AgriLIFE EXTENSION
Texas A&M System

# Economic Contribution of the Mining/Oil/Gas Industry in the Eagle Ford Shale

The Texas Comptroller's office reported gross sales of $381.4 million across counties of the Eagle Ford Shale. $181.8 million of that output occurred in the shale's core counties in 2009.[i] The Bureau of Economic analysis counted 9,009 mining/oil/natural gas jobs in the shale in 2008, the latest data available. The core counties accounted for 3,992 of those jobs.[ii] Despite a weak national economy, the oil industry has remained relatively strong, and the shale employment and output are expected to increase.

Sales by the oil industry and labor income to employees (direct impact) ripples through the regional economy as firms purchase inputs (indirect effect) and pay employees who also make regional purchases (induced effect). Of course, money also leaks from the economy as firms and households purchase goods and services from other parts of the state, nation, and world. The total effects are the sum of direct, indirect and induced for each of the outcomes: employment, labor income, total value added (contribution to gross regional project) and output (gross sales). Value added and labor income are components of output.

Table 1 shows the economic contribution of the oil/mining/gas industry to the core counties of the Eagle Ford Shale. Table 2 shows the additional impact of employment and labor income associated with the industry's exploration efforts not currently generating sales. Table 3 shows the combined total effects estimated with the IMPLAN software and is the sum of the total effects lines from Tables 1 and 2.

The 3,992 direct jobs were associated with an additional 1,386 full- and part-time jobs in the core region. The industry contributed about $316 million in both gross sales and labor income as well as $135 million in value added or "GDP" to the regional economy. Labor income is high relative to sales because of high leakages in spending labor income—due to both resident and non-resident employees spending income outside the local economy. Many workers are based in other parts of the state or US.

Table 1. Economic Contribution of Eagle Ford Shale Core Mining/Oil/Gas Industry Sales

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Direct Effect** | 225.3 | $40,864,400 | $114,127,900 | $181,779,100 |
| **Indirect Effect** | 100.7 | $4,396,300 | $7,430,400 | $13,833,500 |
| **Induced Effect** | 235.8 | $6,518,000 | $13,153,800 | $22,078,800 |
| **Total Effect** | 561.7 | $51,778,600 | $134,712,100 | $217,691,400 |

Table 2. Economic Contribution of Eagle Ford Shale Core Mining/Oil/Gas Exploration Employment

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Direct Effect** | 3,766.7 | $234,711,500 | $0 | $0 |
| **Indirect Effect** | 0.0 | $0 | $0 | $0 |
| **Induced Effect** | 1,048.8 | $29,326,600 | $58,542,500 | $98,356,700 |
| **Total Effect** | 4,815.5 | $264,038,100 | $58,542,500 | $98,356,700 |

Table 3. Total Eagle Ford Shale Core Mining/Oil/Gas Economic Contribution

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Total Effect** | 5,377.3 | $315,816,700 | $193,254,600 | $316,048,100 |

Texas AgriLife Extension Service, January 2011
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Tables 4 through 5 show similar information for the full Eagle Ford Shale area. The 9,009 direct oil industry jobs supported an additional 2,941 jobs across the 20-county region. The total output contribution was $683 million. The contributions to labor income and value added were $691 million and $418 million, respectively.

Table 4. Economic Contribution of Full Eagle Ford Shale Mining/Oil/Gas Industry Sales

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Direct Effect** | 410.9 | $86,259,900 | $239,455,700 | $381,396,900 |
| **Indirect Effect** | 194.8 | $8,863,800 | $18,177,500 | $33,509,400 |
| **Induced Effect** | 439.9 | $12,253,100 | $25,677,700 | $42,966,600 |
| **Total Effect** | 1,045.6 | $107,376,800 | $283,310,900 | $457,872,900 |

Table 5. Economic Contribution of Full Eagle Ford Shale Mining/Oil/Gas Exploration Employment

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Direct Effect** | 8,598.1 | $518,838,100 | $0 | $0 |
| **Indirect Effect** | 0.0 | $0 | $0 | $0 |
| **Induced Effect** | 2,306.2 | $65,042,000 | $134,441,300 | $225,339,200 |
| **Total Effect** | 10,904.3 | $583,880,100 | $134,441,300 | $225,339,200 |

Table 6. Total Full Eagle Ford Shale Mining/Oil/Gas Economic Contribution

| Impact Type | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Total Effect** | 11,949.9 | $691,256,900 | $417,752,200 | $683,212,100 |

Of course, the oil and gas industry enhances local property tax revenues. Enhanced incomes also supplement local sales tax receipts as laborers spend income locally. Transitory workers are lodged in local hotels and motels, generating hotel taxes of up to 7 percent for counties and 9 percent for cities.

Employment in the industry is expected to increase in the near future. Tables 7and 8 show the total economic contributions (based on current sales levels but increased labor income) if industry employment increased by 10 percent or 25 percent.

Table 7. Total Eagle Ford Shale Mining/Oil/Gas Economic Contribution with 10% Employment Increase

| Region | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Core Counties** | 5,887.6 | $343,787,000 | $199,456,200 | $326,467,300 |
| **Full Shale Region** | 13,092.6 | $752,479,500 | $431,849,000 | $706,840,000 |

Table 8. Total Eagle Ford Shale Mining/Oil/Gas Economic Contribution with 25% Employment Increase

| Region | Employment | Labor Income | Total Value Added | Output |
|---|---|---|---|---|
| **Core Counties** | 6,653.0 | $385,742,700 | $208,758,600 | $342,096,200 |
| **Full Shale Region** | 14,806.7 | $844,313,300 | $452,994,200 | $742,281,800 |

[i] The area was defined as Atascosa, Bee, Colorado, De Witt*, Dimmitt*, Duval, Fayette, Frio, Goliad, Gonzales, Karnes*, Kinney, La Salle*, Lavaca, Live Oak*, Maverick*, McMullen*, Webb*, Wilson, and Zavala. The eight core counties are denoted by an asterisk (*).

[ii] Both the Comptroller's data and the BEA data are available at the two-digit level of the North American Industry Classification System so mining must be included with oil and natural gas in the regional economic analysis. However, mining outside the oil industry is rare in the region. Furthermore, this analysis does not analysis the full level of industry activity because oil and gas exploration ventures are in addition to their gross sales from developed fields. While employment and labor income are included in the analysis, other exploration costs are not included due to an inability to precisely estimate such activity and in an effort to maintain conservative estimates.

**Contribution Analysis Overview**

Economic contribution analysis is based on the idea that a dollar spent in a region stimulates additional economic activity, or multiplies as it circulates through the economy. This *multiplier effect* recognizes that the total effect on output, employment, personal income, and government revenue in the region is greater than the initial dollar spent. A business's or organization's purchase of supplies at a local business or a tourist's expenditure at a souvenir shop contributes not only to that business, but to its suppliers, its suppliers' suppliers, each of their employees' incomes, and tax revenues. Of course, some of the original expenditure leaks out of the regional economy, for example as inventory is imported from other regions, employees commute from other regions, and businesses and households pay state and federal taxes. The portion of the money that remains in the local economy throughout these transactions constitutes the net economic gain. Larger regions contain more economic linkages, which is why large cities and multi-county regions generally have larger multipliers than do small towns or single counties.

Multipliers are calculated based on the purchasing patterns of industries and institutions in the regional economy. Multipliers include three components. The *direct effect* on the economy is the initial final-demand expenditure (for example, auction attendees' spending at hotels and restaurants). The direct effect results in two types of secondary effects. The *indirect effect* results from the purchase of inputs among local industries. The *induced effect* results from the expenditure of institutions such as households and governments benefitting from increased the activity among local businesses.

Three types of multiplier effects are reported in the contribution analyses. *Output or sales multipliers* measure the effect of external spending on overall economic activity in the region. The output multiplier provides the largest economic impact value and therefore is reported in many studies; however, the output multiplier says nothing about how the event affects the welfare of households or the profitability of businesses.

The *value-added multiplier* is a more appropriate measure of regional welfare. The value-added multiplier measures the event's contribution to regional gross domestic product (GDP). It is the value added to the regional economy or the return to local resources used in the production of the event.

The *labor income multiplier* is part of the value-added multiplier but is often reported alone. The personal income multiplier measures the effect of final demand spending on the incomes of households in the region and is appropriate for discerning the benefit of an event to a region's residents.