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Regional Economic Impact of the Eagle Ford Shale

By Jim Lee

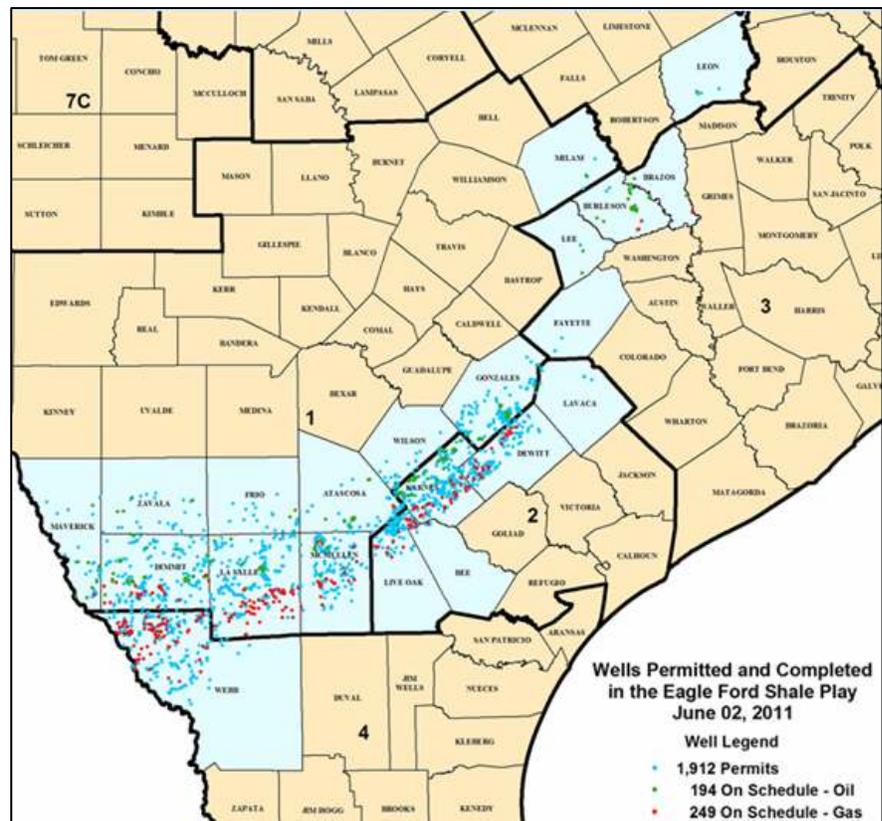
This article provides an overview of the current oil boom in Texas since the drilling of the first oil well in the Eagle Ford Shale in 2008. Eagle Ford oil and gas production will have a remarkable economic impact on a large number of South Texas communities for years to come. How much this oil boom will benefit the Coastal Bend region as a whole remains to be seen.

The discovery of Hawkville Field in LaSalle County in 2008 was perhaps the largest development of the oil industry in South Texas since the collapse of oil prices in the 1980s. According to the Texas Railroad Commission, the Eagle Ford Shale region stretches about 50 miles wide and 400 miles long east of the Mexican border, covering 24 Texas counties. The oil shale is a boon for the local economy in many South and South-East Texas communities. The following map shows the locations of Eagle Ford oil and gas wells today.

The Economics of Oil Shale

Oil shale refers to sedimentary rock that contains bituminous materials that releases petroleum-like liquids when heated to a high temperature. This heating process is called retorting. Because the cost of oil derived from oil shale has been substantially higher than the cost of conventional crude oil, oil shale resources have never been commercially attractive in South Texas until 2008. Today high oil prices and improvements in oil shale extraction and processing technology have made drilling activity economically feasible, and even profitable.

According to a study by Rand Corporation, a research think tank, the cost of producing a barrel of oil from oil shale in the United States ranges between \$70 and \$95 in today's dollars, depending on the quality of oil deposits and extraction efficiency. The total cost includes capital investment and operating expenses on the mines, retorting plants, supporting utilities and shale reclamation. So it is no coincidence that the regional oil shale industry began to develop in 2008, when the crude oil price surged from the average of \$77 in 2007 to over \$140 before falling back to the 2005 levels.



The prospect of oil shale production tends to improve over time as drilling activity faces substantial economies of scale: The production costs would fall by 35-70% after the first 500 million barrels. After one billion barrels, then the costs would fall further to \$30-\$40 per barrel.

Oil Production Activities

The Eagle Ford Shale directly generates a number of activities, including oil and natural gas drilling, processing and storage, and pipeline construction. The most obvious impact is the increase in drilling permits. Three years after the drilling of the first well in LaSalle County, nearly 2,000 permits of oil and gas wells have been issued atop the formation. The number of drilling permits issued has increased exponentially since 2008: 33 permits in 2008, 94 in 2009, and over 1,000 in 2010.

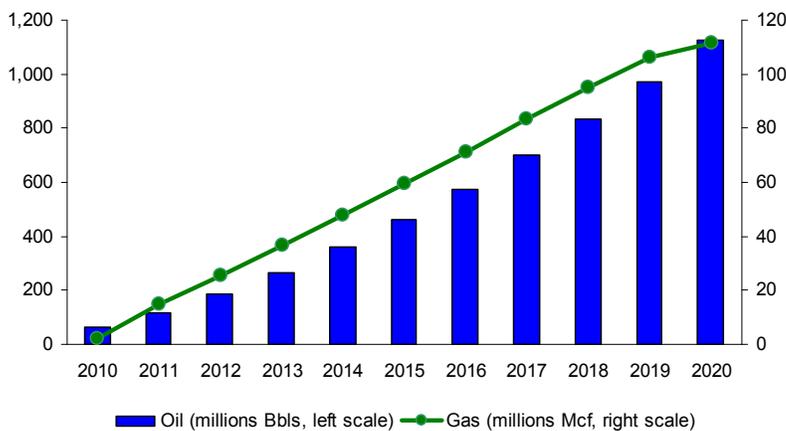
The table to the right is a projection of the numbers of new oil and gas wells between 2010 and 2020, as reported by the Institute for Economic Development at the University of Texas-San Antonio.

Along with increased production per well, new oil and gas wells over time at least through the next 10 years contribute to a sustained increase in the total production volume. The chart to the left shows the Institute for Economic Development’s projected production of the Eagle Ford region as a whole.

New Oil and Gas Wells in the Eagle Ford Shale

<u>Year</u>	<u>Oil</u>	<u>Gas</u>	<u>Total</u>
2010	143	98	241
2011	305	102	408
2012	316	113	429
2013	327	114	441
2014	336	115	451
2015	342	120	463
2016	349	125	474
2017	355	127	482
2018	361	131	492
2019	366	134	501
2020	371	140	511
Total	3,571	1,319	4,890

Source: Institute for Economic Development, 2011.



Source: Institute for Economic Development, 2011.

The following table is a breakdown of the economic impact directly associated with Eagle Ford oil and gas production in 2010:

<u>Development</u>	<u>Amount in 2010</u>
• Increased oil and gas drilling and completion activities	\$1.26 billion
• Increased oil and gas extraction activities	\$592.9 million
• Lease payments for mineral rights to landowners	\$2.4 billion
• Royalties to landowners	\$118.6 million
• Construction and infrastructure development of pipelines, storage etc.	\$280 million

Source: Institute for Economic Development, 2011.

Other Benefits

Oil production in the Eagle Ford has also benefited the bottom lines of its midstream industry, which includes oil and gas processing plants and refineries. Oil refineries in South Texas, such as Valero’s Three Rivers plant, are now replacing crude oil from more expensive foreign oil with the Eagle Ford Shale oil at lower costs. A number of oil and gas processing plants in the South Texas, such as Flint Hills in Corpus Christi, have also ramped up their facilities and production capacities.

Other than a boom in the oil and gas industry within the so-called Port District in Corpus Christi, the Port has also seen a surge in the demand for its storage and shipment facilities to handle anticipated increased imports of commodities such as frac sand, pipes and other equipment for oil and gas production in the Eagle Ford region.

Combined Economic Impact of Eagle Ford Activities

The boom in the regional oil and gas industry will have a remarkable impact on the Texas economy for years to come. The following table summarizes the estimates for the Eagle Ford shale oil production’s direct economic impact and the total economic impact on the 24-county region atop the Eagle Ford formation. These estimates draw on a recent report by the Institute for Economic Development. The Institute’s original 2010 estimates are adjusted for updated data on the production and market prices of oil and gas. The dollar estimates for 2011 rely on the crude oil price at \$100 per barrel, and the estimates for 2020 rely on the oil price at \$132 in today’s dollars. In 2011, direct employment associated with Eagle Ford Shale production accounts for 3 percent of regional total employment. The top job generators are in industrial construction, oil and gas extraction, and drilling and operations.

Regional Economic Impact of the Eagle Ford Shale

	2011		2020	
	<u>Direct</u>	<u>Total</u>	<u>Direct</u>	<u>Total</u>
Oil & Gas Extraction and Production				
Business Revenue (economic output, \$ millions)	5,238.2	7,038.9	17,333.8	21,584.9
Employment (jobs)	12,664	23,575	36,193	67,971
Payroll & benefits to workers (\$ millions)	580.2	957.5	2,095.3	3,235.8
Construction / Infrastructure Development				
Business Revenue (economic output, \$ millions)	474.0	684.5	593.7	857.3
Employment (jobs)	4,280	6,108	5,360	7,650
Payroll & benefits to workers (\$ millions)	130.4	190.1	163.3	238.1
Revenues to Governments & Landowners				
State tax revenues (\$ millions)	116.8		450.6	
Local government revenues (\$ millions)	149.7		1,162.5	
Lease payments (\$ millions)	4,490.1		19,486.2	
Royalty payments to landowners (\$ millions)	286.8		949.1	

Source: Institute for Economic Development, 2011; author’s calculations.

What Does It Mean for the Coastal Bend?

Among the 24 counties atop the Eagle Ford formation, only three are part of the 12-county Coastal Bend community: Bee, Live Oak, and McMullen. The bar chart on the following page compares the annual employment growth rates of these three individual counties against the regional average in 2009, 2010, and year-to-date in 2011. It is clear that those Eagle Ford counties, especially McMullen that has the most wells among the three, have added proportionally more jobs than other communities in the Coastal Bend.

But the regional oil boom may also have a spillover effect on the surrounding communities. For instance, according to the Institute for Economic Development, Eagle Ford oil production generated an indirect impact of \$16 million in business revenues and 86 jobs in Jim Wells County during 2010.

What’s the Catch?

As for the use of most resources, oil shale deposits are no free lunch. Mining and processing of oil shale generate a number of unique environmental impacts. For example, surface-based drilling of oil causes permanent landscape changes. Oil shale processing also requires a large amount of water. Both have a negative impact on wildlife and the overall environmental quality. The economic solution to these environmental impacts is to have lease and royalty payments and severance taxes to fully compensate for resources depletion, decreases in land value and other unavoidable environmental damages.



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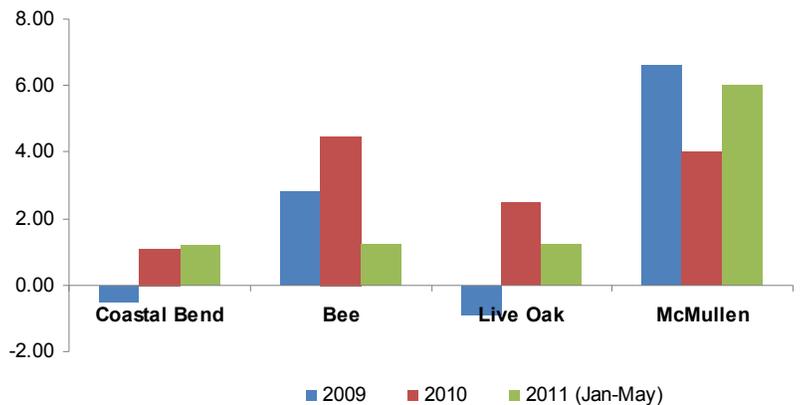
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(cont'd)

Employment Growth Rate Comparison (%), 2009-2011



Source: Texas Workforce Commission; author's calculations.

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- Rand Corporation, *Oil Shale Development in the United States: Prospects and Policy Issues*, 2005.
- Institute for Economic Development, *Economic Impact of the Eagle Ford Shale*, University of Texas at San Antonio, February 2010.