



The Impact of Legacy Lawsuits on Conventional Oil and Gas Drilling in Louisiana

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Executive Summary

- **Historically, high energy prices have sent signals to producers to initiate drilling projects to develop new reserve and production. Between January 2000 and January 2008, natural gas prices increased by some 230 percent, while crude oil prices increased by 242 percent. The number of active US drilling rigs increased in reaction to these prices by some 126 percent.**
- **Most energy producing states have benefited from this increase in overall industry drilling activity during this period. The notable exception to trend, however, has been the stagnation of drilling activity in south Louisiana during the same time period. While drilling activity is still positive in South Louisiana, this region of the state has failed to benefit from increased industry activity that has arisen over the past decade.**
- **While Louisiana drilling activity has benefited from the new development of unconventional shale resources in the northern part of the state, conventional drilling activities have become exceptionally challenged and lag activity levels comparable to other major producing states, as well as Louisiana's own historical trends.**

Executive Summary (continued)

- **Louisiana has simply become an increasingly difficult place for conventional oil and gas producers to operate. The factors contributing to this difficult environment include a challenging physical environment, as well as a number of permitting and regulatory requirements, increasing drilling costs, and a strong perception that Louisiana is a litigious state that subjects producers (past and current) to what many would consider significant legal obstacles.**
- **Since 2000, oil and gas producers throughout Louisiana, particularly those in south Louisiana, have been subjected to a variety of environmental lawsuits. These cases are based on claims in which the purportedly damaging actions were taken not recently, but in the past, and in some instances, several decades into the past. The lawsuits have become to be referred to as “legacy lawsuits” given the fact that they are based upon actions taken, in many instances, several decades ago.**



Executive Summary (continued)

- This study updates research originally conducted in 2005, on the behalf of the Louisiana Department of Natural Resources and the Louisiana Department of Economic Development, comparing the changes in Louisiana conventional oil and gas drilling activity to other energy producing states and examining the economic impacts of the relative deterioration in drilling activity.
- The 2005 study indicated that legacy lawsuits were having a negative impact on south Louisiana conventional drilling activity. However, the results from this 2005 research were considered somewhat preliminary since the cut off date for the statistical analysis only included about three years of post-legacy information, making it difficult to draw any sweeping and definitive conclusions about the role that legacy lawsuits were having on decreased drilling activity.
- The statistical model utilized in this research re-enforces the preliminary findings of the 2005 study finding an important and statistically significant deterioration in state drilling activity since the inception of the legacy lawsuits.

Executive Summary (continued)

- **Legacy lawsuits are strongly and negatively correlated with Louisiana drilling activity. Increases in legacy lawsuits are correlated with reductions in conventional Louisiana oil and gas drilling.**
- **This research estimates that over the past eight years, legacy lawsuits have led to a loss of some 1,200 new wells, translating into a total statewide reduction of about \$6.8 billion dollars in lost Louisiana drilling investments that excludes any production-related expenditures and mineral revenues that would have also been created by these new wells.**
- **Over the past eight years, the economic impacts of the cumulative legacy-induced decrease in drilling activity alone can be said to have led to the reduction of:**
 - **Approximately \$6.7 billion (in 2010 dollars) in decreased drilling expenditures;**
 - **Close to \$10.5 billion in Louisiana economic output;**
 - **Over 30,000 employment opportunities in oil and gas activities and supporting jobs; and**
 - **Over \$1.5 billion in wages for those employed directly and indirectly in the oil and gas business.**

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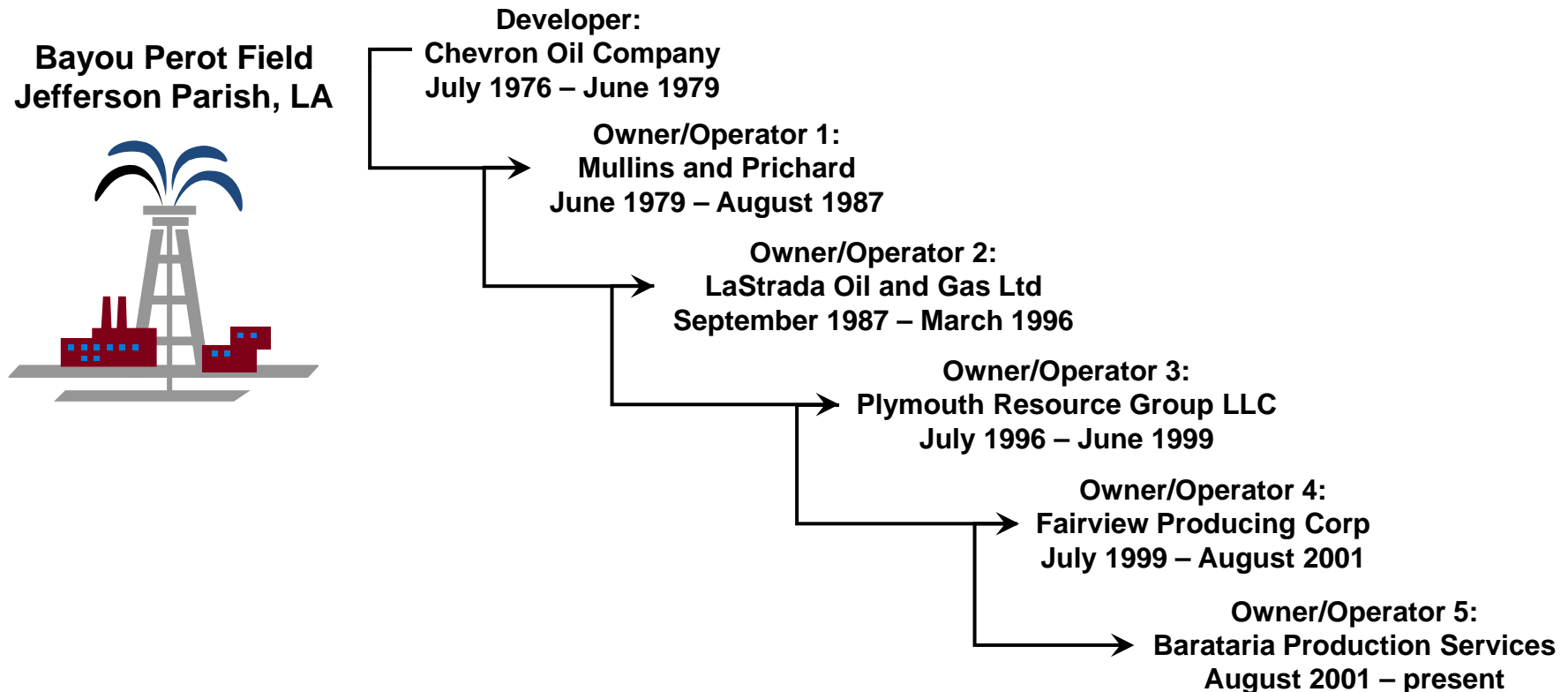


1. Overview of Legacy Lawsuits and Oil & Gas Litigation



Example, Ownership Life-Cycle of an Oil and Gas Well

Legacy lawsuits are associated with older oil and gas properties, that were likely developed by a major oil and gas company, but over time have passed through the hands of a variety of different owners/operators. A legacy suit will hold the current owner/operator, and all predecessor companies, liable for the environmental activities that have occurred at the site over the course of its development history.





Corbello Lawsuit

The precedent setting case for the 250 plus legacy suits that have been filed to date was *Corbello et al v. Iowa Production et. al.* This case involved a 1929 mineral lease and a 1961 surface lease on portions of a 320-acre tract in Iowa Field in Calcasieu Parish. The surface lease required the lessee (Shell Oil Company) to “reasonably restore the premises as nearly as possible to their present condition.” The lessee built an oil terminal and, according to the suit, failed to vacate the premises after the lease expired.

The plaintiffs filed suit in 1992 for trespass, unauthorized disposal of produced water, and the poor conditions of the site. A Louisiana jury awarded the plaintiffs damages upwards of \$33 million to restore the property. This affirmative decision in favor of the plaintiffs encouraged a host of subsequent filings by other similarly situated landowners.



Corbello Lawsuit (continued)

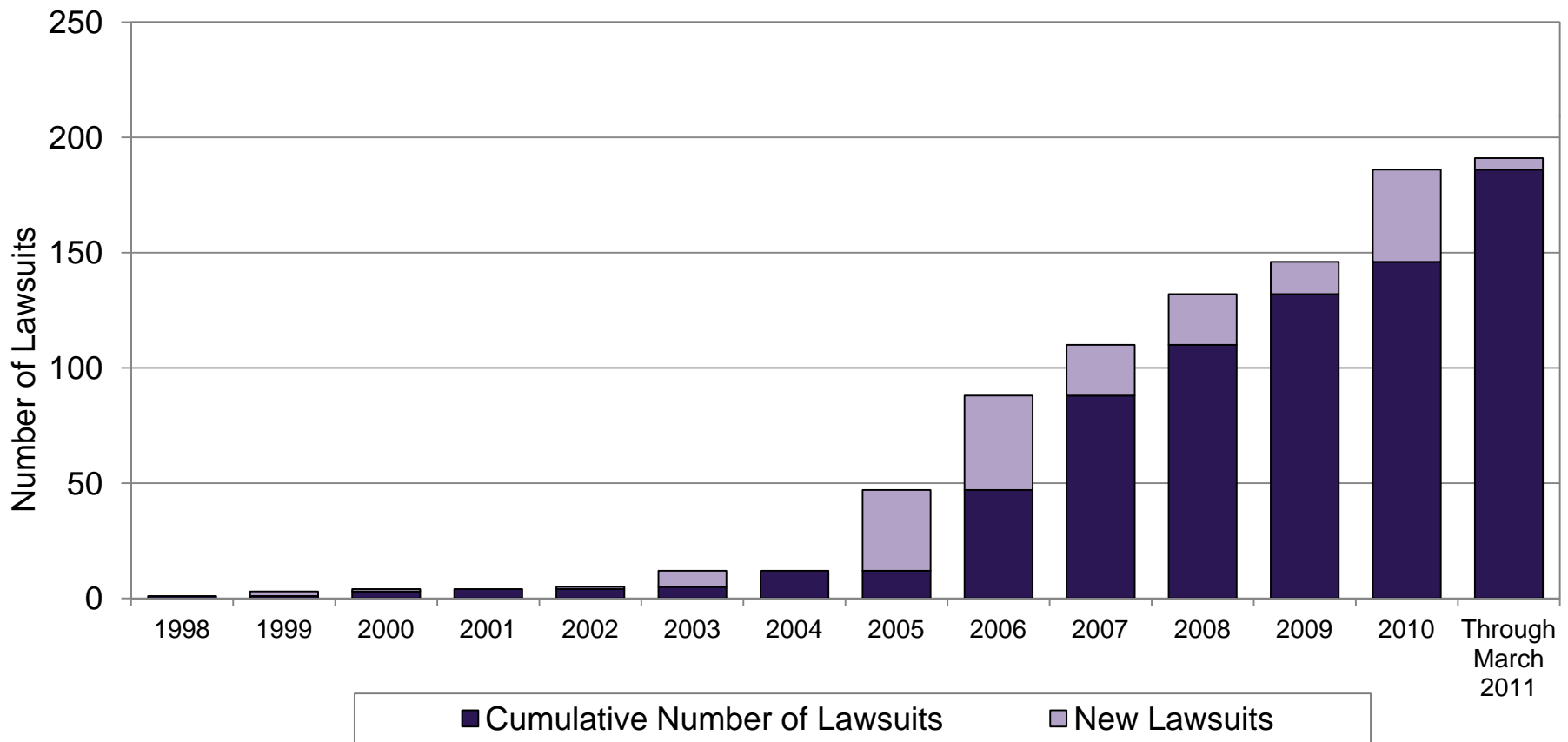
In 2003, the *Corbello* case was appealed to the Louisiana Supreme Court for an ultimate ruling. The Supreme Court upheld the plaintiffs' damages, plus attorney fees and interest, reaching a grand total of close to \$80 million awarded. In upholding this ruling, the Louisiana Supreme Court also found that "the damage award for a breach of contract obligation to reasonably restore property need not be tethered to the market value of the property." The total sum awarded was certainly not relative to the 320-acre tract's market value, considering it was \$108,000. The court did not require the plaintiffs to use this money to restore the property.

Since this time numerous other, similar lawsuits have been filed throughout the state making comparable legacy lawsuit claims.



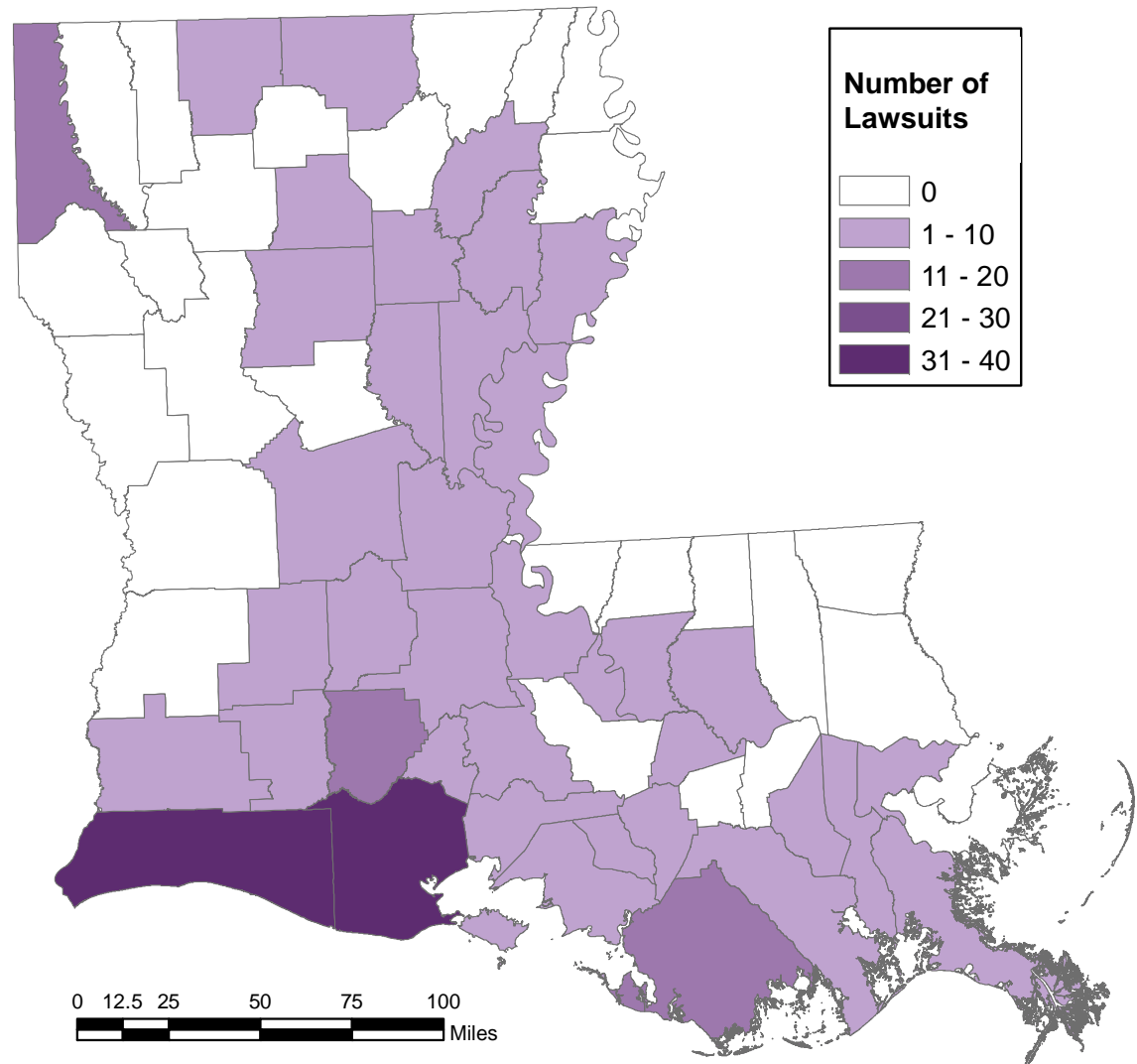
Cumulative Number of Louisiana Legacy Suits

The annual number of legacy-related lawsuits has increased considerably after 2005.



Cumulative Number of Louisiana Legacy Suits

While the largest concentration of legacy suits has been filed in south Louisiana, a good portion of the state has seen at least some legacy suit activity.





Background on Legacy Suits & Claims

- **Legacy lawsuits are primarily directed at oil and gas operators for past environmental damage that occurred at a given oil and gas drilling and production site even though the activities upon which the suit is based, were allowed at the time in which they occurred.**
- **The extraction of oil and gas has changed considerably over the past hundred years. Prior to as late as the 1980s, however, it was common industry practice for operations to build on-site earthen pits that held cuttings, waste, and water discharges that occurred during the drilling process.**
- **Unfortunately, it was not common, nor required, to line these earthen pits and, as a result, seepage of various wastes into surface and subsurface water and soils have been claimed to have occurred. Further, naturally-occurring radioactive materials (“NORM”), a byproduct of oilfield operations, is also said to have accumulated in these earthen pits.**
- **In addition, it was also common practice in Louisiana to dredge canals through the marshlands in order to reach drilling sites, leading to another source of claimed damages.**



Changes in Environmental Practices

- **Over the past two decades, environmental regulators and industry have come to appreciate the ill-effects of certain past materials handling and site preparation practices. Regulations and industry practices have changed to meet the current understanding of the impact that certain past oil and gas practices can have on the environment.**
- **Today, cuttings, materials, and produced water are collected under safer procedures and are either hauled away for further processing and reclamation, or are treated and disposed under specialized procedures and disposal sites.**
- **Site preparation must also take into consideration potential impacts to surrounding habitats during the permitting process. Developers are often required to commit to specific site restoration or the purchase of an offset at a closely proximate mitigation bank.**
- **While new drilling and production techniques largely mitigate the primary concerns associated with recent legacy suits, these new practices usually fail to compensate for past practices that, while potentially harmful to the environment, were allowed under past regulatory guidelines.**



Legacy Lawsuits: Industry Claims

- **Industry has expressed three general reactions to these suits.**
- **First, is that they are based upon past sins that hold the industry to a standard not present, known, or appreciated in the past.**
- **Second, is that by reaching back through the entire ownership chain of a given oil and gas property, these lawsuits have created the ability to hold every operator, including the original developer, financially liable for past environmental damages. It is this tie to the original property developer, usually a major oil and gas company, that makes these suits attractive since major oil and gas companies are often considered the ones with the “deep pockets.” What is often lost in understanding the motivation for these suits is that most of the owner/operators of these properties are smaller, independent oil and gas companies that can be financially devastated by such claims.**
- **Third, many industry observers claim that these suits are nothing more than a winning “lottery ticket” since the damages associated with these suits can be (a) financially considerable; (b) on some occasions paid to landowners long since claiming Louisiana as a primary residence, and most importantly; (c) do not use the resulting financial settlements and judgments for environmental restoration.**



Litigation Trends: Louisiana Rankings

- **There are additional concerns that trends in legacy-site litigation could lead to further negative impressions about the litigious nature of doing business in Louisiana.**
- **The U.S. Chamber of Commerce, for instance, recently-released its 2010 survey of general counsels and senior litigators at various public corporations throughout the country to assess their impressions on the individual fairness of individual state tort liability system. The Chamber has been conducting this survey as earlier as 2002.**
- **Louisiana has consistently fallen into the five perceived worst states in the following areas:**
 - **Overall treatment of tort and contract litigation**
 - **Jury fairness**
 - **The treatment of class action lawsuits.**
 - **The timeliness of summary judgments and dismissals.**
 - **The area of discovery.**
 - **Technical and scientific evidence**
 - **Judges' impartiality**
 - **Judges' competence.**



Litigation Trends: Public Perceptions

- **A 2012 survey conducted by the American Tort Reform Foundation named Louisiana part of its “Judicial Hellhole” watch list. The study states that, “[m]ore than one out of every two barrels of crude pumped from Louisiana’s oilfields are produced by a lawsuit defendant company.”**
- **An earlier 2005 survey conducted by Southern Media & Opinion Research and commissioned by the Louisiana Oil and Gas Association, found that executives are in fact, cutting back oil and gas-related capital investments in the state due to the spate of legacy lawsuits.**
- **The survey conclusions are based upon 214 responses from 450 exploration companies surveyed (all of which had done business in Louisiana).**
- **Eighty-five percent rated the issue of potential legacy lawsuits as “very important,” and more than 90 percent of the respondents would not enter into a lease if there were a potential to be sued.**
- **Sixty percent of oil company executives surveyed said that concerns over the recent wave of pollution lawsuits would cause them to eliminate or decrease their investments in Louisiana.**



2. Recent Industry Price and Drilling Trends

Overview: The Relationship between Price and Drilling Activity

Oil and natural gas drilling activity is a function of a number of different factors that can influence the degree, speed, and location of where drilling activities will occur.

Energy prices, however, are one of the more significant factors influencing drilling activity. Empirical research supports the important and positive influence that prices have on drilling activity: as oil and natural gas prices increase, drilling activity increases, and as oil and natural gas prices fall, drilling activity tends to contract, other things being equal.

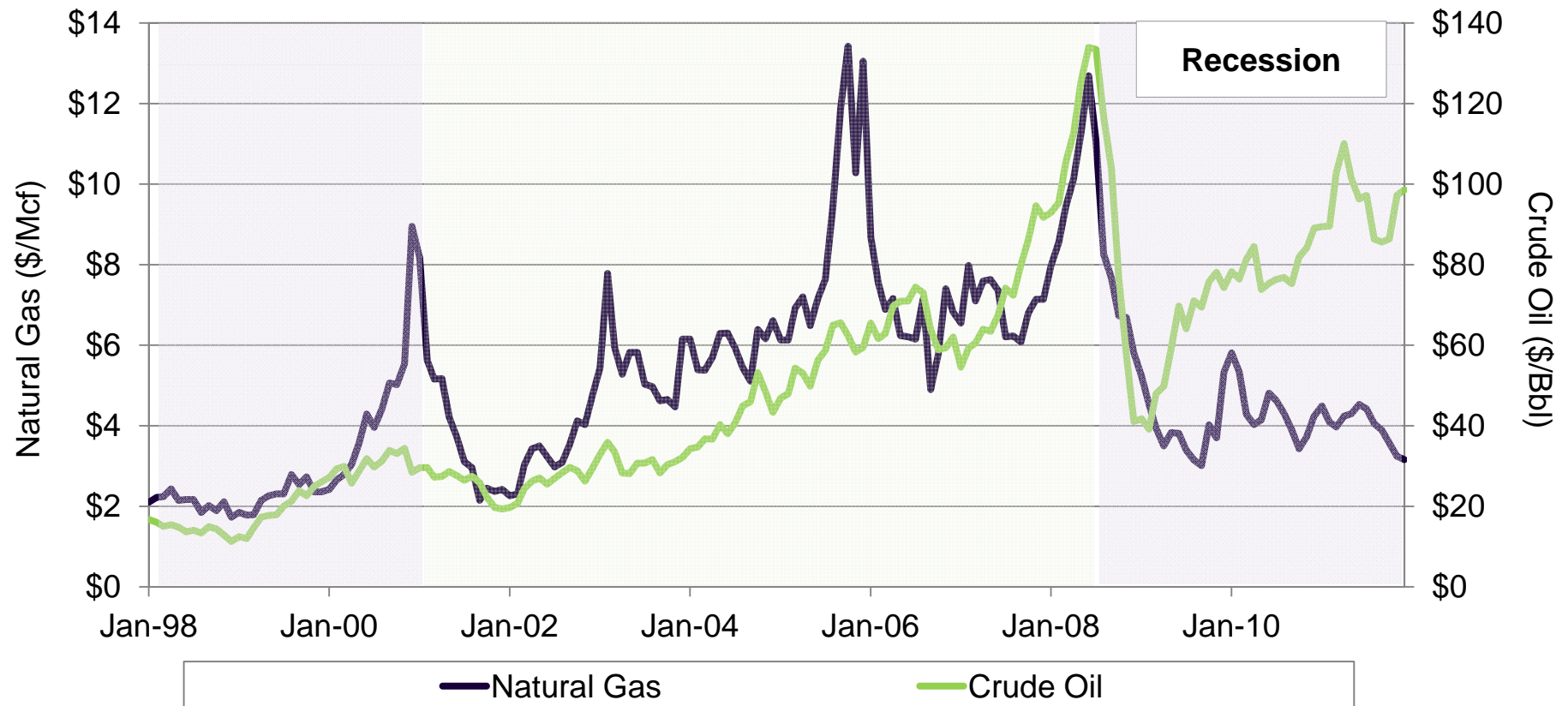
The period between January 2000 and January 2008 experienced natural gas price increases of some 230 percent and crude oil price increases of some 242 percent. US drilling activity, during a comparable period, increased by some 126 percent.

Louisiana activity during this time period has been mixed. In north Louisiana, unconventional shale drilling has increased considerably over the past several years, while conventional drilling activity throughout the state, including North Louisiana, has languished.



Natural Gas (Henry Hub) and Crude Oil (WTI) Price

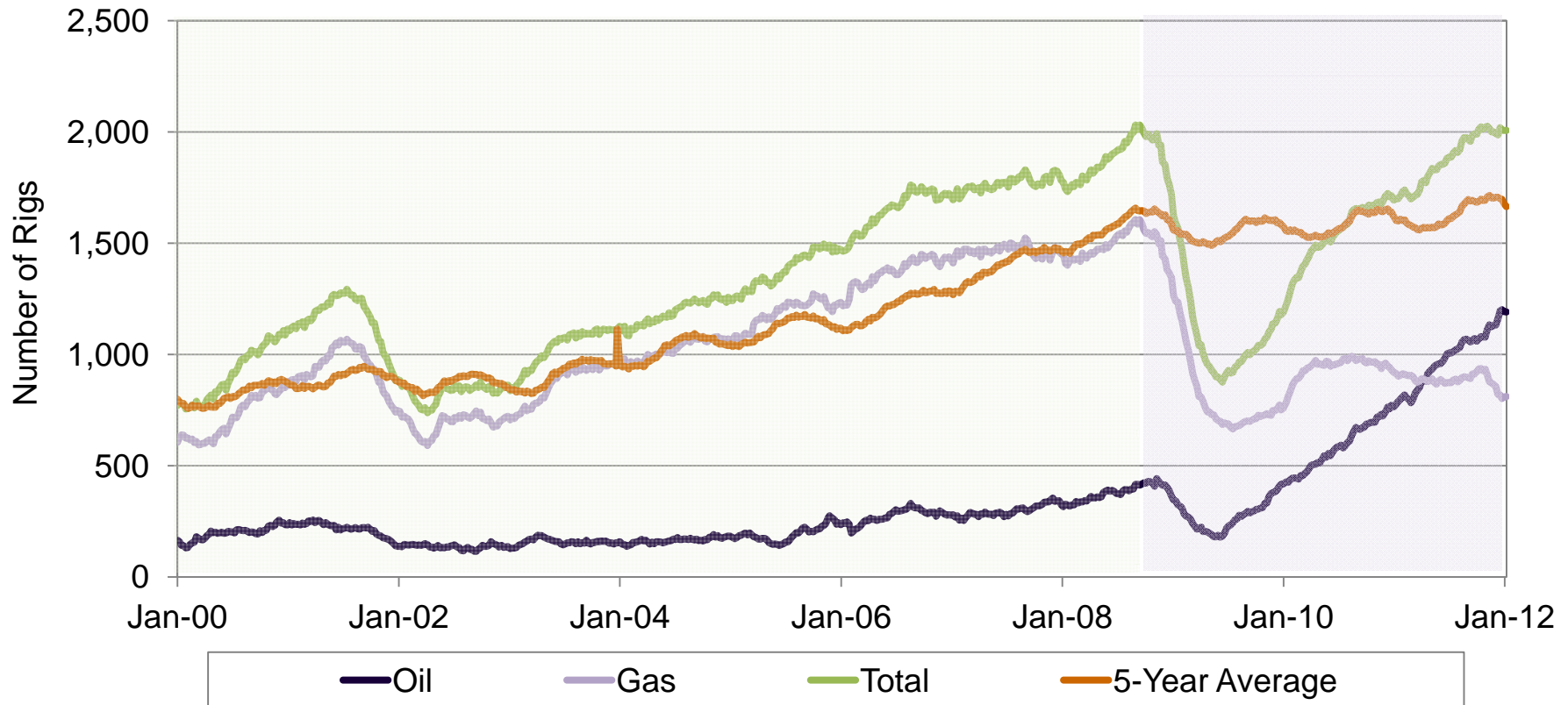
January 2000 to January 2008 natural gas prices have increased by a dramatic 230 percent while crude oil prices have increased by over 242 percent. Crude and natural gas prices fell considerably with the start of the global financial crisis and recession. Crude prices have rebounded by 152 percent since the recession, while nature gas prices continue to fall.





Weekly Counts of Rotary Rigs in Operation (2000 to Present)

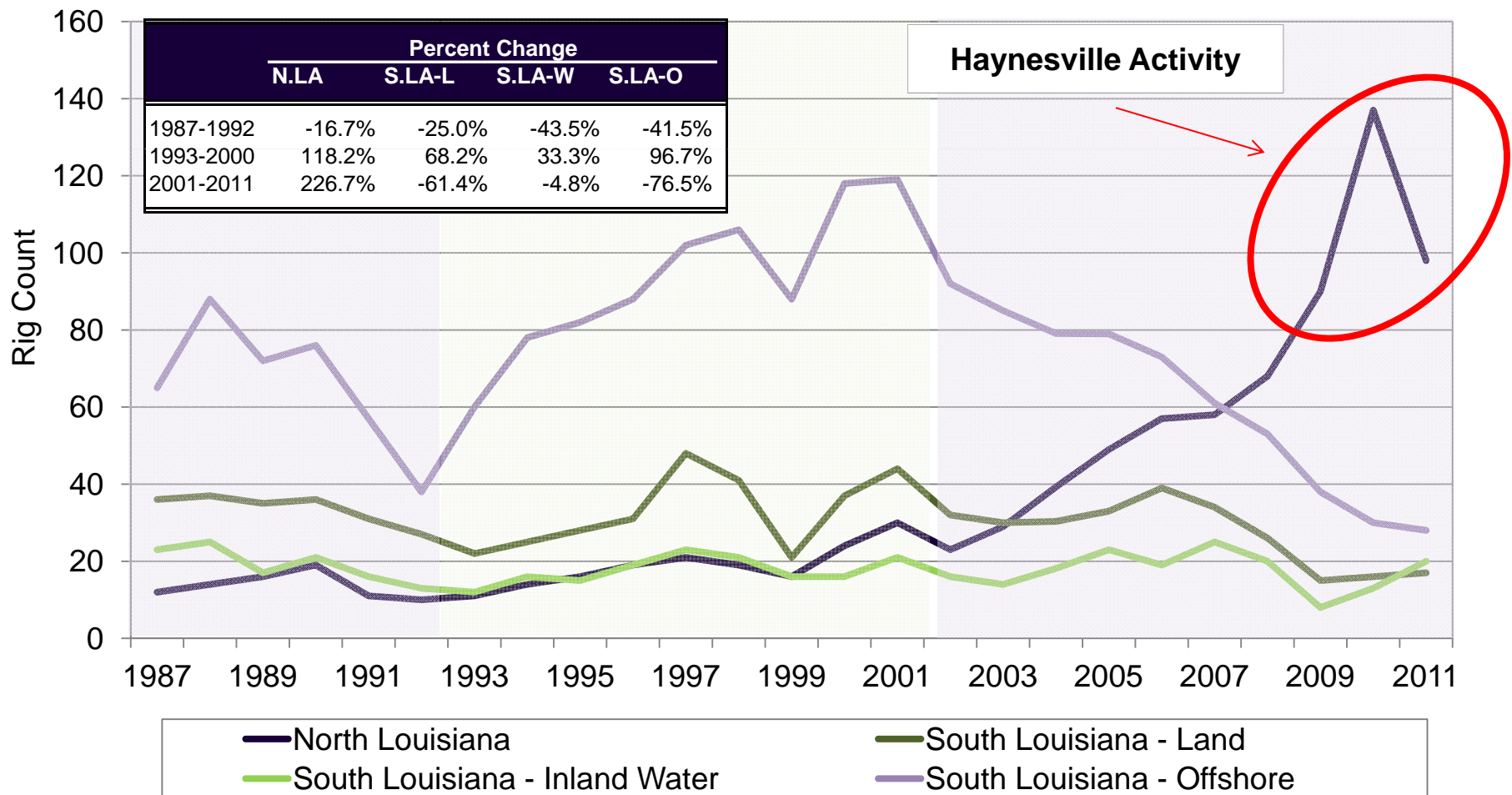
Total U.S. oil and gas drilling rig counts increased by some 118 percent and 127 percent, respectively, between January 2000 to January 2008. Rigs dedicated to drilling crude oil wells have been stable to increasing even through the worst of the recession. Natural gas-related drilling rigs, however, have not recovered from their pre-recessionary losses.





Average Annual Rig Count

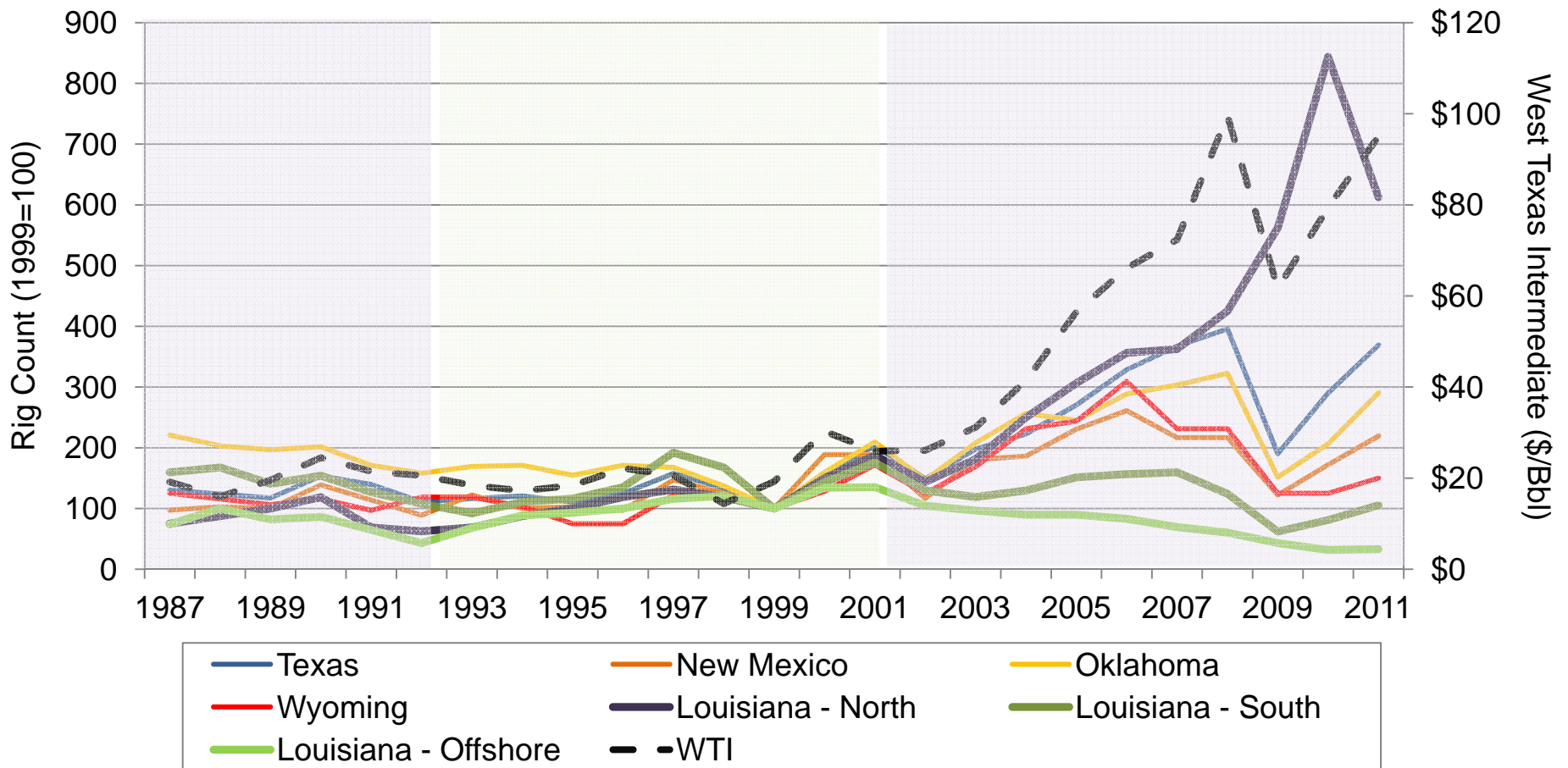
Post-2000 drilling activity has been exclusively relegated to North Louisiana, unconventional shale activity (Haynesville), where as south and offshore Louisiana drilling activity have deteriorated considerably.





Historic Rig Count and Crude Oil Prices (1987-2012)

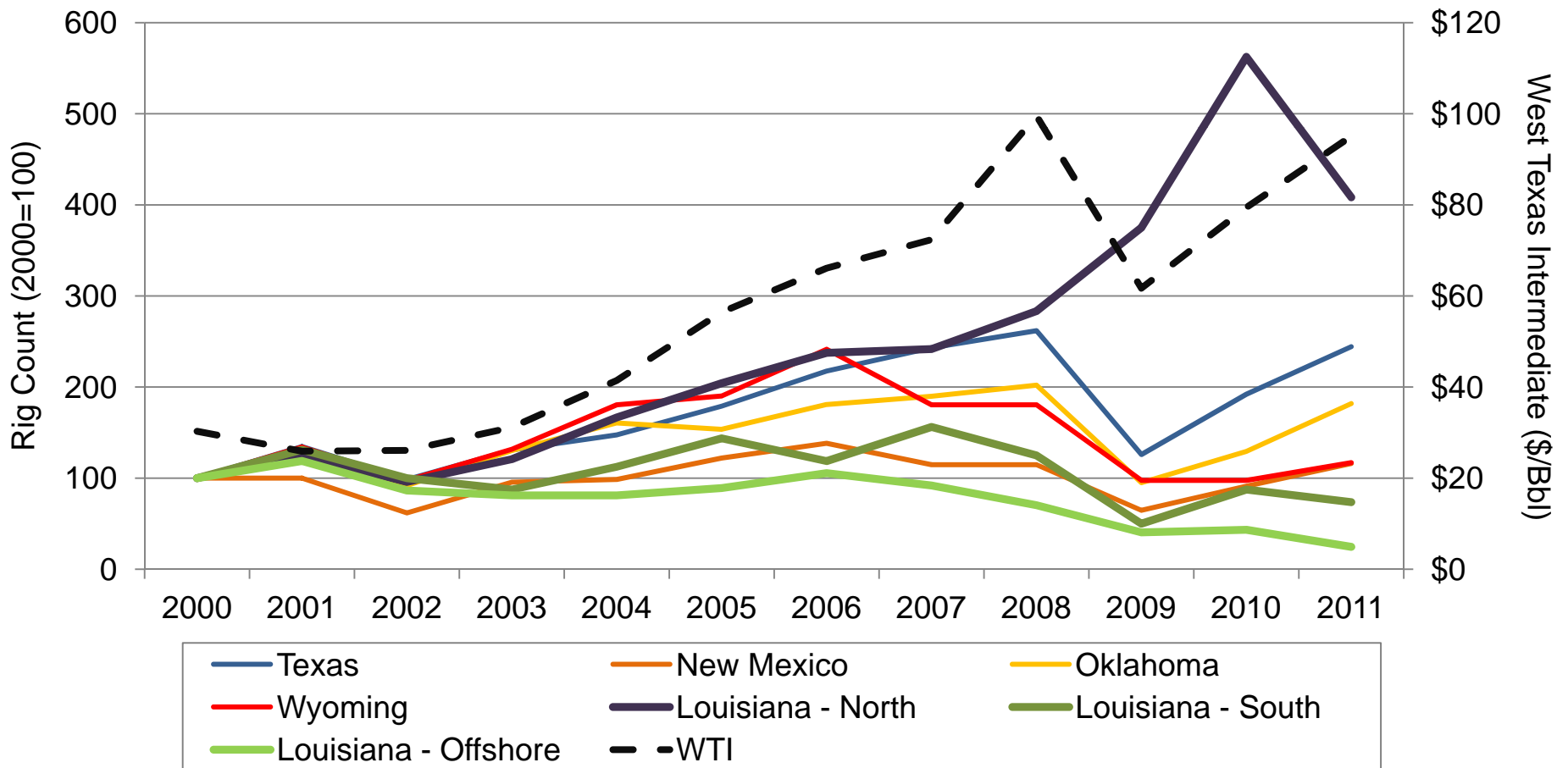
Pre-2000 Louisiana drilling activity was comparable and competitive with other major oil and gas producing states. Louisiana activity has fallen considerably since that time on both a relative and absolute basis.





Historic Rig Count and Crude Oil Prices (2000-2012)

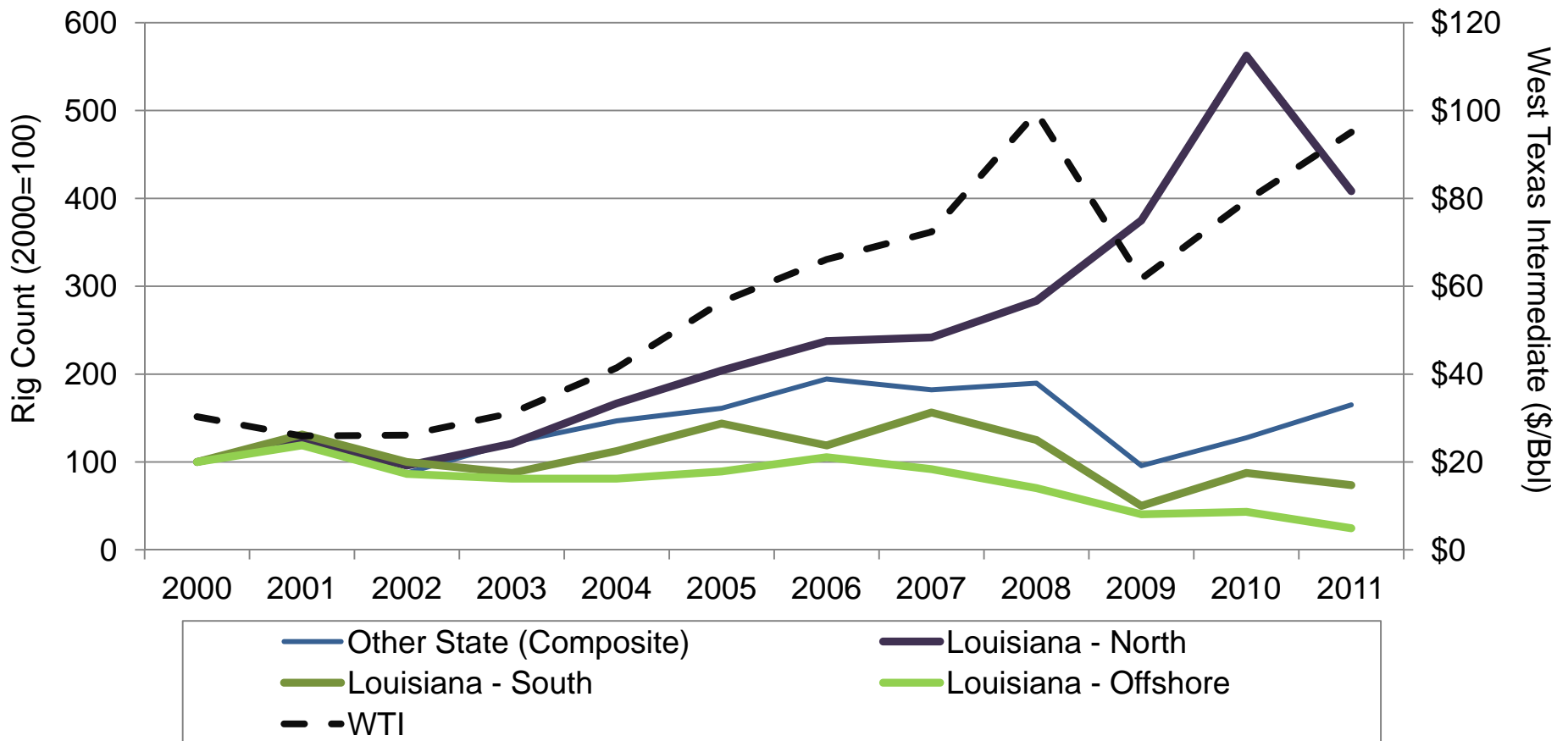
Drilling activity in most oil and gas producing states has surged since the energy price increases of 2000. South Louisiana drilling activity, however, is not only uncompetitive with these other states, but lags its own historic drilling performance.





Historic Rig Count and Crude Oil Prices (2000-2012)

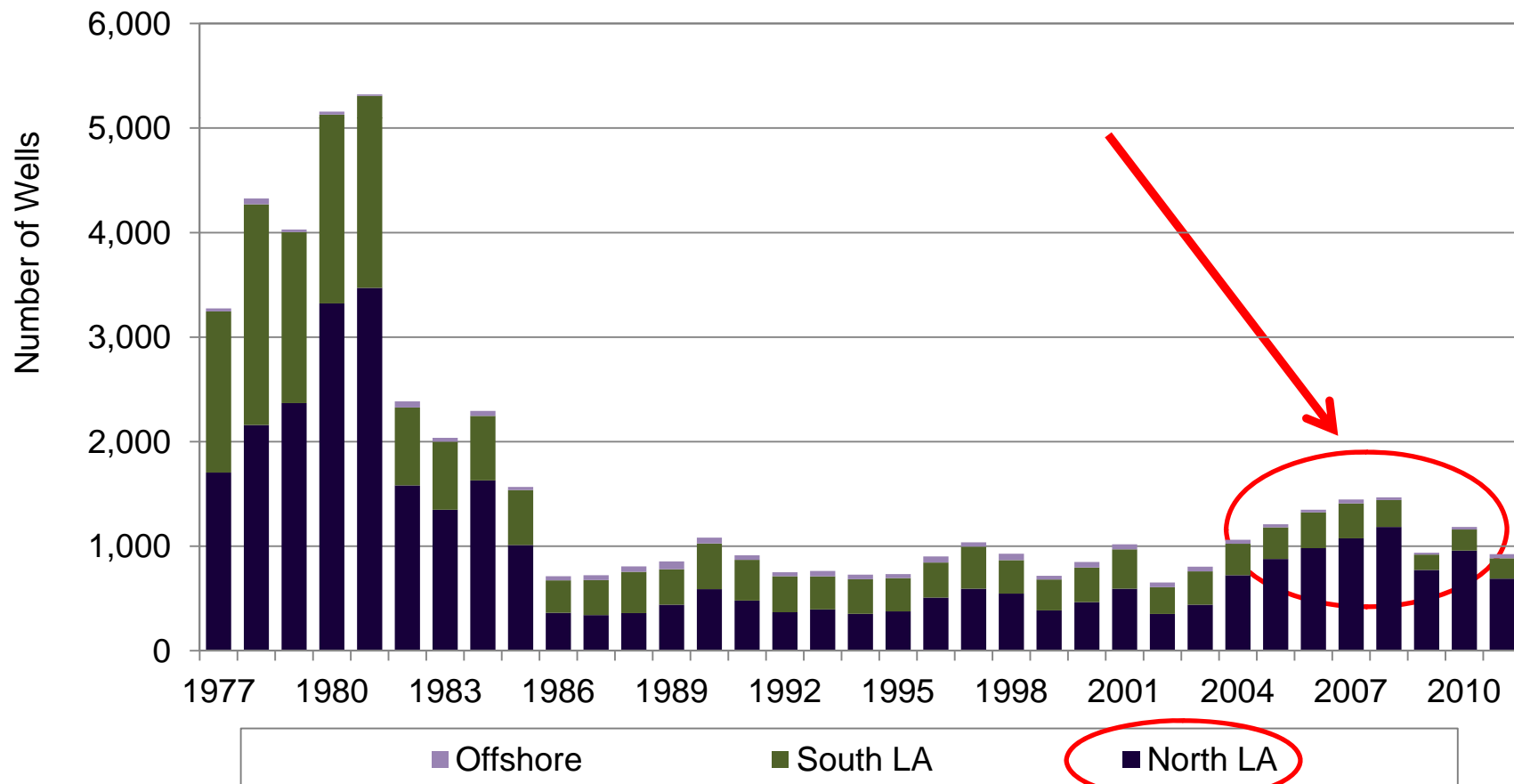
South Louisiana oil and gas drilling activity is some 46 percent below its peers despite a 242 percent increase in crude oil prices since 2000. South Louisiana drilling activity, while still positive, is almost 40 percent below the drilling activity levels experienced in the state over a decade ago, in a period of considerably lower prices.





Number of Well Completions by Completion Date

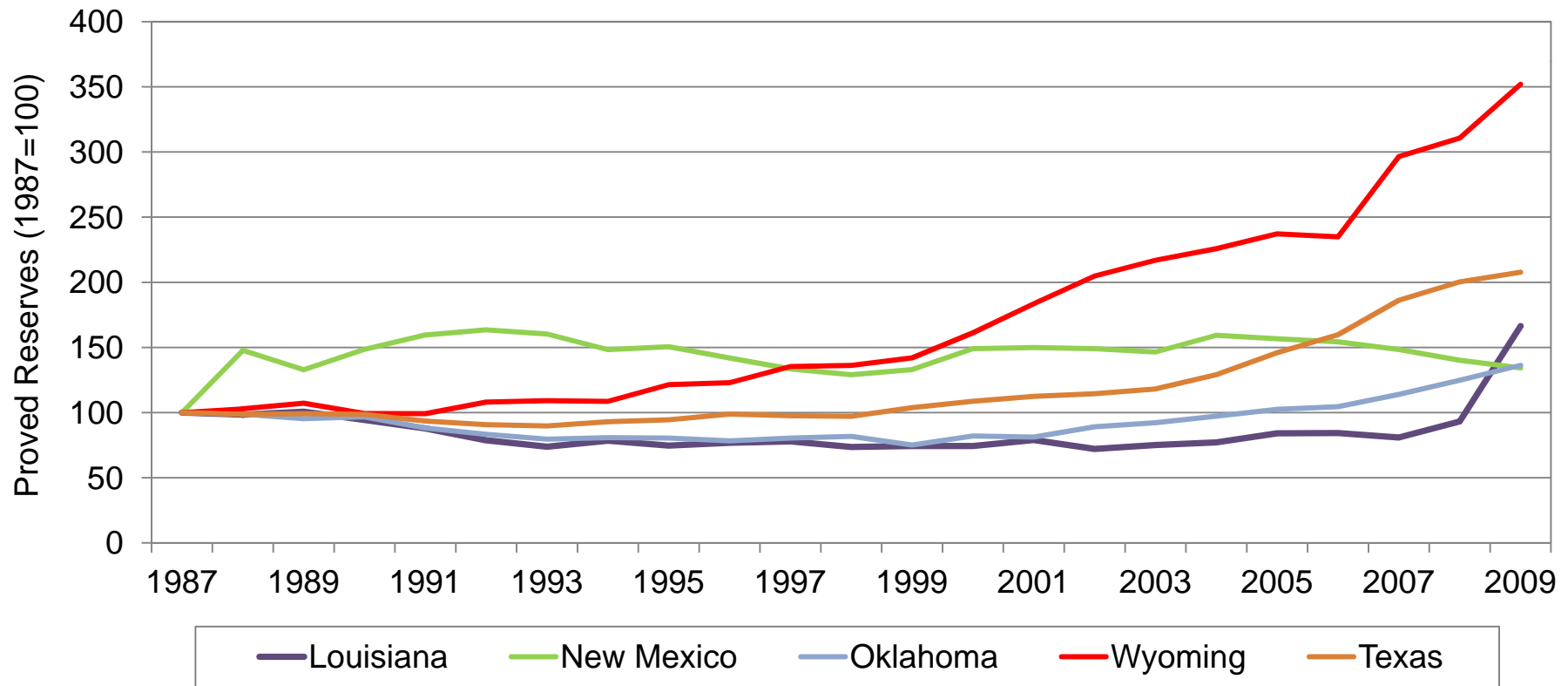
Well completions are down considerably, and the small (relative) increases observed over the past five years are primarily attributable to Haynesville, not conventional development.





Natural Gas Dry, Proved Reserves (Lower 48 States)

Louisiana's natural gas reserve development has lagged other producing states for the last decade. Louisiana's gas reserves development changed course in 2008 with the development of the unconventional Haynesville resources. But even with these developments, Louisiana is still attempting to gain ground lost over the past decade.

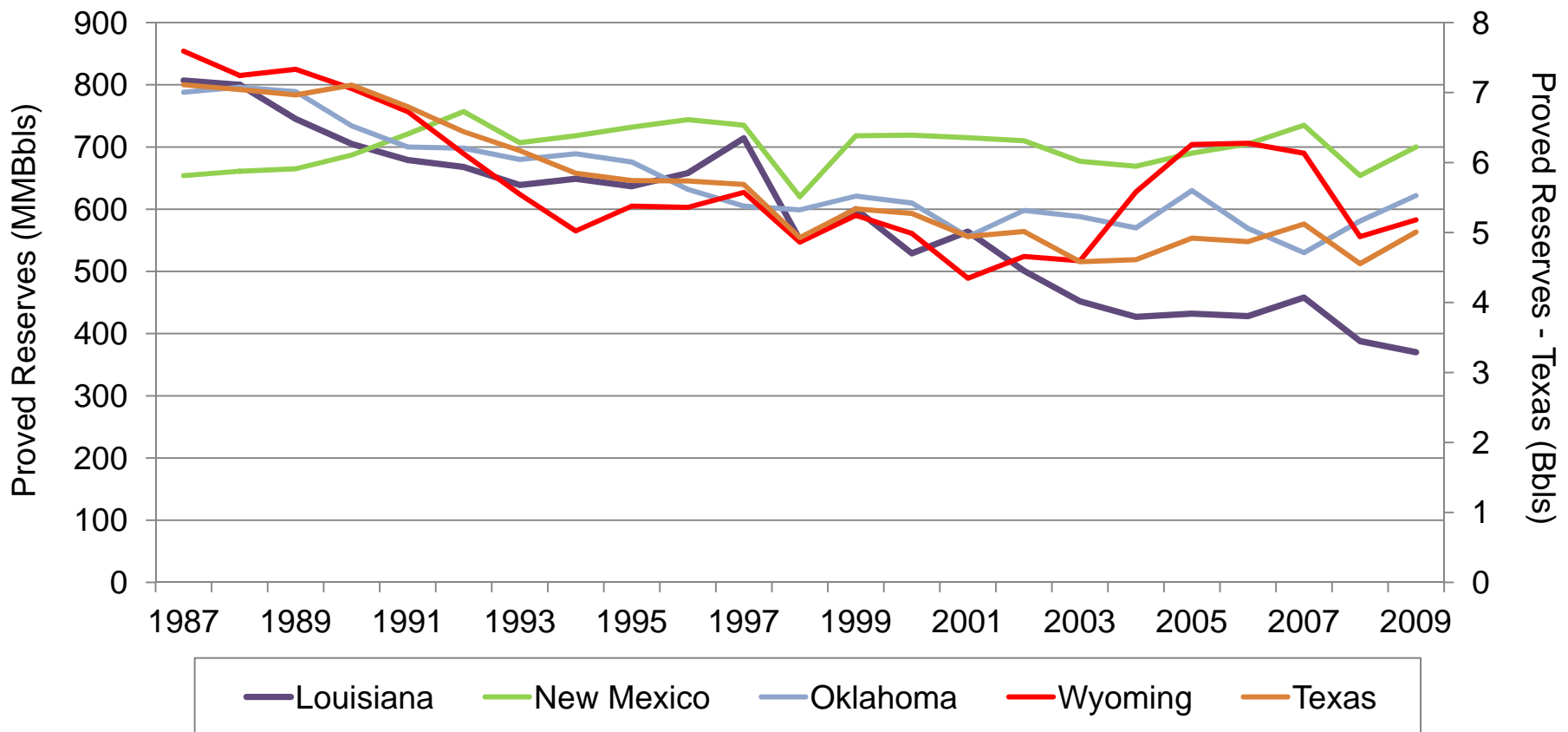


Note: Louisiana and Texas include state offshore and onshore.
Source: Energy Information Administration, U.S. Department of Energy



Crude Oil, Proved Reserves (Lower 48 States)

Louisiana's crude oil reserve development, while competitive with other lower 48 states until about 2000, has lagged far behind its peers, and is now at one of the lowest relative levels of development in over a decade. Post-2000 decreased drilling activity is a likely culprit for this deteriorating crude oil reserves position.



Note: Louisiana and Texas include state offshore and onshore. Source: Energy Information Administration, U.S. Department of Energy



3. Modeling Relative Changes in Regional Oil and Gas Activities

Empirically Modeling Oil & Gas Activities

Statistical models of oil and gas supply have been developed over the past 40 years. Particular advancement of the subject has occurred since the energy crisis of the 1970s and early 1980s. Some of the earliest models of oil and gas supply activity were developed in the 1960s with Adelman (1962) and Fisher (1964). Adelman's work specified two distinct equations for natural gas production that were largely a function of price. An important finding in his model was that it was one of the earliest works attempting to provide quantitative estimates of the sensitivity of natural gas production to price (i.e., price elasticity of supply).

Two years later, Fisher (1964) focused on the sensitivity of petroleum exploration and discovery to economic incentives. Fisher examined four different types of equations as being potentially important determinants of petroleum exploration and discovery. The natural logs of four facets of production, including the number of new field wildcats drilled, the success ratio of productive to total new field wildcats, the average size of oil discoveries per productive new field wildcat, and the average size of gas discoveries per productive new field wildcat, were the dependent variables in their respective equations. The independent variables, however, varied per equation and included the average depth of new field wildcats, crude oil and natural gas prices, and core drilling time.

Empirically Modeling Oil & Gas Activities (continued)

The regulation of natural gas ceiling prices in the early 1970s brought about the next wave of oil and gas supply modeling, and in 1971 the results of two models, the Khazzoom Federal Power Commission (FPC) (1971) model and the Erickson-Spann (1971) model, were published. Two years later, an important contribution was provided by MacAvoy-Pindyck (1973). All of these early models, collectively, are important contributions to the literature from the perspective that they focused on new discovery as the important factor leading to oil and gas production opportunities. These models set the framework for modeling exploratory and development activities, particularly drilling, and the relationship between drilling activity and price.

Since the early 1970s, a wide range of models have been developed that followed the methods established by the early modelers in this area. A large part of the development of the literature, particularly over the past decade, has focused on attempts to employ greater engineering and geological realities into supply models of what is an exhaustible resource. An example of this work can be found in Walls (1992, 1994), Deacon (1990, 1993) and Iledare and Pulsipher (1997).

An Empirical Model of Relative Drilling Activity

The empirical model of drilling activity developed for this research is based upon the total number of wells drilled during the period 1991 to 2007 by the major energy producing states in the lower-48. For purposes of this empirical model, major energy producing states include: Alabama; California; Colorado; Kansas; Louisiana (North, South & Inland waters); New Mexico; Oklahoma; Texas; and Wyoming. Combined, these states account for 80 percent and 83 percent of all onshore lower-48 oil and gas production, respectively.

Drilling activity is statistically modeled using standard panel-model econometric techniques. A number of economic variables are assumed to affect drilling activity in each state. Technical econometric considerations are used to isolate those variables that best describe drilling activity by state. Those explanatory variables (by state) include inflation-adjusted average well costs, oil and gas reserves, inflation-adjusted natural gas prices, and the number of legacy lawsuit cases that have occurred in Louisiana by year.

The econometric model includes fixed state effects and random time-period effects. The model is estimated using a mixed model cross-section seemingly unrelated regression (“SUR”) technique with panel-corrected standard errors (degree of freedom corrected).

An Empirical Model of Relative Drilling Activity (continued)

The first set of variables included in the model is related to the state-specific factors influencing drilling activity. These factors can include regulatory, permitting, and taxation policies that either encourage, or discourage drilling activity to occur in any of the states included in the model. South Louisiana is used as the reference for these state-specific impacts, so parameter estimates generated by the model will measure differences relative to South Louisiana drilling activity levels.

The second set of variables used in the statistical model control for the effect of well drilling costs, oil and gas reserves, and gas prices in each state.

The last set of indicated variables included in the statistical model attempts to capture the impacts of legacy litigation in Louisiana. This variable is simply based upon the number of legacy-related suits. If the parameter estimate for this variable meets a defined threshold of importance, then a measure of the reduction in Louisiana drilling activity can be developed, holding other factors constant.

Drilling Model Specification

Given these considerations, a mixed model can be constructed suggesting the following statistical relationship:

$$\ln(W_{it}) = \mathbf{X}'_{it}\boldsymbol{\beta} + \mathbf{Y}'\alpha_i + \gamma u_t + \varepsilon_{it}$$

Where \mathbf{X}'_{it} is a matrix of regressors including logged variables:

- A constant.
- Average well cost, inflation-adjusted.
- Sum of oil and natural gas reserves.
- Natural gas prices, inflation-adjusted.
- An indicator variable for Legacy Lawsuit cases in Louisiana.

Where $\mathbf{Y}'\alpha_i$ is a vector of fixed-effect region-specific constant terms.

Where γu_t is a time-specific random constant.

The model is carried out using a panel-corrected standard error (“PCSE”) cross-section seemingly unrelated regression (“SUR”) specification. The model is estimated by feasible generalized least squares (“FGLS”) assuming the presence of cross-section heteroskedasticity and contemporaneous correlation. The standard errors are made robust by using a degree of freedom-corrected PCSE specification for the covariance matrix.

Data Used in the Empirical Model

A considerable amount of data was collected for the pooled cross-sectional/time series analysis in this research. All of the data used in the analysis comes from publicly available or commercial available data.

Variable	Source	Mean	Standard Deviation
Dependent Variable:			
Number of Wells	API Cost Survey	1,863	2,378
Independent Variables			
Average Cost per Well, inflation-adj. (\$2010 / Well)	API Cost Survey	\$ 2,481,494	\$ 6,759,711
Sum of oil and natural gas reserves (MMBOE)	DOE/EIA	3,146	3,504
Natural gas prices, inflation-adj. (\$2010 / Mcf)	DOE/EIA	\$ 4.21	\$ 2.06
Legacy lawsuits (Number per year)	LA DNR	5.81	7.24
Number of Observations: 187			

Empirical Model Output

Dependent Variable: Total Wells (logged)				
Sample: 1991 2007				
Periods included: 17				
Cross-sections included: 11				
Total panel (balanced) observations: 187				
Swamy and Arora estimator of component variances				
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	P-value
Constant	1.726	1.05	1.64	0.102
Average real well costs (logged \$2010 / well)	-0.217	0.08	-2.70	0.008
Sum of Reserves (logged MMBOE)	0.973	0.09	11.41	0.000
Real natural gas prices (logged \$2010 / Mcf)	0.651	0.13	4.96	0.000
Legacy Cases in Louisiana	-0.008	0.00	-2.02	0.045
Region: Alabama	-0.738	0.32	-2.28	0.024
Region: California	-0.632	0.41	-1.53	0.128
Region: Colorado	0.037	0.34	0.11	0.915
Region: Kansas	0.430	0.39	1.09	0.277
Region: North Louisiana	0.298	0.26	1.14	0.255
Region: South Louisiana (excl. inland waters)	-0.269	0.20	-1.32	0.189
Region: New Mexico	-0.518	0.35	-1.46	0.146
Region: Oklahoma	0.228	0.35	0.66	0.512
Region: Texas	0.156	0.44	0.36	0.722
Region: Wyoming	-0.162	0.38	-0.42	0.672
R-squared	0.93	Mean dependent var	5.33	
Adjusted R-squared	0.93	S.D. dependent var	1.25	
S.E. of regression	0.34	Sum squared resid	19.30	
F-statistic	171.25	Durbin-Watson stat	0.72	
Prob(F-statistic)	0			

Empirical Model Results (Technical variables and differences in state activities)

The empirical model of drilling activity estimates, as expected, a negative relationship between changes in inflation-adjusted well drilling costs and drilling activity. The model estimates that a one percent increase in well drilling costs results in a 0.21 percent decrease in drilling activity, holding all other things constant .

The model also estimates positive relationships between drilling and oil and natural gas reserve development, and drilling and inflation-adjusted natural gas prices. A one percent increase in reserves (MMBOE) is estimated to result in a 0.97 percent increase in drilling, while a one percent increase in prices are estimated to increase drilling activity by 0.65 percent, holding other factors constant.

State-specific impacts are analyzed using a fixed effects frame work. The fixed effect framework operates with reference to a certain lower 48 production area, which in this case, is South Louisiana. The results of the model estimates that only one state, Alabama, has lower drilling activity levels relative to South Louisiana (inland waters). In total, state fixed effects pass a joint F-test (Wald method) for statistical significance (F-value: 219; p-value: < 0.0001).

Empirical Model Results (Post-Legacy Lawsuit Environment)

The last variable included in the model is a set of fixed effects designed to capture the impact of legacy lawsuits on Louisiana drilling activity holding other factors, such as costs, prices, technical-factors, state-specific sample effects, and time-effects constant. The empirical results estimate that 0.8 percent fewer wells were drilled in Louisiana for each legacy lawsuit filed, holding other factors constant.

Therefore, if seven legacy lawsuits were filled in any given year, there would be a 5.6 percent decrease in drilling activity for that year (7 lawsuits x a 0.8 percent reduction per suit in drilling activity). Assume that 500 wells were drilled in the same year the seven lawsuits were filed. Drilling activity in lieu of the lawsuits would have resulted in 530 new wells, ($500 / (1 - 5.6 \text{ percent}) = 530$) instead of the actual 500. Thus, the lawsuits can be said to have reduced overall drilling activity by some 30 wells in that year ($530 - 500 = 30$).

Empirical Model Results (Post-Legacy Lawsuit Environment)

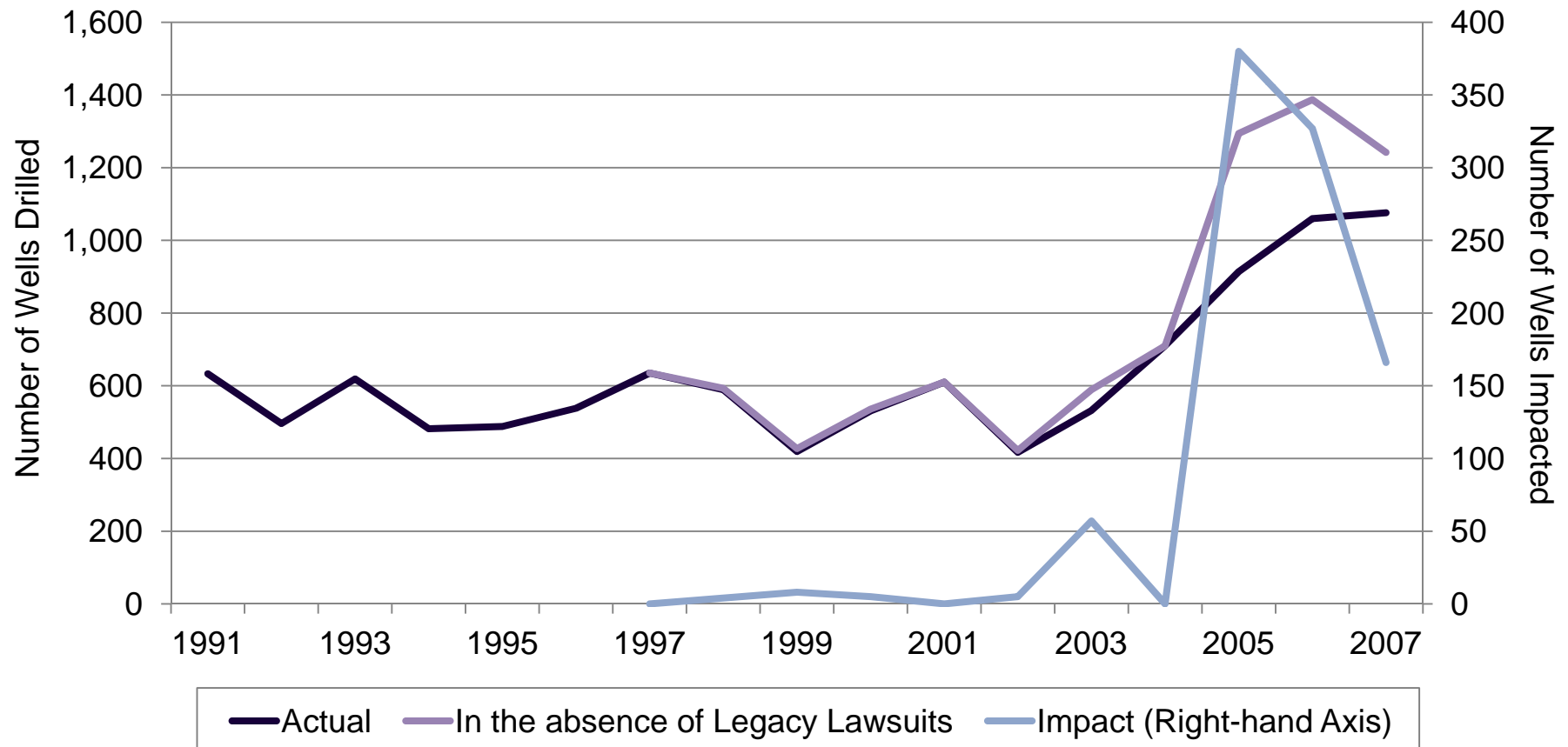
The overall statistical findings estimate that, on average, about 150 fewer wells per year, over the last eight years, were drilled in Louisiana due to legacy lawsuits. This empirical research estimates that over the past eight years, legacy lawsuits have led to a loss of some 1,200 new wells. This translates into a total statewide reduction of about \$6.8 billion dollars in lost Louisiana drilling investments over the past eight years, and does not include any production-related expenditures and mineral revenues that would have also been created by these new wells.

4. Economic Impact of Legacy Lawsuits



Legacy-Induced Reductions in North Louisiana Drilling Activity

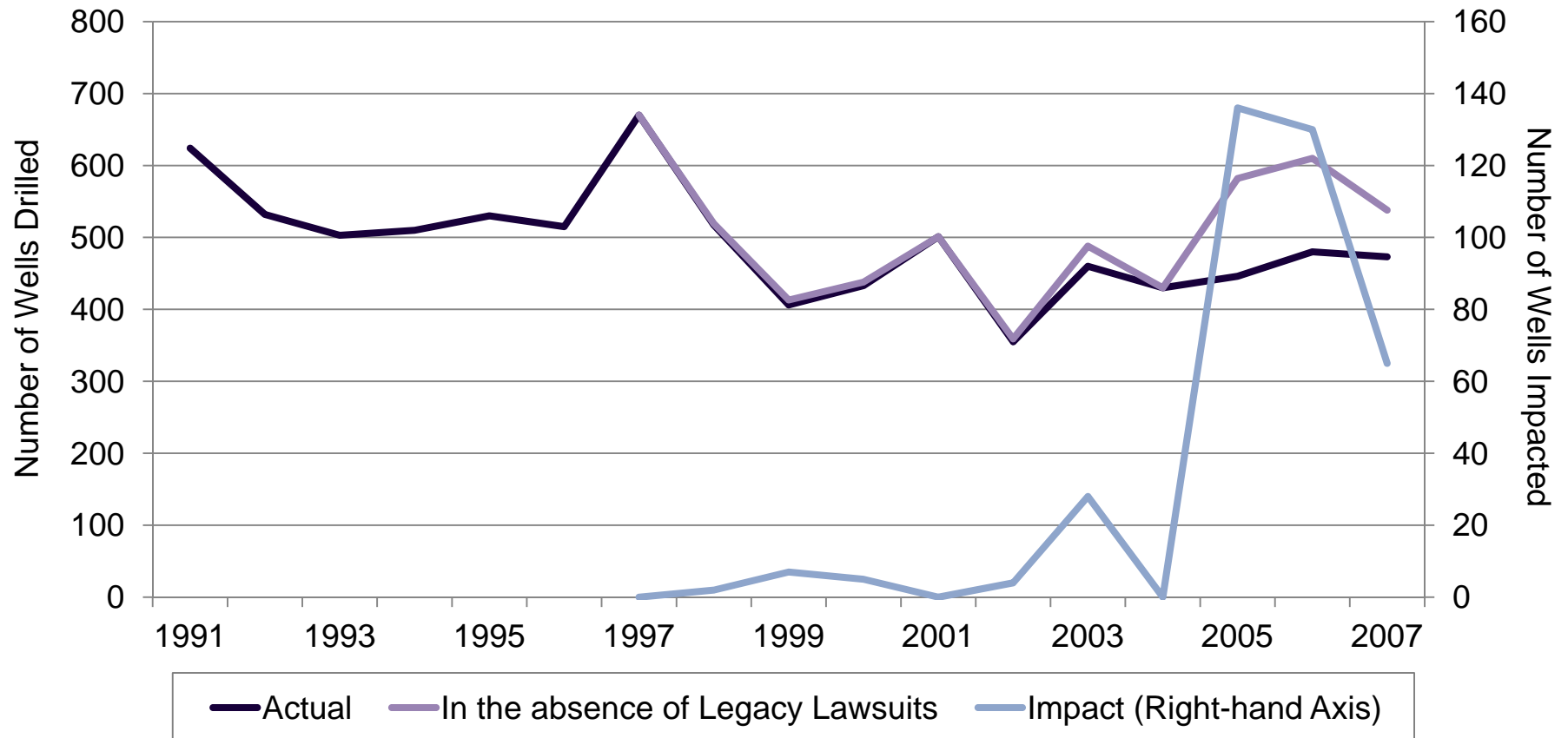
Legacy lawsuits are estimated to have a statistically significant negative impact on north Louisiana conventional drilling activity. Overall, north Louisiana drilling activity is estimated to have been reduced by some 952 wells over the past eight years with the most significant impact occurring in 2005 and 2006.





Legacy Induced Reduction in South Louisiana and Inland Waters Drilling Activity

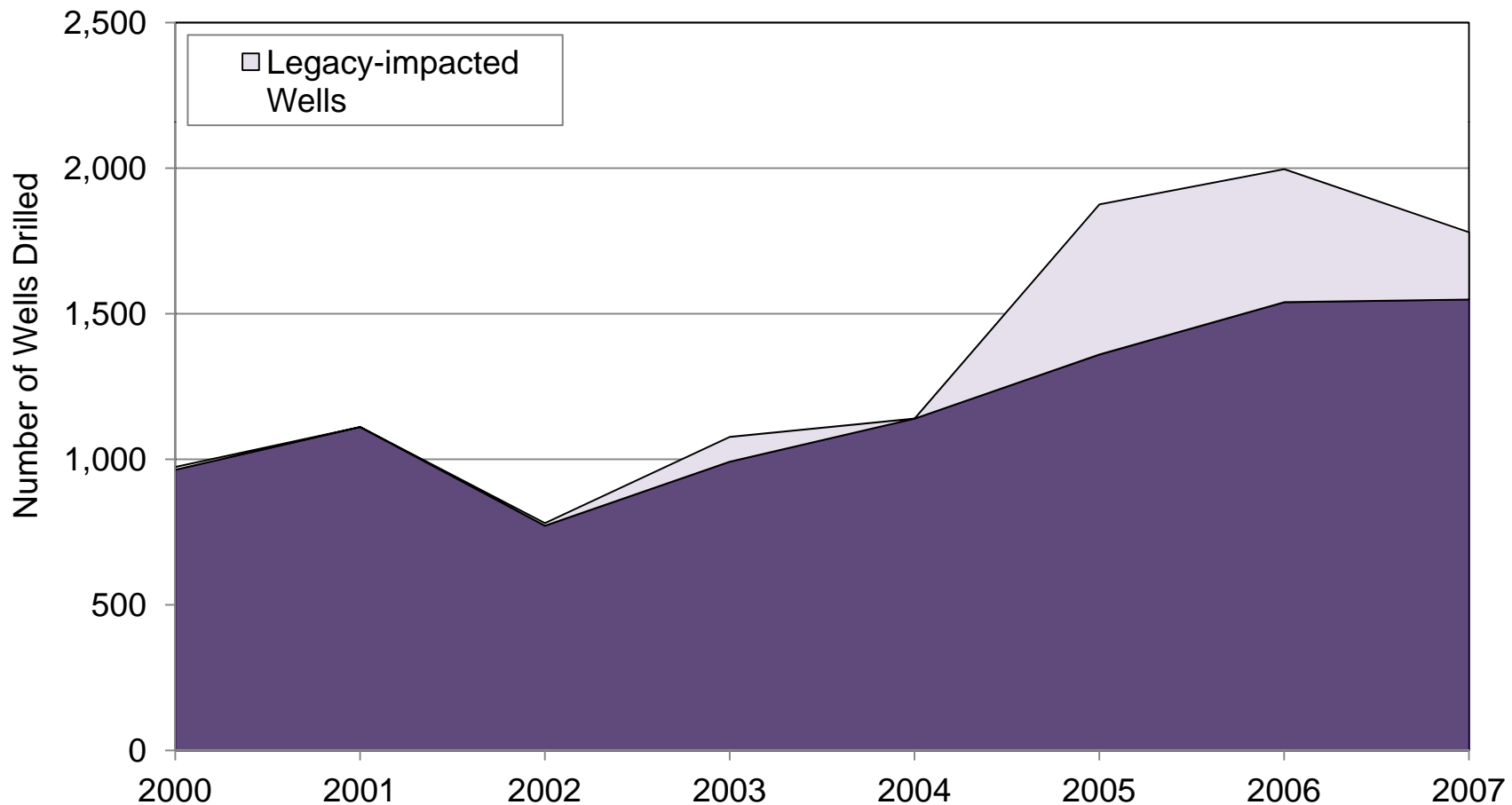
Legacy lawsuits are estimated to have a statistically significant negative impact on south Louisiana conventional drilling activity. Overall, south Louisiana drilling activity is estimated to have been reduced by some 377 wells over the past eight years with the most significant impact occurring in 2005 and 2006.





Actual versus Legacy-Impacted Wells

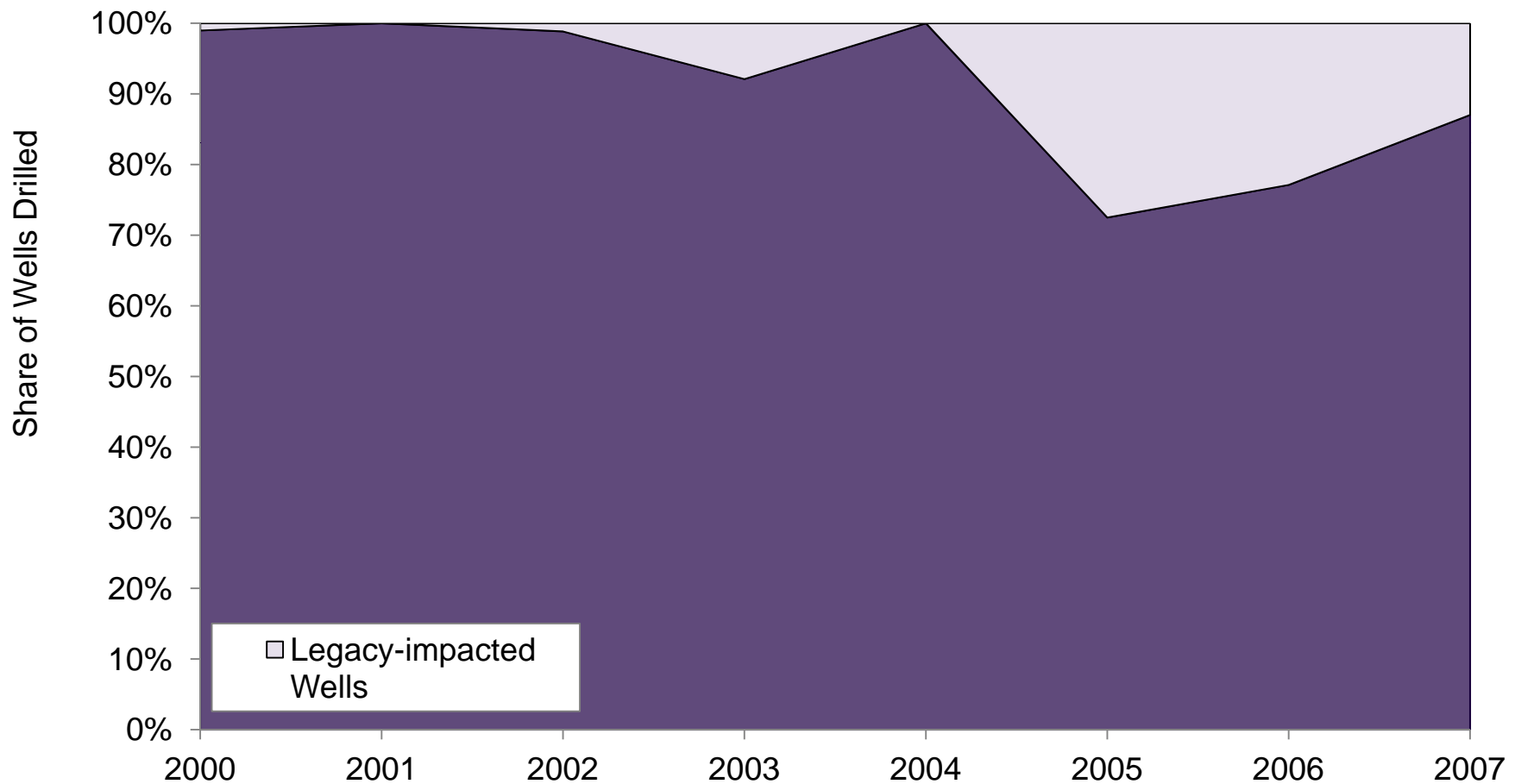
Legacy lawsuits are estimated to have contributed to a significant reduction in drilling activity during 2005 and 2006. While the legacy-induced impact is down in 2007, it still accounts for a several hundred well reduction.





Actual versus Legacy-Impacted Wells (Percent of Total Activity)

In percentage terms, the legacy-lost wells were estimated to have been as large as 25 percent to 30 percent of all completed well activity during 2005 to 2006.



Economic Output Impact

Legacy lawsuits are estimated to have led to the loss of around \$4 billion over the past eight years in north Louisiana, and a loss of close to \$6.5 billion in economic activity in south Louisiana.

Overall state economic activity has been reduced by close to \$10.5 billion.

	Output (2010\$ Millions)		
	N. Louisiana	S. Louisiana and Inland Waters	Total
Total (8 years)			
Output			
Direct	\$ (2,561)	\$ (4,167)	\$ (6,729)
Indirect	\$ (1,038)	\$ (1,690)	\$ (2,728)
Induced	\$ (395)	\$ (642)	\$ (1,036)
Total	\$ (3,994)	\$ (6,499)	\$ (10,493)
Average per Year			
Output			
Direct	\$ (320)	\$ (521)	\$ (841)
Indirect	\$ (130)	\$ (211)	\$ (341)
Induced	\$ (49)	\$ (80)	\$ (130)
Total	\$ (499)	\$ (812)	\$ (1,312)



Employment Impact

Legacy lawsuits are estimated to have contributed to a loss of 11,530 jobs in north Louisiana and 18,761 jobs in south Louisiana over the past eight years.

Overall, Louisiana is estimated to have lost about 30,291 employment opportunities as a result of legacy lawsuit activity.

	Employment (Jobs)		
	N. Louisiana	S. Louisiana and Inland Waters	Total
Total (8 years)			
Output			
Direct	(2,662)	(4,332)	(6,995)
Indirect	(5,205)	(8,470)	(13,675)
Induced	(3,662)	(5,959)	(9,621)
Total	(11,530)	(18,761)	(30,291)
Average per Year			
Output			
Direct	(333)	(542)	(874)
Indirect	(651)	(1,059)	(1,709)
Induced	(458)	(745)	(1,203)
Total	(1,441)	(2,345)	(3,786)



Employee Compensation Impact

Legacy lawsuits are estimated to have contributed to the reduction of close to \$600 million in north Louisiana wages and close to \$950 million in south Louisiana wages.

Overall, Louisiana has seen the loss of some \$1.5 billion in wages due to legacy-related lawsuits.

	Employee Compensation (2010\$ Millions)		
	N. Louisiana	S. Louisiana and Inland Waters	Total
Total (8 years)			
Output			
Direct	\$ (221)	\$ (360)	\$ (582)
Indirect	\$ (250)	\$ (407)	\$ (657)
Induced	\$ (112)	\$ (182)	\$ (294)
Total	\$ (583)	\$ (949)	\$ (1,533)
Average per Year			
Output			
Direct	\$ (28)	\$ (45)	\$ (73)
Indirect	\$ (31)	\$ (51)	\$ (82)
Induced	\$ (14)	\$ (23)	\$ (37)
Total	\$ (73)	\$ (119)	\$ (192)

Value Added Impact

Legacy lawsuits are estimated to have resulted in the contraction of some \$1.7 billion in other value added over the course of the past eight years in north Louisiana.

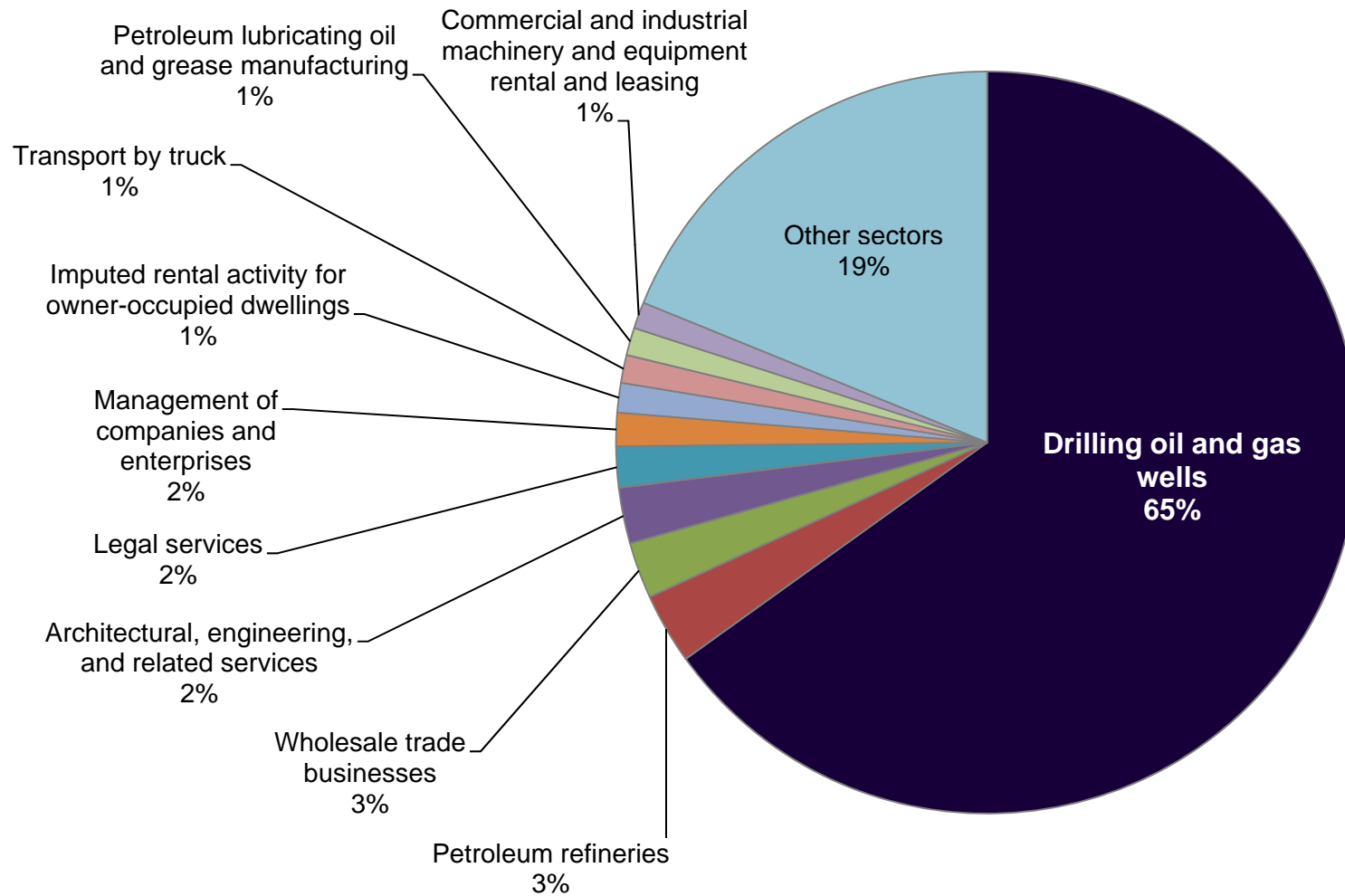
South Louisiana has seen a contraction of some \$2.8 billion over a comparable time period.

Overall, Louisiana has lost some \$4.5 billion in other value-added activity as a result of legacy-induced reductions in oil and gas drilling. Other value added includes state and local taxes that would have occurred but for the legacy suit-induced reduction in oil and gas drilling.

	Value Added (2010\$ Millions)		
	N. Louisiana	S. Louisiana and Inland Waters	Total
Total (8 years)			
Output			
Direct	\$ (1,007)	\$ (1,639)	\$ (2,647)
Indirect	\$ (488)	\$ (794)	\$ (1,281)
Induced	\$ (231)	\$ (375)	\$ (606)
Total	\$ (1,726)	\$ (2,808)	\$ (4,534)
Average per Year			
Output			
Direct	\$ (126)	\$ (205)	\$ (331)
Indirect	\$ (61)	\$ (99)	\$ (160)
Induced	\$ (29)	\$ (47)	\$ (76)
Total	\$ (216)	\$ (351)	\$ (567)

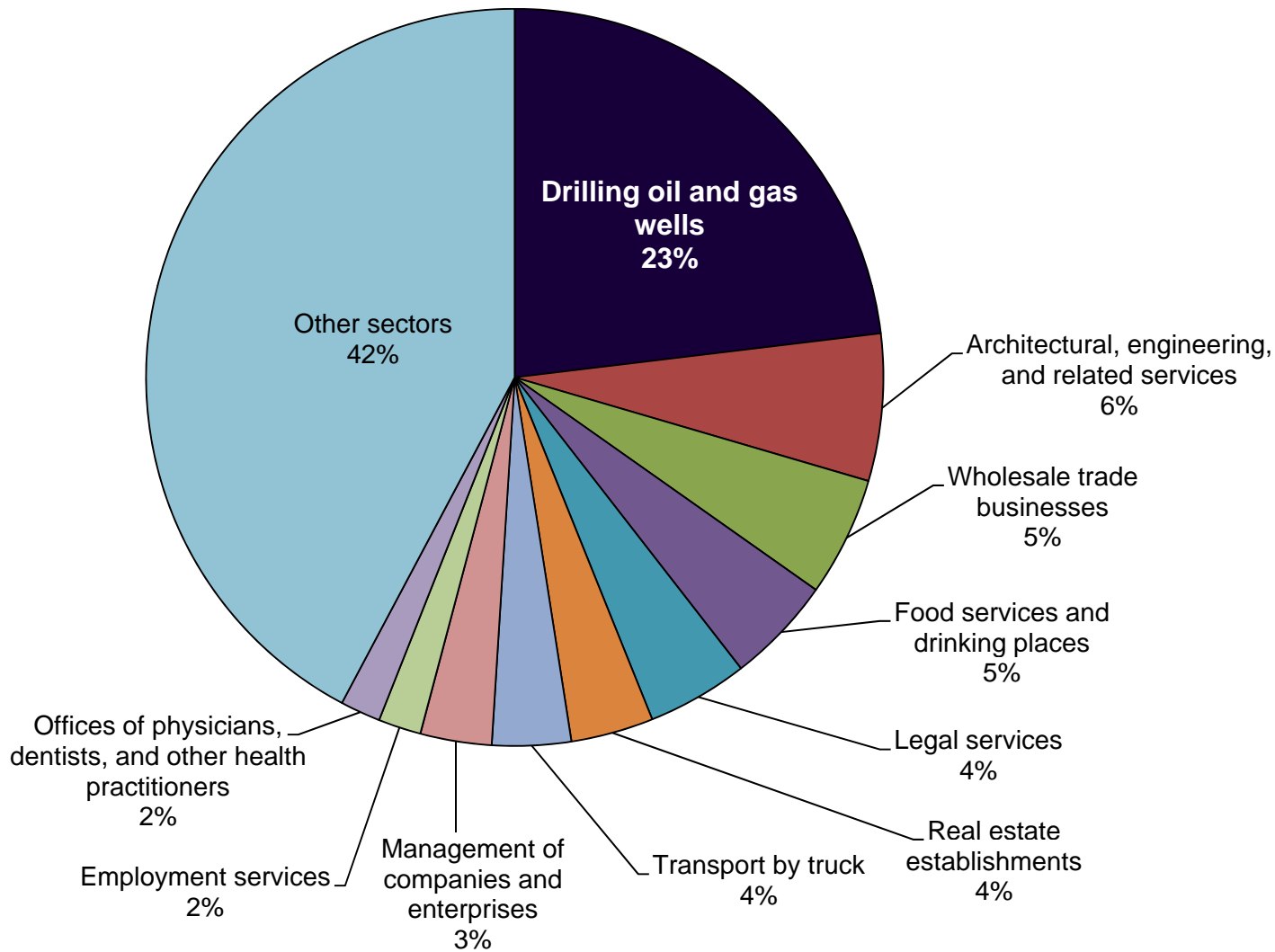


Distribution of output impacts





Distribution of employment impacts



5. Longer Run Considerations



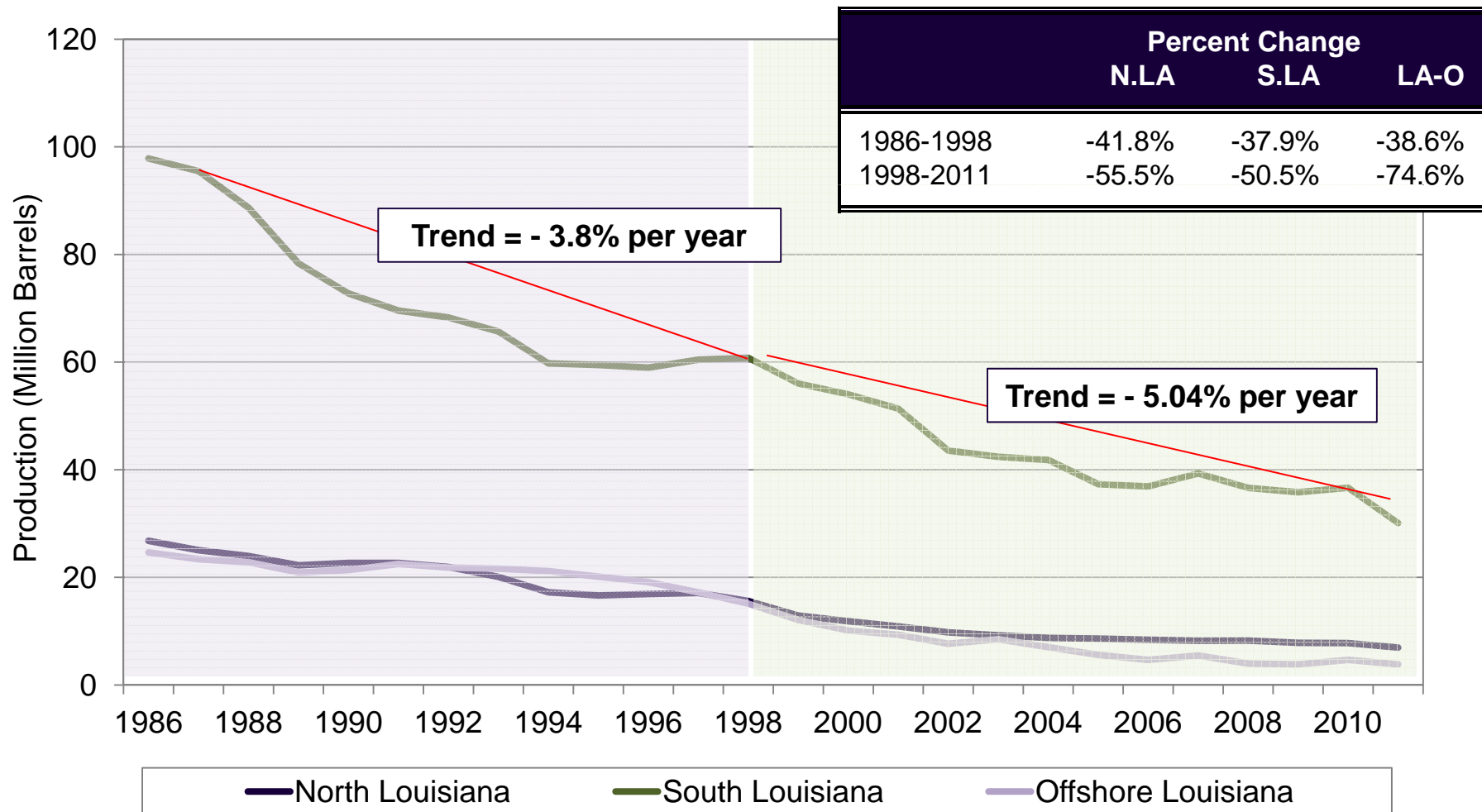
Longer Run Implications Associated with Legacy Suits

- **The negative perceptions created by legacy lawsuits in the oil and gas industry has significant implications for, not only the state's economy, but its annual mineral revenue collections.**
- **While Louisiana has benefitted considerably from recent unconventional oil and gas drilling and production in the Haynesville shale, these benefits have clearly not been large enough to offset the rapid production declines from conventional leases throughout the state.**
- **The decline in conventional production will not reverse itself without new drilling activity, something that this research has shown to be unlikely until the uncertainties created by these legacy suits is addressed in a meaningful fashion.**
- **In addition, Louisiana is becoming exceptionally dependent upon unconventional production rather than a diversified balance of conventional and unconventional activity. There are numerous unconventional opportunities throughout the U.S., with many of these plays having considerable liquids and crude oil resources not present in the Haynesville.**
- **Producer preferences for these alternative unconventional plays, coupled with a rapidly contracting conventional resource base and legacy-induced reductions in new conventional drilling activity, will likely lead to rapidly decreasing state mineral revenues.**



Louisiana Crude Oil Production

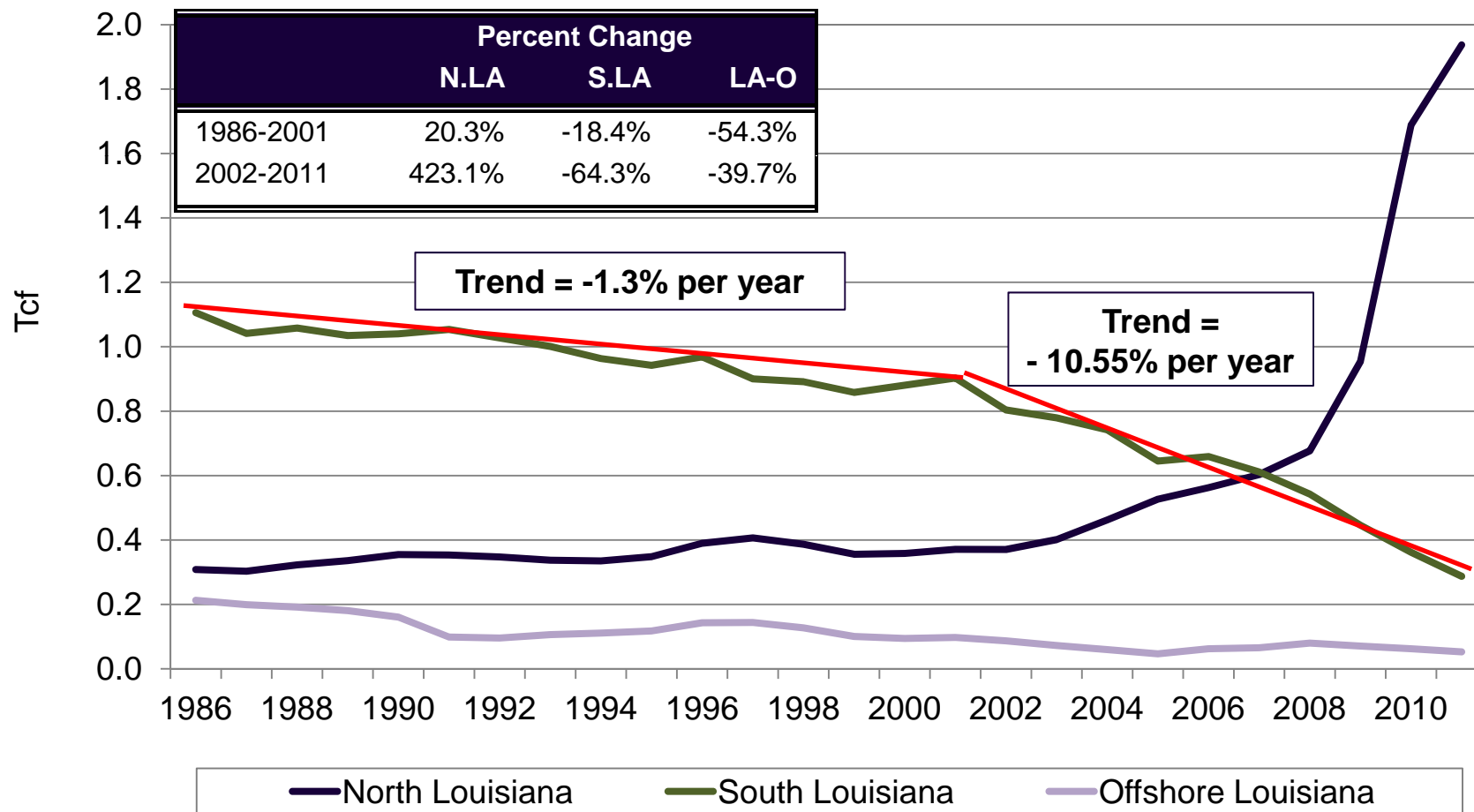
Decline rates in crude oil production are increasing rapidly. Failure to initiate new conventional drilling will only exacerbate an already significant problem.





Louisiana Natural Gas Production Trends

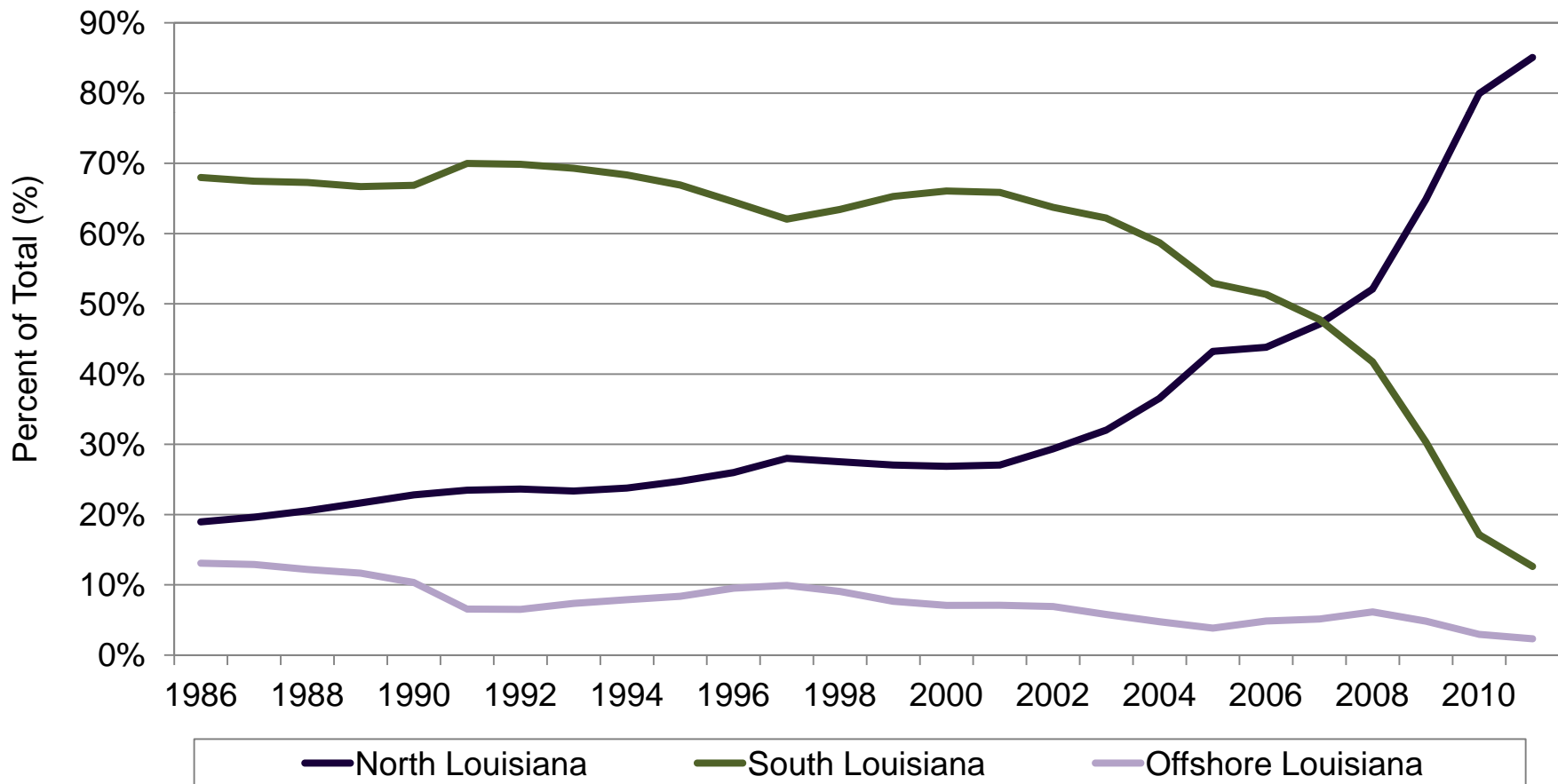
North Louisiana unconventional production is offsetting what would otherwise be a precipitous decline in conventional South Louisiana/offshore natural gas production.





Louisiana Natural Gas Production Shares

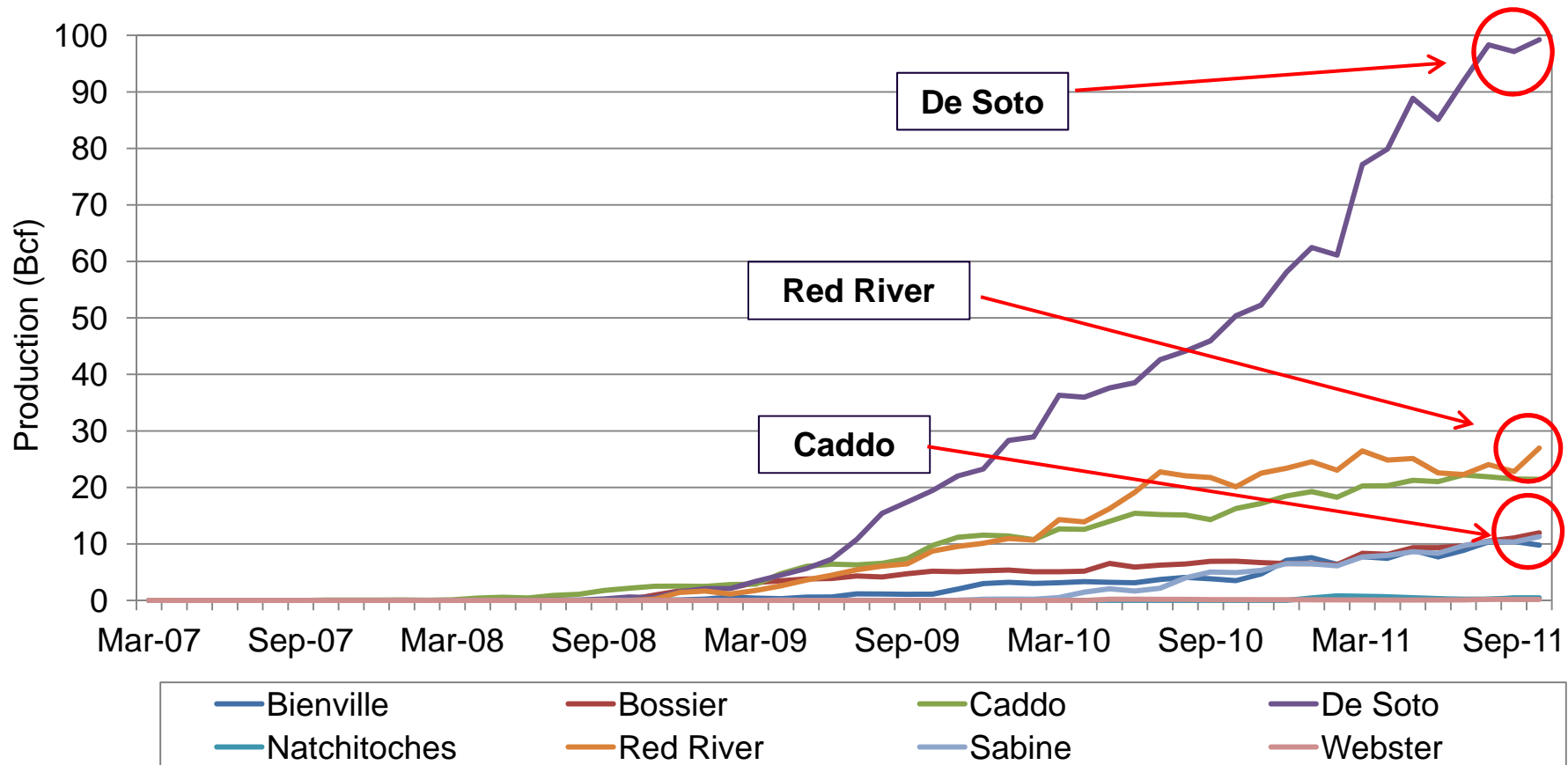
North Louisiana natural gas production has replaced the contribution made by South Louisiana natural gas production. While the economic contribution made by these resources is welcome, Louisiana is becoming exceptionally dependent upon unconventional resource development.





Total Louisiana Haynesville Production by Parish

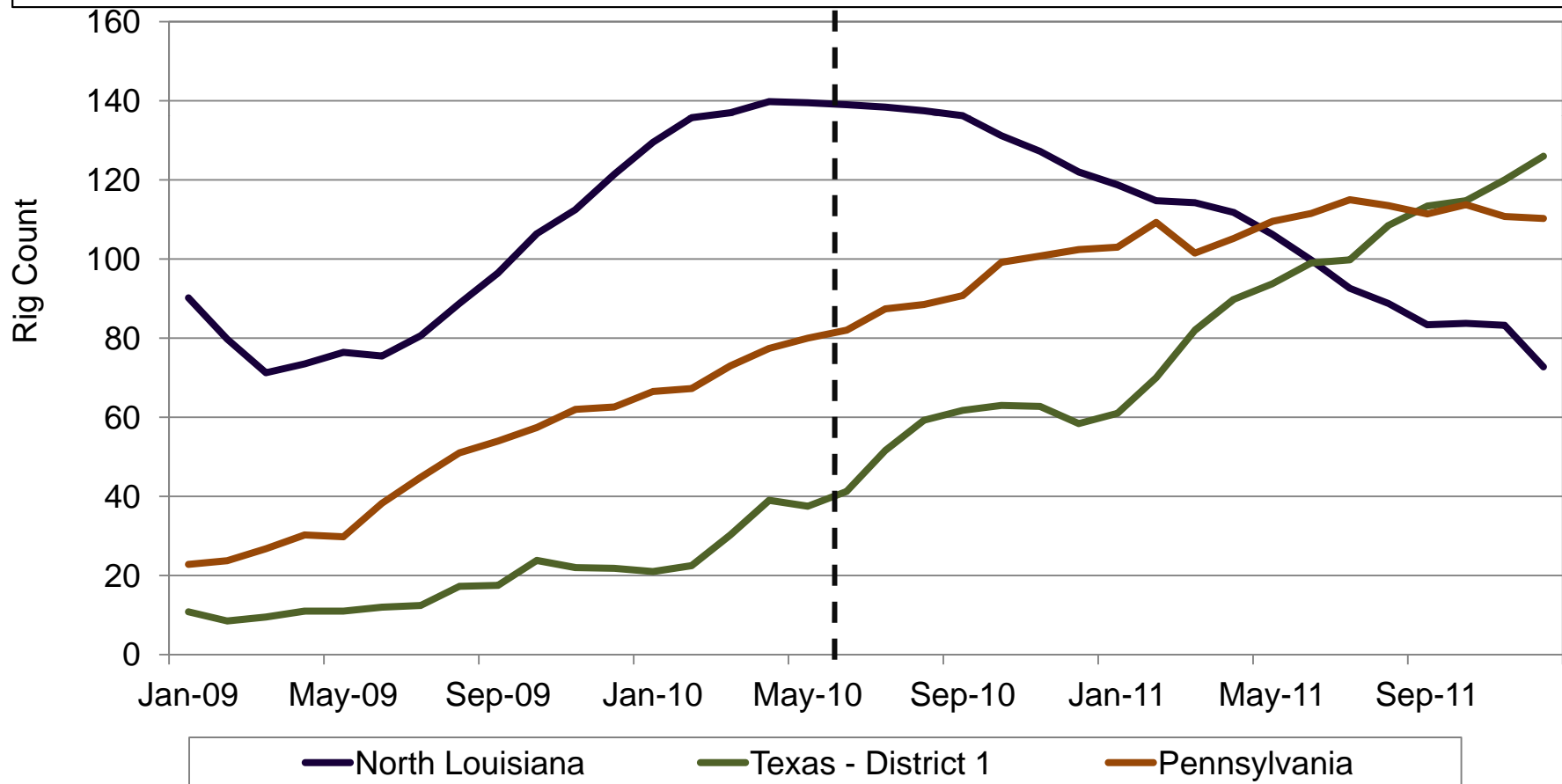
North Louisiana production comes primarily from about four or five parishes.





Rig Count, North Louisiana (Haynesville) and Texas District 1 (Eagle Ford)

In 2011, North Louisiana rig count has fallen 63 percent (46 rigs), while Eagle Ford activity has increased 52 percent (65 rigs) and the Marcellus region has increased 7 percent (7 rigs). Unconventional activity is already moving away from the Haynesville and towards other liquids-rich plays.

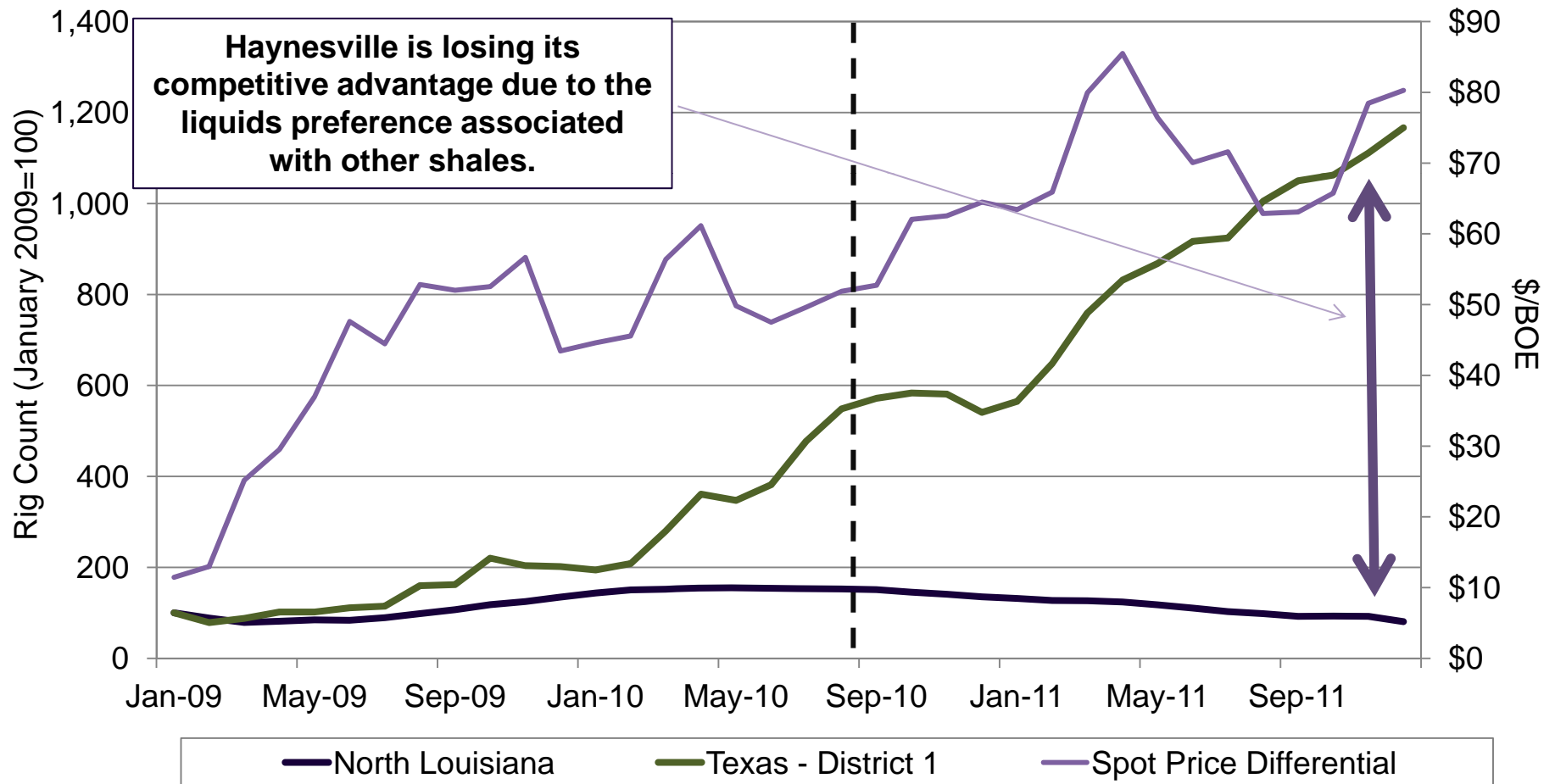


Source: Baker Hughes. Rig counts represent the number of active drilling rigs in each reported area.



Rig Count, North Louisiana (Haynesville) and Texas District 1 (Eagle Ford)

Indexing the rig change from January 2009 highlights the recent, fast, and dramatic shift in basin preference.



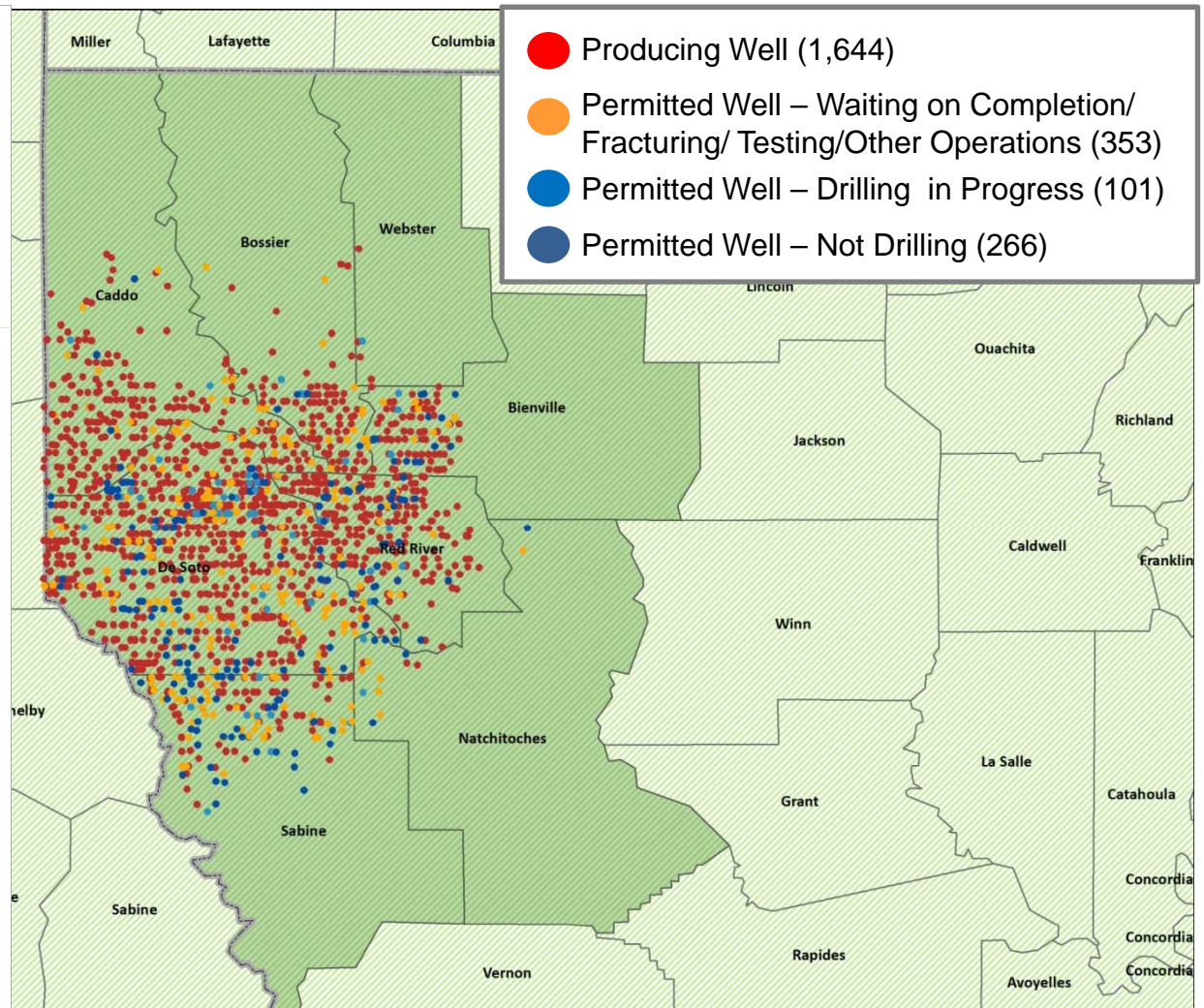
Source: Baker Hughes. Rig counts are indexed to the level of active drilling rigs in each reported area as of January 2009.



Haynesville Wells

During 2008 and 2009, there was a significant well development backlog in the Haynesville parishes: meaning that there were a large number of wells, that had been completed, but were awaiting necessary infrastructure for initial production. This is one of the reasons why 2009 and 2010 saw increased natural gas production volumes from the region despite decreased drilling activity

Today, there are few wells (353) left in the development backlog to come on line over the next 6 to 12 months. This will likely lead to a downturn in overall natural gas production from the area without any substantial pick-up in drilling activity.



State Oil and Gas Mineral Revenue per BOE (Severance)

Louisiana has seen one of the slowest growth rates of mineral revenue per BOE produced of any lower 48 state. Louisiana has also seen one of the largest decreases in mineral revenues during the 2007-2010 period. Even during the 2004 to 2007 period, Louisiana mineral revenue development was not as substantial as other states.

	New Mexico	Mississippi	Oklahoma	Wyoming	Alabama	Louisiana	Texas	Kansas	Arkansas	Colorado	California
\$ per BOE											
2000	\$ 1.65	\$ 0.62	\$ 1.16	n.a.	n.a.	\$ 1.20	\$ 0.94	\$ 0.45	n.a.	\$ 0.16	\$ 0.03
2001	2.21	1.16	2.11	1.64	1.36	1.20	1.70	0.92	n.a.	0.33	0.03
2002	2.00	0.64	1.21	1.60	0.69	1.21	0.86	0.53	n.a.	0.26	0.03
2003	2.28	0.94	1.76	1.13	1.26	1.41	1.31	0.73	0.01	0.12	0.04
2004	2.77	1.03	1.97	1.98	1.50	1.76	1.75	0.87	0.01	0.50	0.04
2005	3.68	1.22	2.49	2.56	2.06	2.22	2.06	1.11	0.01	0.60	0.05
2006	4.76	1.51	3.23	3.47	2.88	2.64	2.67	1.42	0.28	0.85	0.05
2007	4.47	1.17	2.66	3.04	2.38	2.75	2.10	1.23	0.28	0.52	0.06
2008	5.84	1.53	3.15	2.49	3.40	3.57	2.91	1.51	0.26	0.51	0.06
2009	4.65	1.33	2.97	3.78	2.11	1.94	1.75	1.35	0.35	0.92	0.07
2010	4.63	2.62	2.47	2.41	2.00	1.78	1.69	1.08	0.44	0.23	0.08
Average for Period:											
2000-2010	\$ 3.54	\$ 1.25	\$ 2.29	\$ 2.41	\$ 1.97	\$ 1.97	\$ 1.79	\$ 1.02	\$ 0.21	\$ 0.46	\$ 0.05
2000-2003	\$ 2.03	\$ 0.84	\$ 1.56	\$ 1.46	\$ 1.11	\$ 1.25	\$ 1.20	\$ 0.66	\$ 0.01	\$ 0.22	\$ 0.03
2004-2007	\$ 3.92	\$ 1.24	\$ 2.59	\$ 2.76	\$ 2.21	\$ 2.35	\$ 2.15	\$ 1.16	\$ 0.15	\$ 0.62	\$ 0.05
2007-2010	\$ 4.90	\$ 1.66	\$ 2.81	\$ 2.93	\$ 2.47	\$ 2.51	\$ 2.11	\$ 1.29	\$ 0.33	\$ 0.55	\$ 0.07
Percent Change (%)											
2001	33.9%	87.9%	82.1%	n.a.	n.a.	-0.4%	80.1%	104.1%	n.a.	107.7%	10.3%
2002	-9.2%	-44.8%	-42.8%	-2.4%	-49.2%	1.2%	-49.3%	-42.4%	n.a.	-21.0%	5.3%
2003	13.8%	47.2%	46.4%	-29.1%	82.4%	15.9%	51.6%	37.4%	n.a.	-55.7%	15.8%
2004	21.5%	9.8%	11.9%	74.8%	19.0%	25.5%	34.1%	20.3%	-4.6%	326.1%	5.6%
2005	33.0%	17.8%	26.0%	28.9%	37.3%	26.1%	17.8%	26.6%	2.2%	19.4%	14.2%
2006	29.4%	24.1%	30.0%	35.7%	39.4%	18.7%	29.2%	28.2%	2019.1%	42.9%	4.3%
2007	-6.1%	-22.4%	-17.7%	-12.3%	-17.2%	4.3%	-21.2%	-13.1%	0.0%	-39.5%	15.9%
2008	30.5%	30.5%	18.3%	-18.1%	42.6%	29.8%	38.5%	22.4%	-8.7%	-0.4%	11.8%
2009	-20.3%	-13.3%	-5.7%	51.4%	-37.8%	-45.6%	-39.9%	-10.6%	37.7%	80.1%	15.5%
2010	-0.6%	97.0%	-16.9%	-36.2%	-5.1%	-8.5%	-3.5%	-19.6%	23.2%	-75.3%	13.3%
Average for Period:											
2001-2010	12.6%	23.4%	13.2%	10.3%	12.4%	6.7%	13.7%	15.3%	295.6%	38.4%	11.2%
2001-2003	12.8%	30.1%	28.6%	-15.7%	16.6%	5.6%	27.5%	33.0%	n.a.	10.3%	10.5%
2004-2007	19.5%	7.3%	12.6%	31.8%	19.6%	18.7%	15.0%	15.5%	504.2%	87.2%	10.0%
2007-2010	0.9%	22.9%	-5.5%	-3.8%	-4.4%	-5.0%	-6.5%	-5.2%	13.1%	-8.8%	14.2%



6. Conclusions

Conclusions

- **Legacy lawsuits are strongly and negatively correlated with Louisiana drilling activity. Increases in legacy lawsuits are correlated with reductions in conventional Louisiana oil and gas drilling.**
- **This research estimates that over the past eight years, legacy lawsuits have led to a loss of some 1,200 new wells, translating into a total statewide reduction of about \$6.8 billion dollars in lost Louisiana drilling investments that excludes any production-related expenditures and mineral revenues that would have also been created by these new wells.**
- **Over the past eight years, the economic impacts of the cumulative legacy-induced decrease in drilling activity alone can be said to have led to the reduction of:**
 - **Approximately \$6.7 billion (in 2010 dollars) in decreased drilling expenditures;**
 - **Close to \$10.5 billion in Louisiana economic output;**
 - **Over 30,000 employment opportunities in oil and gas activities and supporting jobs; and**
 - **Over \$1.5 billion in wages for those employed directly and indirectly in the oil and gas business.**