

DeSoto Parish, Louisiana | Case Studies

For years, natural gas production in the Haynesville Shale in the southern U.S. was too difficult and costly. However, in the mid- to late-2000s, advances in hydraulic fracturing and horizontal drilling techniques, as well as rising natural gas prices, made extracting natural gas in the region both technically feasible and profitable for the extractive industries.

Geology and history

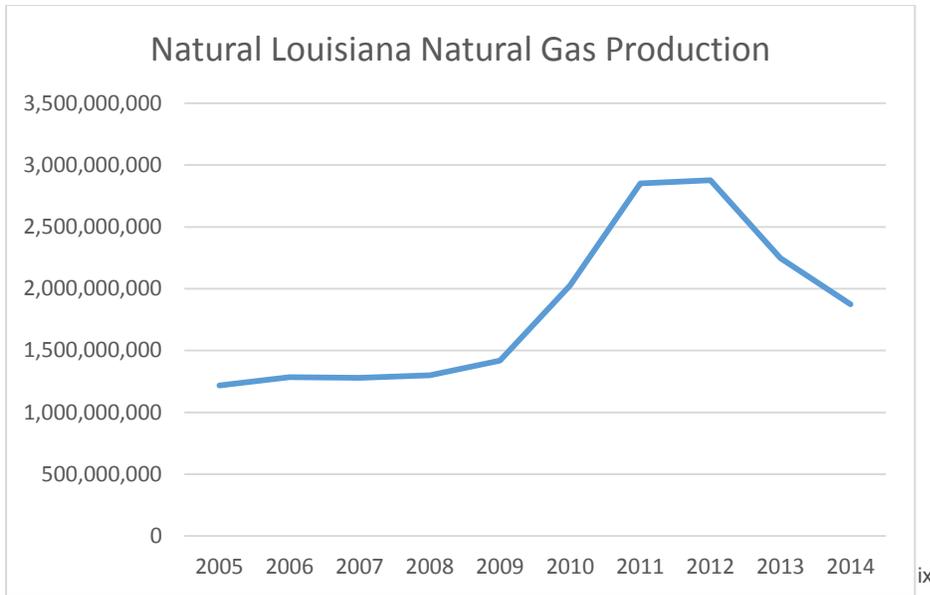
The Haynesville sedimentary rock formation rests 10,000 feet to 13,000 feet below the surface of northwestern Louisiana, eastern Texas, and southwestern Arkansas. DeSoto Parish, home to 27,052 residents, sits at the center of the Haynesville Shale. In the early 2000s, DeSoto Parish's economy consisted primarily of cattle and dairy farming, and forest extraction. However, DeSoto's economy transformed when the Chesapeake Energy Corporation drilled the first exploratory well in the Haynesville Shale in 2007, setting off a natural gas boom in the parish in 2008.ⁱ

Production

From 2007 to 2011, natural gas production quadrupled in northern Louisiana, where DeSoto Parish is located.ⁱⁱ More recently, declining natural gas prices have resulted in lower production numbers. For example, the spot price at the Henry Hub in Louisiana fell by ~35% from 2014 to 2015 (from an average \$4.55 per MMBtu to an average of \$3.00 in 2015).ⁱⁱⁱ Production in the region fell from 2.5 trillion cubic feet in 2011 to 1.3 trillion cubic feet in 2015.^{iv}

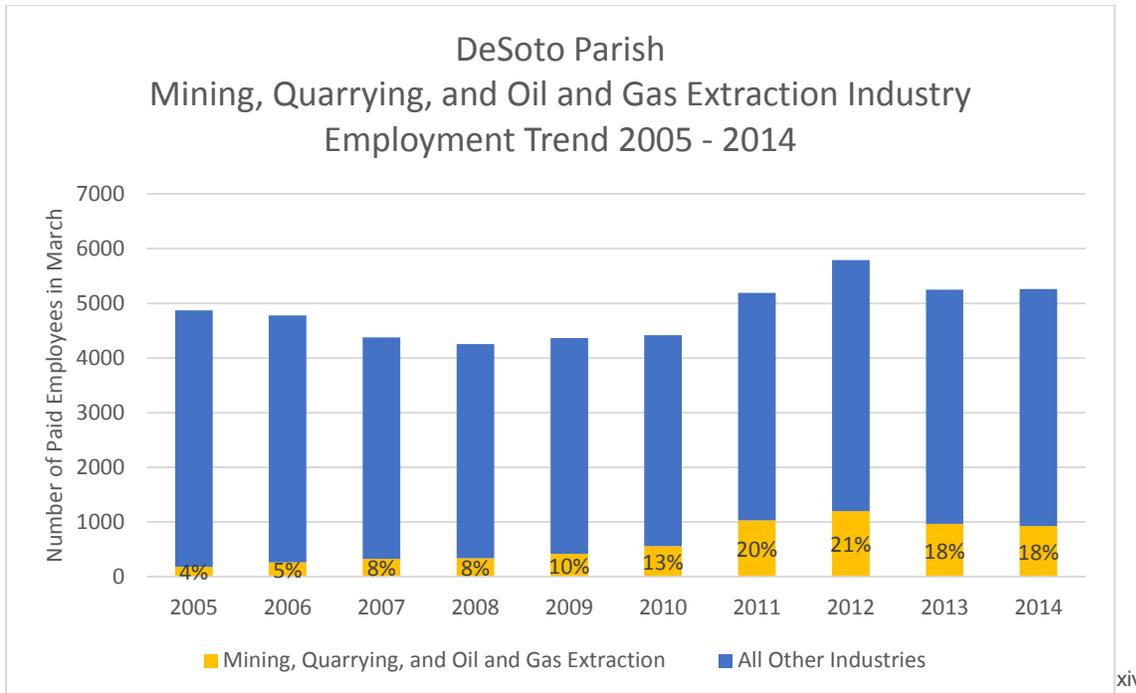
In 2014, Louisiana had a total of 23.25 trillion cubic feet of proved natural gas reserves.^v Louisiana experienced the largest drop in natural gas production in the country in 2014, with a decline of 16%.^{vi}

In 2014, the U.S. Energy Information Administration estimated that there were 16.6 trillion cubic feet of proved reserves in the Haynesville/Bossier Shale in Texas and Louisiana.^{vii} Louisiana ranked 5th in the nation for proved shale gas reserves.^{viii}



Employment

Out of DeSoto's nearly 27,000 residents, about 2% (548 people) were employed in mining-support activities in 2013, which included oil and gas extraction.^{x xi} Of this group, about half (271 people) were employed specifically in support activities for oil and gas extraction.^{xii} More recent employment data for the complete oil and gas industry in the parish is unavailable. The chart below shows the increase in employment in broader extractive industries — specifically mining, quarrying, and oil and gas extraction — in DeSoto Parish between 2005 and 2014.^{xiii}



Revenue

The Haynesville Shale natural gas boom has increased revenue for the State of Louisiana and DeSoto Parish through state severance taxes and royalties, parish property taxes, and sales and use taxes.

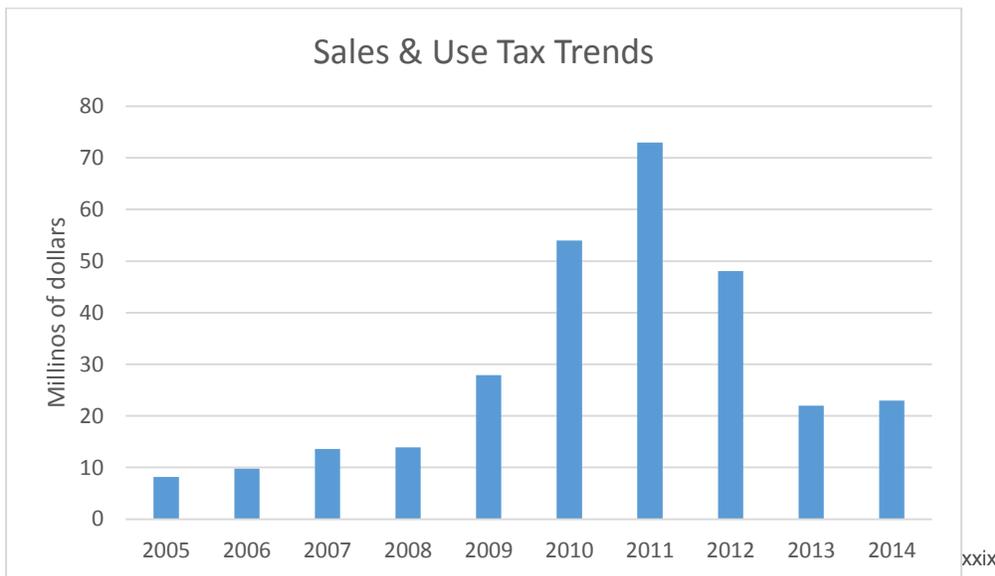
The State of Louisiana levies a severance tax on natural gas owners at a rate of \$0.158 per Mcf (or thousand cubic feet) produced.^{xv} In 2015, Louisiana received \$190 million from gas severance taxes across the state, as well as from \$358 million from gas royalties for production on state-owned lands, up from \$99.45 million and \$158.82 million respectively in 2013.^{xvi} The state distributes some of this revenue to the parishes where extraction took place. For severance taxes, one-fifth of taxes return to the parish, as long as the total does not exceed \$750,000.^{xvii} For royalties, 10% return to the parish.^{xviii} Royalties are bid on for each lease, and by law they cannot be less than 1/8 of the value of production.^{xix} In 2014, DeSoto Parish received \$624,592 in royalties, rents, accounting for 2% of total revenue, while taxes made up 69%.^{xx} Louisiana also collects 1% of gross receipts from the operation of natural gas franchises or charters in the state.^{xxi}

In addition to the state, DeSoto Parish also collects revenue from natural gas production, most notably in the form of property taxes. Revenue from property taxes increases with the assessed value of the property, and is the largest source of revenue for DeSoto Parish. Starting in 2008, the discovery of shale gas increased property values in DeSoto Parish, according to the parish school board. From 2008 to 2015, the taxable value of property within the parish increased by 125%, or from \$291 million to \$750 million.^{xxii} ^{xxiii} In 2015, property taxes exceeded \$43 million.^{xxiv} Property tax

revenues are used for numerous purposes, including to pay off long-term debt which was sold to build new schools.^{xxv}

Sales and use taxes are the second largest source of revenue for DeSoto Parish. Natural gas exploration and development also spurred greater revenue from sales and use taxes, which increased from \$8 million in 2004 to \$73 million in FY 2010–2011. This trend has since reversed, and sales and use tax accounted for \$23 million in revenue in 2014.^{xxvi}

Sales and use taxes are deposited into the General Fund, School Lunch Fund, Debt Service Fund, and Capital Projects Fund.^{xxvii} While sales and use taxes are not solely attributable to the natural gas industry, there is a noticeable decline in this revenue stream when the industry faces slowdowns. For example, sales and use taxes declined by \$27 million (40%) in 2013 compared to the prior fiscal year, as exploration for oil and natural gas moved to other parts of the country.^{xxviii}



Property taxes also contribute substantially to the school board’s revenue, funding employee salaries, operations, and debt service payments on capital bonds for the local education system.^{xxx} The amount of revenues coming from property tax increased by 45% from 2012 (\$26.5 million) to 2015 (\$38.4 million).^{xxxi} State tax documents do not specify what percentage of property taxes comes from the gas industry.

Costs

Since 2008, Louisiana has invested at least \$1.1 billion in transportation projects in the seven parishes located in the northwest region of the state, including DeSoto Parish.^{xxxii} While Louisiana’s latest comprehensive state transportation plan acknowledges that the state must pay adequate attention to the transportation needs of the rapidly expanding oil and gas industry, it does not specify the types or costs of projects supported.^{xxxiii}

Louisiana completed a Hydraulic Fracturing State Review in March 2011, which explains the state’s policies around industrial water use and wastewater reuse and/or disposal. However, the review does not itemize public expenditures on water-related infrastructure for industrial activities.^{xxxiv}

The DeSoto Parish Emergency Medical Services (EMS) Department formed in 2001, funded by a four percent millage tax.^{xxxv} Since then, the DeSoto EMS Department has worked closely with gas companies on safety measures, including answering numerous calls related to gas-well site incidents. The parish is not bearing the full burden of these incidents; the parish has received donations from private companies to offset equipment costs. The frequency and value of the donations is not published.

Data availability

The table below highlights data sources used to compile this narrative, as well as any gaps in publicly available data.

Measure	Data availability	Data gaps
Production	The Louisiana Department of Natural Resources (DNR) publishes annual natural gas production data at the regional level.	
Employment	The Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages published employment data for extractive industries support activities for 2013. U.S. Census Bureau Censtats data on County Business Patterns provided historical employment data for the complete mining industry (NAICS code: 21) for the parish. For any employment estimates identified using the letter-coded ranges (e.g., “a” = 0–19 employees), the average number was used (e.g., “a” = 9.5 employees).	BLS data does not include employment in the oil and gas industry more broadly, only in support activities. For DeSoto Parish, Censtats did not have employment data specifically for the oil and gas industry (NAICS codes: 211, 213111, 213112), only for the mining industry at large (NAICS code: 21). In addition, the data did not separate employment related to natural gas extraction from the broader oil and gas sector.
Revenue	The Louisiana Department of Revenue, Louisiana DNR, Louisiana Division of Administration, DeSoto Parish Policy Jury, and DeSoto Parish School Board publish information on revenue related to extractive	

Measure	Data availability	Data gaps
	industries.	
Costs	The Louisiana Department of Transportation and Development, Louisiana DNR, and DeSoto Parish website publish publicly available cost information related to natural gas extraction.	Data on public expenditures for gas-related site reclamation was not found. Data on private company donations to parish emergency services was not publically available. Several public reports on parish costs including Department of Transportation reports have not been updated since last year.

Notes

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- ⁱ [De Soto parish’s instant millionaires hold on to their humble roots](#), 2011
- ⁱⁱ Louisiana Department of Natural Resources, [Louisiana Energy Facts and Figures](#)
- ⁱⁱⁱ [U.S. Crude Oil and Natural Gas Proved Reserves, 2014 \(PDF\)](#)
- ^{iv} Louisiana Department of Natural Resources, [Louisiana Energy Facts and Figures](#)
- ^v [U.S. Crude Oil and Natural Gas Proved Reserves, 2014 \(PDF\)](#), page 33
- ^{vi} [U.S. Crude Oil and Natural Gas Proved Reserves, 2014 \(PDF\)](#), page 15
- ^{vii} [U.S. Crude Oil and Natural Gas Proved Reserves, 2014 \(PDF\)](#), page 17
- ^{viii} [U.S. Crude Oil and Natural Gas Proved Reserves, 2014 \(PDF\)](#), page 16
- ^{ix} Louisiana Department of Natural Resources, [Louisiana Energy Facts and Figures](#)
- ^x Bureau of Labor Statistics, [Quarterly Census of Employment and Wages: 2013 Annual Averages](#)
- ^{xi} Data for those employed in oil and gas extraction (NAICS 211) is not publicly available
- ^{xii} Bureau of Labor Statistics, [Quarterly Census of Employment and Wages: 2013 Annual Averages](#)
- ^{xiii} [2013 County Business Patterns for NAICS code 21 in DeSoto Parish](#), 2005–2014
- ^{xiv} *Ibid*
- ^{xv} Louisiana Department of Revenue, [Severance Taxes: Gas](#)
- ^{xvi} Louisiana Department of Natural Resources, [Louisiana Energy Facts and Figures, Revenue, Mineral Severance Tax](#)
- ^{xvii} The Louisiana Division of Administration, [Program 22-917, Severance Tax Dedication \(PDF\)](#)
- ^{xviii} The Louisiana Division of Administration, [Program 22-918, Parish Royalty Fund \(PDF\)](#)
- ^{xix} [State of Louisiana Comprehensive Annual Financial Report \(PDF\)](#), for fiscal year ended June, 2015, page 165
- ^{xx} DeSoto Parish Policy Jury, [Annual Financial Report, December 2014 \(PDF\)](#)
- ^{xxi} [State of Louisiana Comprehensive Annual Financial Report \(PDF\)](#), for fiscal year ended June, 2015, page 165
- ^{xxii} The DeSoto Parish fiscal year starts on July 1 and ends on June 30 the following year.
- ^{xxiii} [Annual Operating Budget of the DeSoto Parish School Board \(PDF\)](#), July 1, 2015 through June 30, 2016,
- ^{xxiv} *Ibid*.
- ^{xxv} *Ibid*.
- ^{xxvi} *Ibid*.
- ^{xxvii} DeSoto Parish Policy Jury, [Annual Financial Report, December 2014 \(PDF\)](#)
- ^{xxviii} [Annual Operating Budget of the DeSoto Parish School Board \(PDF\)](#), July 1, 2012 through June 30, 2013
- ^{xxix} *Ibid*.
- ^{xxx} *Ibid*.

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- ^{xxxi} Annual Operating Budget of the DeSoto Parish School Board (PDF), July 1, 2012 through June 30, 2013 ; [Annual Operating Budget of the DeSoto Parish School Board \(PDF\), July 1, 2014 through June 30, 2015](#)
- ^{xxxii} Louisiana Department of Transportation and Development, [Accomplishments 2008–2014 \(SWF\)](#), p. 18
- ^{xxxiii} [Louisiana Statewide Transportation Plan, Chapter 7: Transportation Plan Development \(PDF\)](#), 2003, p. 7-50
- ^{xxxiv} Louisiana Department of Natural Resources, [Louisiana Hydraulic Fracturing State Review \(PDF\)](#), 2011, p. 16
- ^{xxxv} DeSoto Parish EMS, [Our History](#)