drilling activities, cutback in production due to low prices, competition from wet shale plays, and overstock of gas in storage curtailed the gas production in Louisiana. In January 2014, drilling active gas rigs recovered to 37 rigs, caused by rising gas prices, an expected demand increase, and exports. In January 2015, drilling gas rigs dropped to 25 rigs due to declining prices and improvements in drilling techniques. By January 2016, drilling rigs increased to 35 despite low gas prices, the increase can be attributed to the expectation of starting LNG export from Louisiana's LNG exporting terminals.

Factors that contribute to the year-to-year deviations in oil and gas production are:

- Changes in wildcat drilling and development of marginal fields within the state,
- adding new producing areas,
- unstable crude oil and natural gas prices,

- changes in environmental laws, especially those concerning saltwater discharge and the Clean Air Act Amendments of 1990,
- world supply and demand causing a glut or shortage, depending on its growth rate,
- the number of active drilling rigs in the region,
- application of advanced technology, such as 3-D, 4-D, or carbon dioxide injection,
- state and local tax incentives,
- weather patterns, and
- imports/exports.

Figure 2: Louisiana Historical and Projected Natural Gas Productions



## Price Projections

### *Oil Prices*

Oil prices are determined in the international markets and are difficult to project. Just as the historical data shows great swings in the price of oil, there is also considerable uncertainty about future prices. The future price of oil is linked to the unpredictability of world oil supplies and world economics.

Major factors affecting oil prices are a) political stability of producing countries, b) world environmental issues, c) industrialized countries' conservation practices, d) weather-related demand for petroleum products, e) production restrictions by OPEC countries, f) economic changes in consumer nations, g) stability in the labor force, and h) new producing fields. If crude oil supply and demand for petroleum products are well balanced and refiners have sufficient downstream capacity to process difficult crudes, the price of crude oil will seek a stable market condition.

The oil price started the recent slide in the second half of 2014 as oil inventory built up. The buildup was caused by high production from oil shale plays; an increase from old fields using enhanced techniques; increased production in other producing countries; the slow recovery pace of the U.S. economy; and the recession of the Chinese economy. It appears that oil prices have bottomed out; the

lowest point occurred on January 20, 2016 at \$27.49 per barrel and prices are recovering. The following events will help increase the price of oil. Saudi Arabia production goals seem to change course. The Saudi's are not calling for production cuts yet, but have set an agreement with Russia (Saudi Arabia and Russia are the top two oil producers in the world) and Latin America OPEC producers to freeze production at the January level, as reported by Reuters. U.S. production has been slowly declining, especially in the shale plays as drilling slowed down. Canada, North Sea, and Brazil companies have been cutting their E&P budgets as profits drop due to low oil prices. Moreover, other conditions could affect the market and push the price down. Iran, after years of nuclear –related sanctions, and Iraq, after years of internal wars, have the opportunity to produce the most they have in years, which will allow the oil sector to benefit the overall economies of both countries. Uncertainty in the Asian economy could prolong the high oil inventory as well, because of less demand within countries feeling an economic slowdown. The oil price recovery will be slow as long as world oil inventory is high and demand does not increase.

Table 1: Louisiana Crude Oil Historical and Projected Prices

	Base Case		Low Case	High Case
FY2009/10	\$68.37	-13.00%	N/A	N/A
FY2010/11	\$85.73	25.39%	N/A	N/A
FY2011/12	\$109.30	27.50%	N/A	N/A
FY2012/13	\$105.05	-3.89%	N/A	N/A
FY2013/14	\$103.40	-1.57%	N/A	N/A
FY2014/15	\$76.22	-26.28%	N/A	N/A
FY2015/16	\$42.10	-44.77%	\$32.06	\$51.79
FY2016/17	\$39.89	-5.25%	\$31.86	\$58.90
FY2017/18	\$43.57	9.22%	\$35.55	\$62.59
FY2018/19	\$45.98	5.52%	\$38.26	\$65.30
FY2019/20	\$47.68	3.71%	\$40.17	\$67.22

Louisiana crude oil average price was \$106.36 per barrel in the spot market in February 2014, the price dropped to \$55.28 per barrel in February 2015, and it dropped to \$32.48 in February 2016. Table 1 shows the historical Louisiana Crude oil prices and the projection for the next five years.

### *GAS PRICES*

Louisiana natural gas average spot price was \$5.96 per MCF in February 2014, the price dropped to \$2.85 per MCF in February 2015, and it dropped to \$2.18 per MCF in February 2016. Table 2 shows the historical Louisiana Crude oil prices and the projection over the next five years. As shown above, oil and gas prices trends are similar.

The physical relationship between the crude oil price and the natural gas price is the so-called “6-to-1” rule, where the price of one barrel of crude oil should be approximately six times the price of natural gas per million BTUs (MMBTUs). This is because the BTU content of a barrel of oil is around six times the quantity of a million BTUs of natural gas. Natural gas prices recently started to diverge from this relationship, with the current ratio being 15:1. Oil prices are higher because Asian countries are consuming more oil than gas and the political unrest in African and Islamic countries are disrupting oil supplies more heavily than gas supplies. Gas has less mobility than oil in international trade because it

requires special vessels and infrastructure (pipelines, compression stations, LNG terminals, etc.). Gas prices are cyclical, regional, controlled by supply and demand, and lack infrastructure for international trade. They are driven by factors such as weather, demand for gas not satisfied by pipeline systems, availability of spot supplies, and competing fuel prices. Others factors that could affect prices are storage levels, curtailments, market changes, new consumption, and NAFTA (North American Free Trade Agreement). Gas prices are also affected by psychological factors, often the expectation of soft prices is enough to bring them about, and a good dose of long, cold, winter weather will usually erase much of the psychological element of low gas prices and price increases.

The lack of mobility of natural gas between producing areas and consuming areas, caused by insufficient infrastructure, is best shown by the Federal Energy Regulatory Commission's January 2016 world LNG estimated landed prices. Gas prices are \$5.75 per MMBTU in Japan and Korea, \$5.60 per MMBTU in China, \$5.70 per MMBTU in India, \$4.38 per MMBTU in Belgium, \$5.23 per MMBTU in Spain, \$5.69 per MMBTU in Brazil, and in the U.S., it is \$2.13 per MMBTU in Lake Charles and \$4.44 per MMBTU in Cove Point. The low price in the U.S. is caused by the oversupply of gas for low demand due to warm weather and high production from shale plays. The price difference between Lake Charles and Cove Point is attributed to the level of access to pipeline networks.

Table 2: Louisiana Natural Gas Historical and Projected Prices

	Base Case		Low Case	High Case
FY2009/10	\$4.35	-32.38%	N/A	N/A
FY2010/11	\$4.31	-0.81%	N/A	N/A
FY2011/12	\$3.28	-23.96%	N/A	N/A
FY2012/13	\$3.48	6.07%	N/A	N/A
FY2013/14	\$4.24	21.77%	N/A	N/A
FY2014/15	\$3.33	-21.48%	N/A	N/A
FY2015/16	\$2.18	-34.33%	\$2.11	\$3.56
FY2016/17	\$2.35	7.57%	\$2.08	\$4.38
FY2017/18	\$2.55	8.50%	\$2.18	\$4.54
FY2018/19	\$2.60	1.83%	\$2.18	\$4.62
FY2019/20	\$2.66	2.53%	\$2.29	\$4.72

Louisiana annual average gas price is expected to be above \$2 per MMBTU in the near future, and to increase to above \$3 per MMBTU when demand increases from newly built plants in the state and when LNG export terminals became operational.

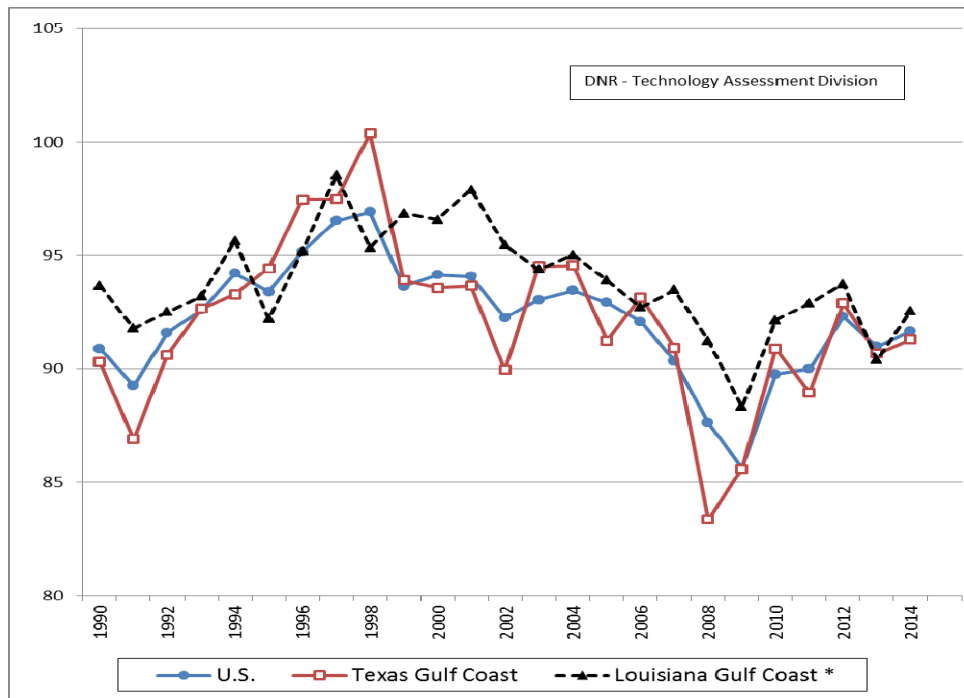
# HIGHLIGHTS OF THE 20<sup>TH</sup> EDITION OF THE LOUISIANA CRUDE OIL REFINERY SURVEY REPORT

by  
Manuel Lam

The 20<sup>th</sup> edition of the Department of Natural Resources (DNR) *Louisiana Crude Oil Refinery Survey Report* covers calendar year 2014. The 16 Louisiana refineries have a combined operating capacity of 3,286 thousand barrels per calendar day (MBCD), and the operating rate was 86.2%. The total U.S. refinery-operating rate was 90.4% for the same period, with a combined operating capacity of 17,792 MBCD.

Louisiana refinery capacity shrank slightly from our last survey. The Louisiana refineries combined throughput for the 12-month period was 1,033,555 thousand barrels. Marathon Petroleum Co LLC at Garyville has the most refining capacity in Louisiana and it is the third largest refinery in the U.S. Table 1 shows the LA operating refinery capacity and throughput information and Table 2 lists the top six refinery products based on percent of total refinery production from the DNR's last survey. Motor gasoline remains the largest share of refinery production in Louisiana at about 40% of the total. The figure below shows the Louisiana gulf coast, Texas gulf coast, and total U.S. refinery operating rates since 1990.

Louisiana Gulf Coast, Texas Gulf Coast and U.S. Refinery Operating Rates (%)



Source: EIA, *Petroleum Supply Annual*, Vol. 1

Changes since our last survey: Shell Chemical Co. at St. Rose was moved from the operating list to the non-operating list.

The full report is available online in PDF format on the  
 Department of Natural Resources Technology Assessment Division website:  
[http://dnr.louisiana.gov/assets/TAD/reports/refinery\\_survey/refinsurvey\\_2014.pdf](http://dnr.louisiana.gov/assets/TAD/reports/refinery_survey/refinsurvey_2014.pdf)

Table 1. Louisiana Operating Refinery Capacity and Throughput

Refinery	Operating capacity as of 12/31/2014 (bcd)	Operating Capacity Change <sup>1</sup> (%)	Throughput 1/1/2014 - 12/31/2014 (Barrels)	Throughput Change <sup>2</sup> (%)
Alon Refining, Krotz Springs	80,000	0.00	23,683,293	8.54
Calcasieu Refining, Lake Charles	80,000	0.00	26,501,031	1.46
Calumet Lubricants, Cotton Valley	13,020	0.00	2,401,636	1.91
Calumet Lubricants, Princeton	8,300	0.00	2,422,497	18.17
Calumet Shreveport, Shreveport	65,000	0.00	12,286,505	-7.14
Chalmette Refining, Chalmette	192,500	-2.28	54,218,408	7.90
Citgo Petroleum Corp, Lake Charles	427,800	0.00	141,154,876	1.68
ExxonMobil Refining & Supply Co, Baton Rouge	502,500	0.00	179,469,037	6.14
Marathon Petroleum Co LLC, Garyville	522,000	0.00	189,709,075	5.64
Motiva Enterprises LLC, Convent	235,000	0.00	77,912,184	9.82
Motiva Enterprises LLC, Norco	238,000	1.93	65,936,322	-10.77
Phillips 66, Belle Chasse	247,000	-1.98	74,317,490	-7.61
Phillips 66, West Lake	260,000	8.60	88,793,544	9.40
Placid Refining Co, Port Allen	75,000	27.12	19,720,301	-7.61
Valero Refining Co, Meraux	125,000	-10.71	36,857,197	0.32
Valero Refining Co, Norco	215,000	-14.00	38,172,130	4.13
Totals	3,286,120		1,033,555,526	

1. Change from end date (1/31/2013) of previous DNR survey to end date (12/31/2014) of 2014 DNR survey.

2. Change from previous DNR survey throughput (2013) to DNR survey throughput (2014).

Table 2. Top Products from LA Refineries by % of Product Slate

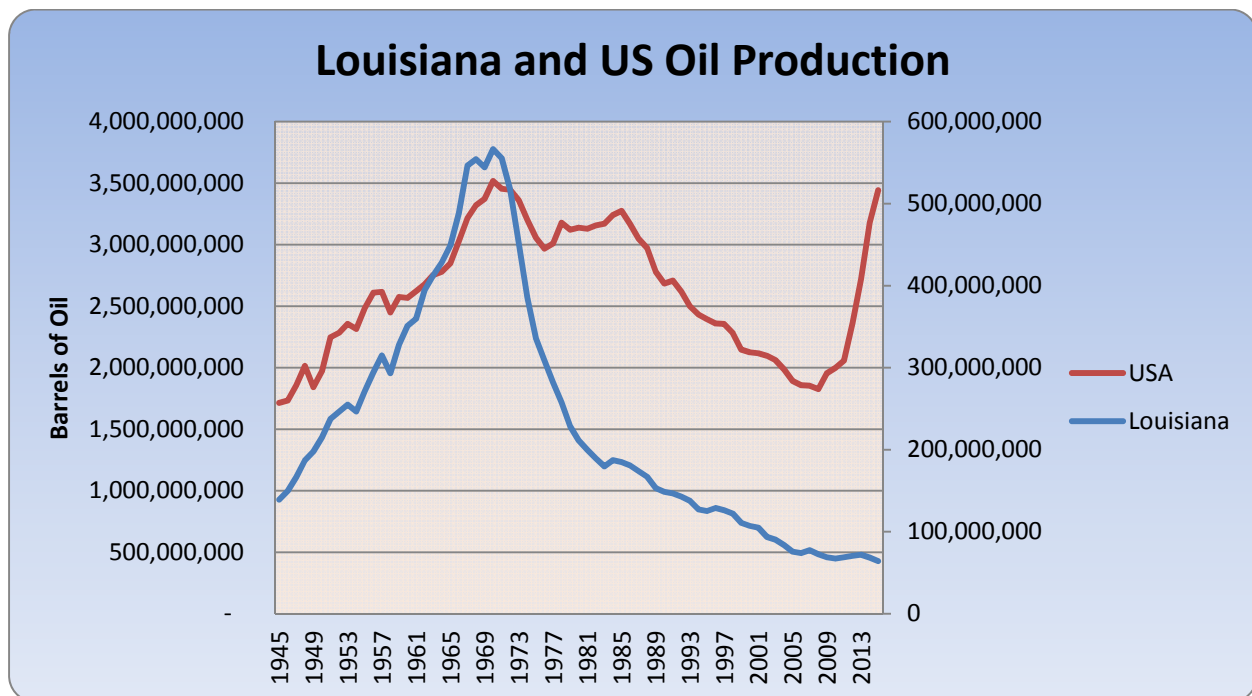
Product	Total Product Slate (%)
Motor gasoline	39.3
Diesel fuel	23.9
Jet fuel	7.4
Residual/Coke	3.6
Gas mixture	2.5
Lubricants	0.7

# LOUISIANA'S DECLINING OIL PRODUCTION

by  
Edward O'Brien

Since the 1970s, Louisiana has been going through a decline in oil production. Peaking at 566 million barrels produced, 1970 was the apex of oil production within Louisiana and has been in decline since then, 2015 produced 64 million barrels and 2016 is set to decline even further. While the increase in oil prices from 2009 to 2014 helped increase production, production has seen a decline with lower oil prices. In fact, Louisiana oil production, as a percentage of US oil production, peaked in 1967 at 16.99% of all United States production at 546 million barrels produced that year, compared to the 3.2 billion barrels produced in the United States, whereas now, Louisiana produces roughly 65 million barrels a year, and the United States production is 3.4 billion barrels.

Figure 1. Louisiana and US Oil Production



SOURCES: Louisiana Department of Natural Resources/Office of Conservation  
Energy Information Administration: <http://tonto.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS2&f=A>

## Sharp Decline from the Top

Since the days of the first US oil crisis in the 1970s, Louisiana's production has been waning. In fact, in 1970, Louisiana produced the second most oil in the United States, only trailing Texas, which produced 32.7% of United States oil.<sup>1</sup> Since peak production for Louisiana, the annual rate of decline for oil production has been 5%, with the greatest decline happening from 1970 to 1980, where oil production fell by 355.2 million barrels, or 62.7% of the peak, and the last 10 years at 2%.<sup>2</sup> (Note: figures include

<sup>1</sup> Basic Petroleum Data Book, Volume V, Number 3, September 1985, Section IV, Table 4a

<sup>2</sup> Louisiana Department of Natural Resources/Technology Assessment Division, Crude and Condensate Projections

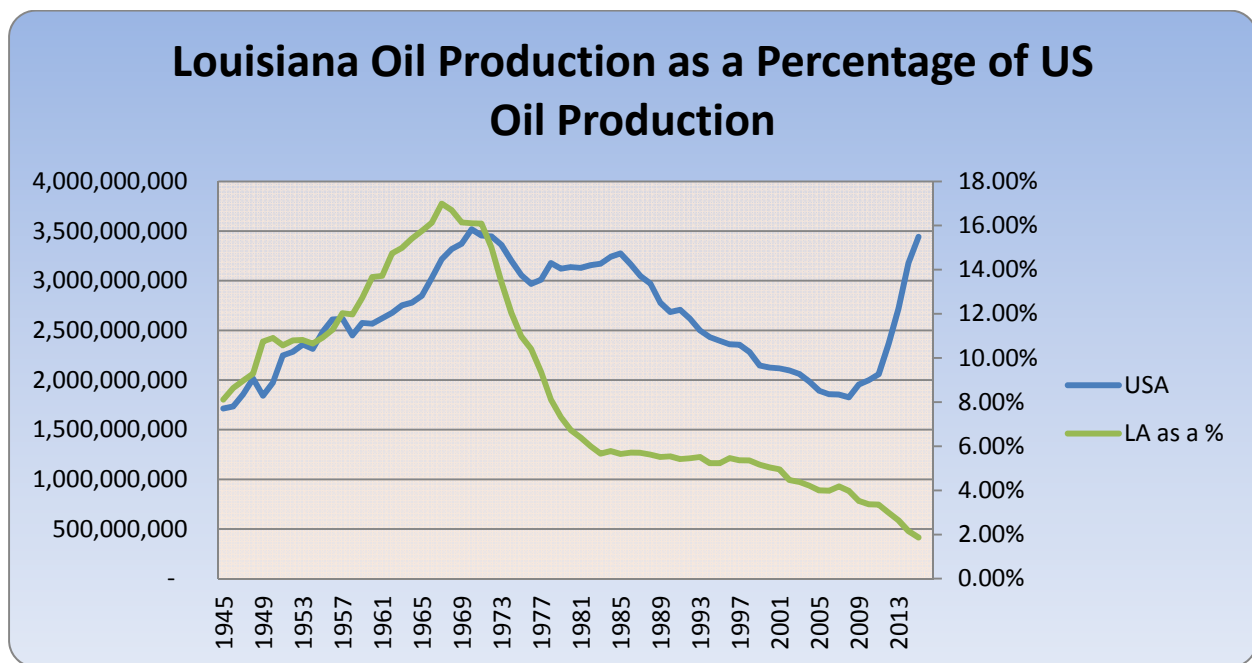


Louisiana onshore and inland water totals only, and OCS is not included in the overall total.) While Louisiana has been in decline recently, other areas, such as the Eagle Ford formation in West Texas and the Bakken in North Dakota, have seen sharp increases in production, reinvigorating oil production in the United States. Hydraulic fracturing (fracking) technology, where a pressure injection of fluid into the well cracks the shale holding the oil or natural gas, has existed since 1947, but it was not until the 1990s, coupled with horizontal drilling, when the combination was proven to be commercially viable.

The utilization of horizontal fracking in the two formations helped increase production in the United States from 5 million barrels a day in 2008 to nearly 10 million barrels a day in 2015. With the additional production, the gap between Louisiana production and United States production has decoupled. Louisiana produced 17% of United States oil in 1967; by 1980, it produced only 6.7%, in 2000, 5.0%, and 1.7% today.<sup>3</sup>

Louisiana still has rich resources, even with the decline. The Tuscaloosa Marine Shale (TMS) has an estimated 7 billion barrels of oil locked under South Louisiana. With technology advancing, the cost of production in the TMS is decreasing, bringing the break even price of the TMS more on par with oil prices today. In addition, many companies are going back into mature fields, ones which were shuttered decades ago, using new technology to extract oil once thought unextractable, and making them economically viable again.

Figure 2. Louisiana Oil Production as a Percentage of US Oil Production



SOURCES: Louisiana Department of Natural Resources/Technology Assessment Division  
Energy Information Administration – <http://tonto.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPUS2&f=A>

<sup>3</sup> Ibid

# THE CLEAN POWER PLAN (AUGUST 3, 2015)

by  
Patty Nussbaum

In August 2015, the United States Environmental Protection Agency (EPA) announced the Clean Power Plan<sup>1</sup>. The plan introduces national standards to require carbon pollution reductions from power plants. Fossil fuel-fired power plants in the United States account for roughly one-third of the total U.S. greenhouse gas emissions. The Clean Power Plan is designed to be fully implemented in 2030. According to EPA, states have the flexibility to select the measures to use to achieve the statewide goal. The plan also gives states an option to work with other states on multi-state approaches. Following is a summary of how the plan works (excerpted from the EPA fact sheet referenced below).

## How the Clean Power Plan Works<sup>2</sup>

- The final Clean Power Plan – under section 111(d) of the Clean Air Act follows the approach that EPA sets a goal and states and tribes choose how they will meet it. EPA is establishing interim and final carbon dioxide (CO<sub>2</sub>) emission performance rates for two subcategories of fossil fuel-fired electric generating units (EGUs):
  - Fossil fuel-fired electric steam generating units (generally, coal- and oil-fired power plants)
  - Natural gas-fired combined cycle generating units.
- To maximize the range of choices available to states in implementing the standards and to utilities in meeting them, EPA is establishing interim and final statewide goals in three forms:
  - A rate-based state goal measured in pounds per megawatt hour (lb/MWh);
  - A mass-based state goal measured in total short tons of CO<sub>2</sub>;
  - A mass-based state goal with a new source complement measured in total short tons of CO<sub>2</sub>.
- States then develop and implement plans that ensure that the power plants in their state – either individually, together, or in combination with other measures – achieve the interim CO<sub>2</sub> emissions performance rates over the period of 2022 to 2029 and the final CO<sub>2</sub> emission performance rates, rate-based goals or mass-based goals by 2030.

Compliance must not compromise the reliability of the electricity supply. There is a mechanism for a state to seek a revision to its plan in the case where significant reliability issues arise. A reliability safety valve is in place so a CO<sub>2</sub> constrained plant could provide critical generation in an emergency situation.

The Supreme Court of the United States stayed the Clean Power Plan pending the outcome of ongoing litigation. Some states stopped all work on the Clean Power Plan as a result of the stay. The Louisiana Department of Environmental Quality received public comments at a Clean Power Plan listening session held on March 31, 2016. They want to be ready for any decision that may be handed down – the Supreme Court decision could result in the plan being upheld, vacated, or modified.

<sup>1</sup> United States Environmental Protection Agency (<http://www2.epa.gov/cleanpowerplan>)

<sup>2</sup> United States Environmental Protection Agency (<http://www2.epa.gov/cleanpowerplan/fact-sheet-overview-clean-power-plan>)

## Louisiana's Interim (2022-2029) and Final Goals (2030)

	Rate-Based Goal CO <sub>2</sub> Rate (lbs/Net MWh)	Mass-based Goal (annual average CO <sub>2</sub> emissions in short tons)	Mass Goal (Existing) & New Source Complement
Interim Period 2022-2029	1,293	39,310,314	39,794,622
Interim Step 1 Period 2022-2024	1,398	42,035,202	42,233,941
Interim Step 2 Period 2025-2027	1,265	38,461,163	39,131,613
Interim Step 3 Period 2028-2029	1,175	36,496,707	37,130,156
Final Goal 2030 and Beyond	1,121	35,427,023	35,854,321

SOURCE: Clean Power Plan: State at a Glance - Louisiana<sup>3</sup>

Energy efficiency<sup>4</sup>, at least in theory, should have a significant role in state compliance plans. The Clean Power Plan Toolbox<sup>5</sup> offers resources to help states with energy efficiency strategies to achieve their targets.

1. Under a mass-based approach, energy efficiency automatically “counts” toward compliance and states can use an unlimited amount to help achieve their state goals.
2. Under a rate-based approach, the final Clean Power Plan enables states to get credit for all eligible energy efficiency projects installed after 2012.

<sup>3</sup> Clean Power Plan: State at a Glance - Louisiana (<http://www3.epa.gov/airquality/cpptoolbox/louisiana.pdf>)

<sup>4</sup> Energy Efficiency in the Clean Power Plan (<http://www2.epa.gov/cleanpowerplan/fact-sheet-energy-efficiency-clean-power-plan>)

<sup>5</sup> Clean Power Plan Toolbox (<http://www2.epa.gov/cleanpowerplantoolbox>)

## SELECTED LOUISIANA ENERGY STATISTICS

Among the 50 states, Louisiana’s rankings (in 2015, unless otherwise indicated) were:

**PRIMARY ENERGY PRODUCTION**

(Including GOM Central OCS region)

- 2<sup>nd</sup> in crude oil
- 1<sup>st</sup> in OCS crude oil
- 1<sup>st</sup> in OCS natural gas
- 1<sup>st</sup> in OCS revenue generated for federal government
- 1<sup>st</sup> in mineral revenues from any source to the federal government
- 1<sup>st</sup> in LNG terminal capacity
- 3<sup>rd</sup> in natural gas
- 3<sup>rd</sup> in crude oil proved reserves
- 5<sup>th</sup> in natural gas proved reserves
- 4<sup>th</sup> in total energy from all sources

**REFINING AND PETROCHEMICALS**

- 2<sup>nd</sup> in primary petrochemical production
- 2<sup>nd</sup> in natural gas processing capacity
- 2<sup>nd</sup> in petroleum refining capacity

**PRIMARY ENERGY PRODUCTION**

(Excluding GOM Central OCS region)

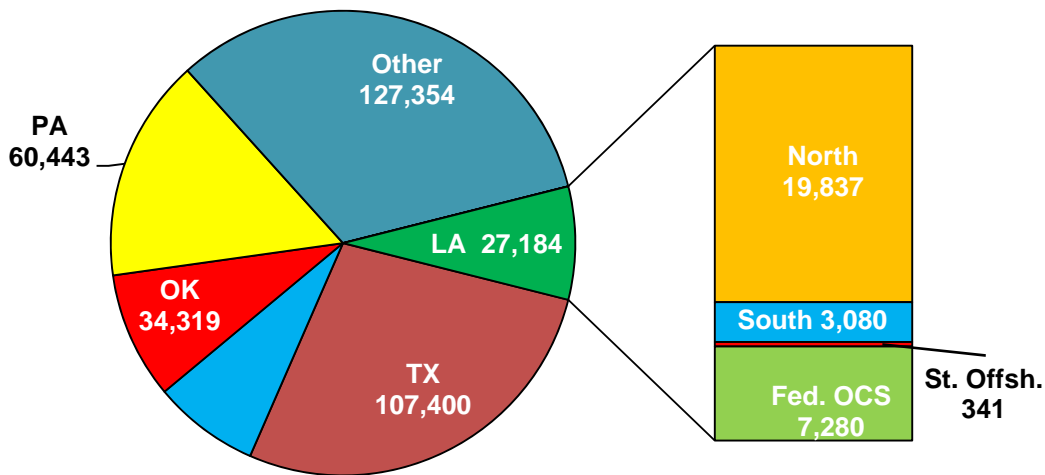
- 9<sup>th</sup> in crude oil
- 4<sup>th</sup> in natural gas
- 6<sup>th</sup> in natural gas proved reserves
- 9<sup>th</sup> in crude oil proved reserves
- 18<sup>th</sup> in coal
- 18<sup>th</sup> in nuclear electricity

**ENERGY CONSUMPTION (2014)**

- 2<sup>nd</sup> in industrial energy
- 2<sup>nd</sup> in per capita energy
- 3<sup>rd</sup> in natural gas
- 3<sup>rd</sup> in petroleum
- 3<sup>rd</sup> in total energy
- 26<sup>th</sup> in residential energy

Figure 1

### **2015 U.S. Natural Gas Reserves** (Billion Cubic Feet)

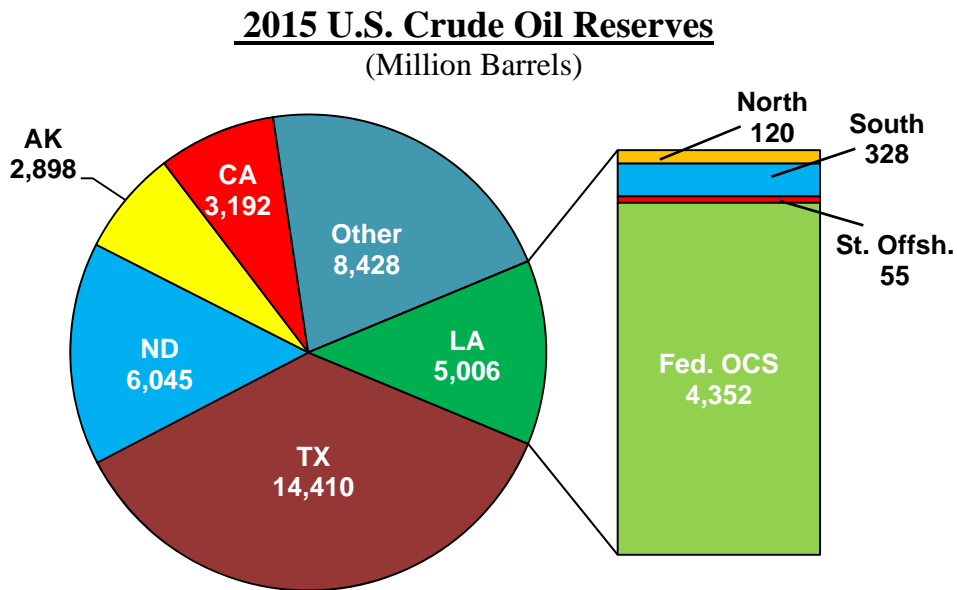


**PRODUCTION**

State controlled natural gas and casinghead gas production peaked at 5.6 trillion cubic feet (TCF) per year in 1970 and declined to 1.28 TCF in 2005. The trend started to reverse in 2006 when production increased to 1.35 TCF. The rising trend continued until 2011 when it peaked at 2.98 TCF. This production surge was due to production in the Haynesville shale play. Prior to the Haynesville discovery, the long-term decline rate was around 3.2% per year. With the start of production in Haynesville in 2007, the state production has shown an increase of 0.3% in 2008 over the previous year, 12.4% in 2009, 42.3% in 2010, and 37.1% in 2011. In 2012, production fell to 2.96 TCF, in 2013, it fell to 2.31 TCF, in 2014, it fell to 1.94 TCF and, in 2015, it fell to 1.76 TCF or a 9.2% drop from the previous year. This decline is expected to continue as long as prices continue to be below \$4.00 per MCF and storage gas level remains high.

State controlled crude oil and condensate production peaked at 566 million barrels (mmbbls) per year in 1970, declined to 211 mmbbls in 1980, declined to 148 mmbbls in 1990, declined to 107 mmbbls in 2000, and declined to 68 mmbbls in 2010. Then in 2011, oil production reversed its trend; 2011 production was 69 mmbbls, in 2012 it increased to 71 mmbbls, in 2013 it increased to 72 mmbbls, in 2014 it decreased to 69 mmbbls, and in 2015 it decreased to 63 mmbbls. The oil production decrease is caused by declining oil prices and resulting lower drilling activities. If oil prices stay below \$65 per barrel, production is expected to decrease from the present level, but if the Tuscaloosa Marine Shale or the Brown dense shale productions increase, state oil production might reverse the declining trend.

Figure 2



Gulf of Mexico (GOM) Central OCS region is the most extensively developed and mature OCS territory in the U.S. It has produced approximately 92% of the 20 billion barrels of crude oil and condensate and 81% of the 185 TCF of natural gas extracted from all federal OCS territories, from the beginning of offshore production through the end of 2015.

In 2015, GOM Central OCS region produced 14.9% and the state territory produced 1.9% of the U.S. oil domestic production. The GOM Central OCS region produced 3.8% and the state territory produced 6.3% of the natural gas produced in the U.S.

GOM Central OCS region gas production first peaked at 4.10 TCF per year in 1981, then declined to 3.00 TCF in 1986, started to recover as prices increased, reaching a second peak at 4.11 TCF in 2010. Production then slowly started to decline, caused first by the moratorium on deep water drilling and later by the decline in price and increased gas shale production. In 2015, it produced 1.07 TCF.

GOM Central OCS region crude oil and condensate production first peaked at 374 mmbbls per year in 1972 and then declined to 249 mmbbls in 1981. The production rose from 248 mmbbls in 1990 to 524 mmbbls in 2001, due to the development of deep water drilling. In 2008, production dropped to 396 mmbbls due to weather, in 2009 production reached its second peak at 544 mmbbls, in 2011 production began to slow down after the Macondo oil spill and subsequent moratorium, but by 2014, production was on the upswing with discovery of deep oil reservoirs. The Central OCS produced 467 mmbbls in 2014 and 513 mmbbls in 2015.

## REVENUE

In Fiscal Year (FY) 2007/08, oil and gas revenue (severance tax, royalties, and bonuses) reached an all time high of \$1.94 billion, or 16% of state income (total state taxes, licenses, and fees); the previous peak occurred in FY 1981/82 at \$1.62 billion, but it was 41% of state income. In FY 2012/13, it was \$1.37 billion or 13% of the state income, in FY 2013/14, it was \$1.32 billion or 13% of state income, in FY 2014/15, it was \$1.01 billion or 10% of state income and, in FY 2015/16, it is expected to be around \$707 million.

At constant production, the state treasury gains or loses about \$9.5 million of direct revenue from oil severance taxes and royalty payments for every \$1 per barrel change in oil prices.

For every \$1 per MCF change in gas price, at constant production, the state treasury gains or loses around \$34 million in royalty payments. Increases or decreases in gas full rate severance tax by 1.0 cent per MCF cause an \$8 million dollar change in revenue.

There are no studies available on indirect revenue to the state from changes in gas and oil prices.

## DRILLING ACTIVITY

Drilling permits issued on state controlled territory peaked at 7,631 permits in 1984 and declined to a low of 1,017 permits in 1999. Since 2000, the annual number of drilling permits issued has been on a roller coaster ride. In 2008, they increased to 2,374 permits, in 2009, permits decreased to 1365, in 2010, they increased to 1,956 permits, in 2013, they decreased to 1,578 permits, in 2014, they decreased to 1,408 permits and, in 2015, they decreased to 643.

- Note: **GOM Central OCS** (Outer Continental Shelf) region is the federal offshore territory adjacent to Louisiana's coast beyond the three mile limit of the state's offshore boundary and includes Alabama federal offshore production.



# LOUISIANA, AN ENERGY CONSUMING STATE: AN UPDATE USING 2014 DATA

by  
Manuel Lam

Louisiana ranks high among the states in overall energy consumption. Louisiana ranked 3<sup>rd</sup> in total energy consumption in 2014 and it was 5<sup>th</sup> in 2013. Louisiana is 2<sup>nd</sup> in per capita energy consumption for 2014. The main reason for Louisiana’s high energy consumption is the extremely energy intensive petrochemical and petroleum refining industry that is located in the state. The abundance of Louisiana’s natural resources has historically meant low energy prices, which have attracted a large cluster of energy intensive industries to the state. Figures 1 & 2 below show Louisiana energy consumption by sector and source. The large amount of energy consumed by the petrochemical and petroleum refining industry is reflected in the high percentage for the industrial sector and the high percentages for natural gas and petroleum.

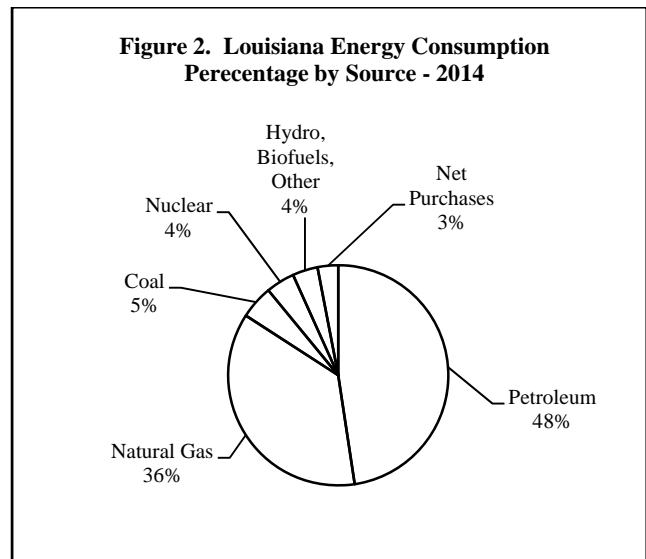
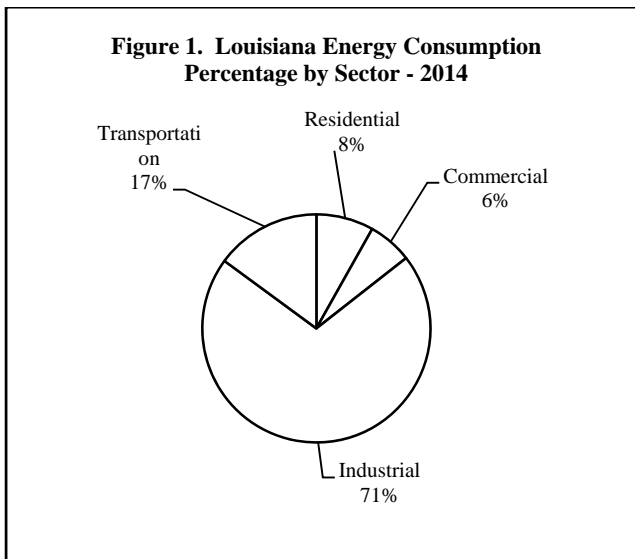


Table 1 shows where Louisiana ranks among the states in various energy consumption categories and lists the top energy consuming state for each category.

Louisiana is also a large producer of energy, mainly in the form of crude oil and natural gas. Table 2, on the following page, presents the Louisiana energy balance for 2014. The energy balance is calculated both inclusive and exclusive of Central Gulf of Mexico federal waters oil and gas production.

Category	Rank	TBTU	#1 State (TBTU)
Residential	26	348.8	Texas (1,709.5)
Commercial	23	268.2	Texas (1,638.8)
Industrial	2	3,024.3	Texas (6,288.8)
Transportation	13	638.2	Texas (3,262.4)
Coal	31	210.0	Texas (1,586.0)
Natural Gas	3	1,563.3	Texas (4,219.1)
Petroleum	3	2,037.1	Texas (5,947.6)
Electricity	15	309.2	Texas (1,329.6)
Total	3	4,279.4	Texas (12,899.5)
Per Capita (MBTU)	2	828.0	Wyoming (918.0)



**Table 2. Louisiana Energy Balance - 2014 <sup>1</sup>**

<u>ENERGY SOURCE</u>		<u>PRODUCTION</u>	<u>CONSUMPTION</u>	<u>NET STATE ENERGY PRODUCTION</u>	
				<u>Excluding OCS</u>	<u>Including OCS</u>
PETROLEUM:	STATE OIL <sup>2</sup>	397.7 TBTU <sup>4</sup> (68.6 MMBBL)	2,037.1 TBTU (431.3 MMBBL)	-1,639.4 TBTU	1,087.7 TBTU
	CENTRAL GOM OCS OIL <sup>2</sup>	2,727.1 TBTU <sup>4</sup> (470.2 MMBBL)			
NATURAL GAS:	STATE GAS <sup>3</sup>	1,962.6 TBTU <sup>4</sup> (1.926 TCF)	1,563.3 TBTU (1.518 TCF)	399.3 TBTU	1,460.5 TBTU
	CENTRAL GOM OCS GAS <sup>3</sup>	1,061.2 TBTU <sup>4</sup> (1.041 TCF)			
COAL:	LIGNITE	41.6 TBTU (3.095 MMSTON)	210.0 TBTU (12.8 MMSTON)	-168.4 TBTU	-168.4 TBTU
NUCLEAR ELECTRIC POWER		181.1 TBTU (17.3 Billion kWh)	181.1 TBTU (17.3 Billion kWh)	0.0 TBTU	0.0 TBTU
HYDROELECTRIC, BIOFUELS & OTHER		158.1 TBTU	158.1 TBTU	0.0 TBTU	0.0 TBTU
NET INTERSTATE PURCHASES OF ELECTRICITY INCLUDING ASSOCIATED LOSSES			129.9 TBTU	-129.9 TBTU	-129.9 TBTU
<hr/>					
TOTALS:	Excluding Central GOM OCS	2,741.1 TBTU	4,279.5 TBTU	-1,538.4 TBTU	
	Including Central GOM OCS	6,529.4 TBTU	4,279.5 TBTU		2,249.9 TBTU

The Louisiana energy balance for 2014 shows that the state consumed 1,538.4 more TBTUs of energy than it produced if Central GOM OCS production is not included. If Central GOM OCS production is included, the state is a net producer of energy by 2,249.9 TBTUs.

TCF = Trillion Cubic Feet  
 TBTU = Trillion BTU's  
 MMBBL = Million Barrels

GOM = Gulf of Mexico  
 kWh = Kilowatt hour  
 MMSTON = Million Short Tons  
 OCS = Outer Continental Shelf (federal waters seaward of the state's 3-mile offshore boundary)

1. Unless otherwise noted, data is obtained from the Energy Information Administration's latest published figures for state energy consumption.
2. Includes condensate
3. Includes gas plant liquids
4. Louisiana Department of Natural Resources data

## LOUISIANA'S ROLE IN LNG EXPORTS

by

Edward O'Brien, III MBA, M.Ec.

Ever since the fracking of natural gas in the Haynesville Shale and other mammoth natural gas shale plays within the United States, and the onset of the lower natural gas prices that followed, natural gas has been thought of as a resource that could transform energy, not just in the United States, but also the world. The abundance of natural gas locked beneath the ground in the United States instantly moved the country from contemplating about importing natural gas to how to use and export the resources available in Louisiana and the United States. Liquefied Natural Gas (LNG) projects, which up to that time focused on importing, were reconsidered, and plans were made to retrofit facilities for export to take advantage of the plethora of natural gas discovered in the United States.

LNG has been used for decades throughout the world, but mainly in resource poor areas. Two of the world's largest importers, Japan and South Korea, have limited hydrocarbon resources and depend on imports for the vast majority of their energy needs. Both countries are resource poor and represent about half of all LNG demand throughout the world.<sup>1</sup> Other major importers of LNG include Taiwan, France, the United Kingdom, and Spain. In previous decades, countries that supplied LNG tended to be resource rich in natural gas, allowing an ample supply to export LNG to countries that had a net energy need. Historically, the major LNG exporters have been Qatar, Malaysia, Australia, and Indonesia, with Trinidad and Tobago supplying much of the demand in the Western Hemisphere.

Cheniere Energy is the highest profile international exporter of LNG in the United States. Originally conceived of as an LNG importing company, Cheniere Energy was quick to realize, the abundance of natural gas in the United States could be a game changer, and in 2008, in the midst of the fracking boom where prices of natural gas plummeted from over \$13 in the summer of 2008 to below \$3 in 2009, the company decided to reinvent itself as an exporting facility. Realizing the global opportunities of shipping LNG all over the world, the company saw an opportunity to exploit the margins that LNG exporters enjoy. Already possessing the proper permits for importing LNG into Louisiana facilitated the transformation from purely being an importer to becoming a major exporter of LNG in the United States. Also, with the vast quantities of natural gas being both discovered and fracked, the importation of LNG would no longer be economically viable.

Fast forward 7 years of permitting and construction, Cheniere was ready to liquefy the natural gas and ship. Cheniere Energy exported their first LNG shipment February 2016, sending 3.44 Bcf of natural gas to Brazil.<sup>2</sup> From that first shipment to the beginning of August 2016, Cheniere has shipped out 16 full LNG vessels from its Sabine Pass terminal. Cheniere's first shipment of LNG passed through the Panama Canal at the end of July 2016, the shipping time to cross the Pacific has now been reduced by 43%. Previously, shipping LNG (or any good) from a Gulf port to Asia added around 20 days and 6,000 nautical miles to the trip.<sup>3</sup> With the deepening of the Panama Canal, the ability to reach Pacific harbors

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<sup>1</sup> <http://www.bp.com/en/global/corporate/about-bp/energy-economics/energy-outlook.html>

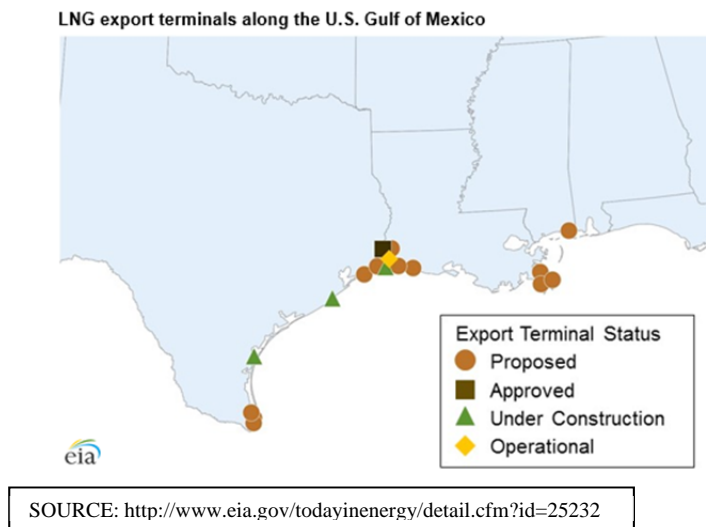
<sup>2</sup> <http://blogs.platts.com/2016/07/28/panama-canal-us-lng-asia/>

<sup>3</sup> <http://blogs.platts.com/2016/07/28/panama-canal-us-lng-asia/>

is not only cheaper, with both time saved and fuel expended, but it also allows larger shipments of LNG to cross the seas to markets that were previously less economically viable prior to the deepening.

One aspect rarely mentioned is that, with additional LNG exports, LNG has the ability to provide cleaner energy to emerging economies, which would otherwise use coal. Countries, such as India, China, and smaller emerging economies, some of which are not energy rich, now have options when building the energy infrastructure of their nations. Where in the past coal was the cheap alternative for powering the countries, LNG has the potential to revolutionize the emerging markets with cleaner burning natural gas. One gallon of LNG has the BTU equivalent of 82.6 cubic feet of natural gas, or roughly 12.1 gallons per million BTU.

Louisiana is a major player in LNG exportation in the United States. Currently, there are six additional LNG export projects that have gained approval by the Federal Energy Regulatory Commission (FERC), all located in the greater Lake Charles area, with more proposed in both Southwest and Southeast Louisiana.<sup>4</sup> The proximity to the Gulf of Mexico, and its global shipping lanes, coupled with the natural gas infrastructure already in place, makes this area extremely viable with regards to LNG facilities. The deepening of the Panama Canal just enhances the capability of the area to supply LNG, not just to South America, Eastern Africa, and Europe in a reasonable time frame, but adds to the viability of exporting across the Pacific to Asian countries, which already have a high demand for LNG.



<sup>4</sup> <http://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf>

## 2016 LOUISIANA LEGISLATIVE SESSION HIGHLIGHTS

by  
Patty Nussbaum

Several bills of interest passed during the 2016 Louisiana Legislative Session. Following is summary information; the details of the bills are available on the legislature's website, <http://www.legis.la.gov/legis/home.aspx>.

### ACT 643 - Sustainable Energy Financing Districts

ACT 643 repeals provisions that authorize local governmental subdivisions to create sustainable energy financing districts.

AN ACT to repeal Subpart B-44 of Part IV of Chapter 1 of Title 33 of the Louisiana Revised Statutes of 1950, comprised of R.S. 33:130.811 through 130.814, relative to sustainable energy financing districts; to remove authority granted to local governmental subdivisions to create such districts; and to provide for related matters:

Be it enacted by the Legislature of Louisiana: Section 1. Subpart B-44 of Part IV of Chapter 1 of Title 33 of the Louisiana Revised Statutes of 1950, comprised of R.S. 33:130.811 through 130.814, is hereby repealed in its entirety.

### ACT 279 - Vehicles Operated by Engines Fueled by Compressed or Liquefied Natural Gas

ACT 279 permits vehicles operated by engines fueled wholly or partially with compressed or liquefied natural gas to exceed gross vehicle weight limits and axle weight limits.

AN ACT to enact R.S. 32:386(L), relative to the weight of certain vehicles allowed on roads and highways; to allow certain vehicles to exceed weight limitations on roads and highways; and to provide for related matters.

Be it enacted by the Legislature of Louisiana: Section 1. R.S. 32:386(L) is hereby enacted to read as follows:

§386. Weight L(1) ...a vehicle that is operated by an engine fueled primarily by compressed or liquified natural gas may exceed the gross vehicle weight limits and any axle weight limits imposed by this Section by an amount, not to exceed a maximum of two thousand pounds, that is equal to the difference between the weight of the vehicle attributable to the natural gas tank and fueling system carried by the vehicle and the weight of a comparable diesel tank and fueling system.

## ACT 583 - Dedicates Certain Funds to Oilfield Site-Specific Trust Accounts in Order to Provide for Oilfield Site Restoration

ACT 583 provides for the use of certain funds in the state treasury derived from orphan wells for oilfield site restoration.

AN ACT to amend and reenact R.S. 47:645(B) and to enact R.S. 30:88.1, relative to site-specific oilfield trust accounts.

### §88.1. Oilfield site trust accounts for orphaned wells

(A) Orphan Wells. (1) For purposes of this Section, an orphan well shall mean an oil or gas well that is designated as part of an orphaned oilfield site as of August 1, 2016, and thereafter, and that has had no reported production for a period of greater than two years immediately prior to the production of oil, gas, or condensate to which this section applies.

(C) Site Restoration Assessment. When establishing a site-specific trust account under this Section, the assistant secretary shall require an oilfield site restoration assessment to be made to determine the site restoration requirements existing at the time the site-specific trust is established. ....

(D) Trust Account Monitoring. The assistant secretary shall monitor each trust account to assure that it is being properly funded. ...

(H) The assistant secretary shall make, after notice and public hearings as provided in this Chapter, any reasonable rules, regulations, and orders that are necessary to implement this Section.

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# 2017 SERVICE QUESTIONNAIRE

LOUISIANA DEPARTMENT OF NATURAL RESOURCES - TECHNOLOGY ASSESSMENT DIVISION

Dear Customer,

Our goal is to provide accurate and timely information on oil, gas, and energy production and use in Louisiana. By taking a few minutes to fill in our 2017 Service Questionnaire, your comments enable us to see how we are doing, and allows you to suggest areas where we might improve.

Thank you, in advance, for helping us to provide you with the best service possible.

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Timeliness of Data Provided					
Quality of Analyses Provided					
Quality of Tables Provided					
Quality of Graphs Provided					

(Check all that apply)	NEWSLETTER	FACTS ANNUAL	OTHER
Publications you currently receive or read online			

**Comments/suggestions:**

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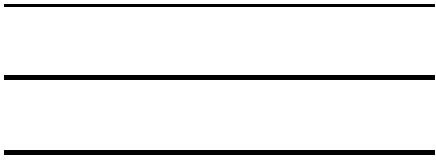


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