THE ECONOMIC IMPACT OF PETROCHEMICAL INDUSTRY IN BRAZORIA COUNTY DURING 2023

January 31, 2025

Prepared for:
Brazoria County Petrochemical Council

Prepared by:
Impact DataSource, LLC
Austin, TX
www.impactdatasource.com

PURPOSE & LIMITATIONS

This report presents the results of an analysis undertaken by Impact DataSource, an Austin, TX based economic consulting firm.

The analysis relies on publicly available information about the petrochemical industry in Brazoria County as compiled by Impact DataSource from its independent research effort.

Our analysis quantifies the economic impact of the petrochemical industry in Brazoria County as described throughout this report.

CONTENTS

EXECUTIVE SUMMARY

Economic Impact of the Petrochemical Industry in Brazoria County

In 2023, the petrochemical industry in Brazoria County demonstrated its critical role in the local economy by supporting **12,259 direct jobs** and paying **$1.8 billion in wages**, with an **average annual wage of $143,182**—more than double the county average. This sector accounted for **10% of county employment** and **22% of total wages**, highlighting its significant contribution.

The industry's broader economic impact, including indirect and induced effects, generated:

- **34,955 total jobs** (29% of county employment).
- **$3.7 billion in total wages** (46% of county wages).
- **$24 billion in total spending** in the county.

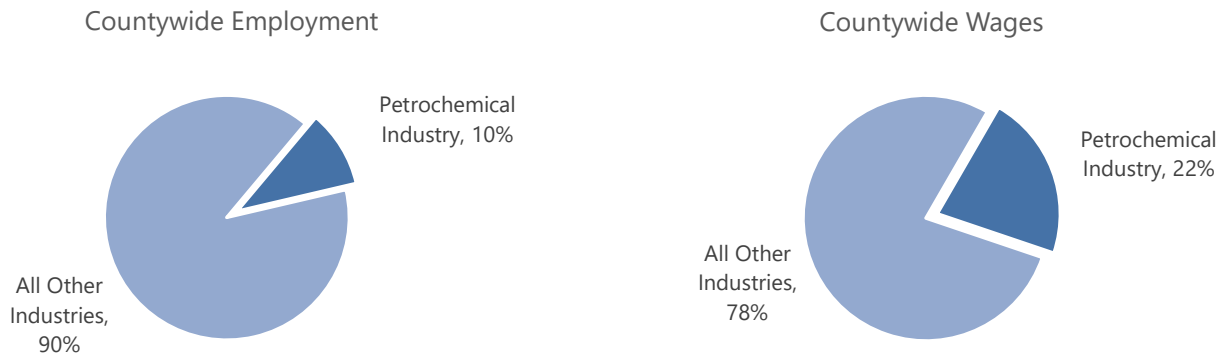
Additionally, the petrochemical industry contributed **43% of Brazoria County's gross area product** and supported **$370 million in property taxes** in the most recent year, benefiting various jurisdictions. Without this contribution, county property tax rates would need to increase by **16%** to maintain the current level of services.

For every direct job in the petrochemical industry, **2.85 additional jobs** are created across the local economy, demonstrating its far-reaching impact.

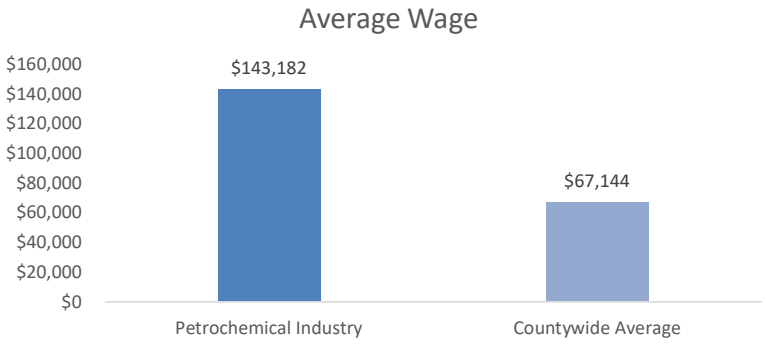
Study Highlights

Employment and Wages by Petrochemical Businesses in 2023

- According to the Texas Labor Market Information database for 2023, the petrochemical industry in Brazoria County employed 12,259 workers and paid $1.8 billion of wages to these employees.
    - Petroleum and Coal Products Manufacturing: 993 jobs
    - Chemical Manufacturing: 7,344 jobs
    - Plastics and Rubber Products Manufacturing: 137 jobs
    - Oil & Gas Pipeline and Related Construction: 3,785 jobs
    - Total Petrochemical Industry: 12,259 jobs



Employment Share: Petrochemical businesses account for 10% of total employment in the county.
Wage Contribution: Wages from the petrochemical sector make up 22% of all wages paid to county workers.



Earnings Comparison: Petrochemical employees earn an average of $143,182, which is 2.1 times the average county wage of $67,144.
Economic Impact: This higher wage scale highlights the significant economic contribution of the petrochemical industry to the county.

Economic Impact of the Petrochemical Industry in Brazoria County

- The direct employment and wages paid by petrochemical businesses in Brazoria County support additional economic activity throughout the economy. The economic activity by these petrochemical businesses spur additional rounds of business-to-business spending throughout the supply chain, known as the indirect impact effect. Additionally, the spending by the workers employed by these businesses and suppliers support consumer-to-business spending in the economy, known as the induced impact effect. The total economic impact of the petrochemical industry encompasses the direct activity of the businesses well as the indirect and induced effects generated by this activity.

- Businesses in the petrochemical industry supported 12,259 direct jobs, $1.8 billion in workers' earnings and $12.0 billion in economic output or spending. The total economic impact of this industry supported $24.02 billion in total spending or economic output, 34,955 jobs, $3.7 billion in workers' earnings, and contributes $9.1 billion in value added to the economy.

Table 1. Total Economic Impact of the Petrochemical Industry in Brazoria County During 2023

		Annual Impact
Economic Output:		
Direct		$12,037,216,156
Indirect		$9,946,084,741
Induced		$2,032,690,007
	Total Economic Output	$24,015,990,905
Jobs:		
Direct		12,258.8
Indirect		9,110.3
Induced		13,586.1
	Total Jobs	34,955.1
Workers' Earnings:		
Direct		$1,755,238,061
Indirect		$1,446,487,552
Induced		$488,164,609
	Total Workers' Earnings	$3,689,890,222
Value Added:		
	Total Value Added	$9,118,626,790

- **Total Employment Impact:** Including indirect and induced impacts, petrochemical businesses contribute 29% of the county's total employment.

  For every worker employed in the petrochemical industry in Brazoria County, a total of 2.85 workers are employed in the county.

- **Total Wage Impact:** With broader effects considered, wages from the petrochemical sector account for 46% of the county's total wages.
- **Gross Area Product Impact:** The petrochemical industry contributes 43% to the county's gross area product when all economic impacts are included.
- **Expanded Economic Significance:** These broader impacts underscore the substantial role petrochemical companies play in supporting the county's overall economy.

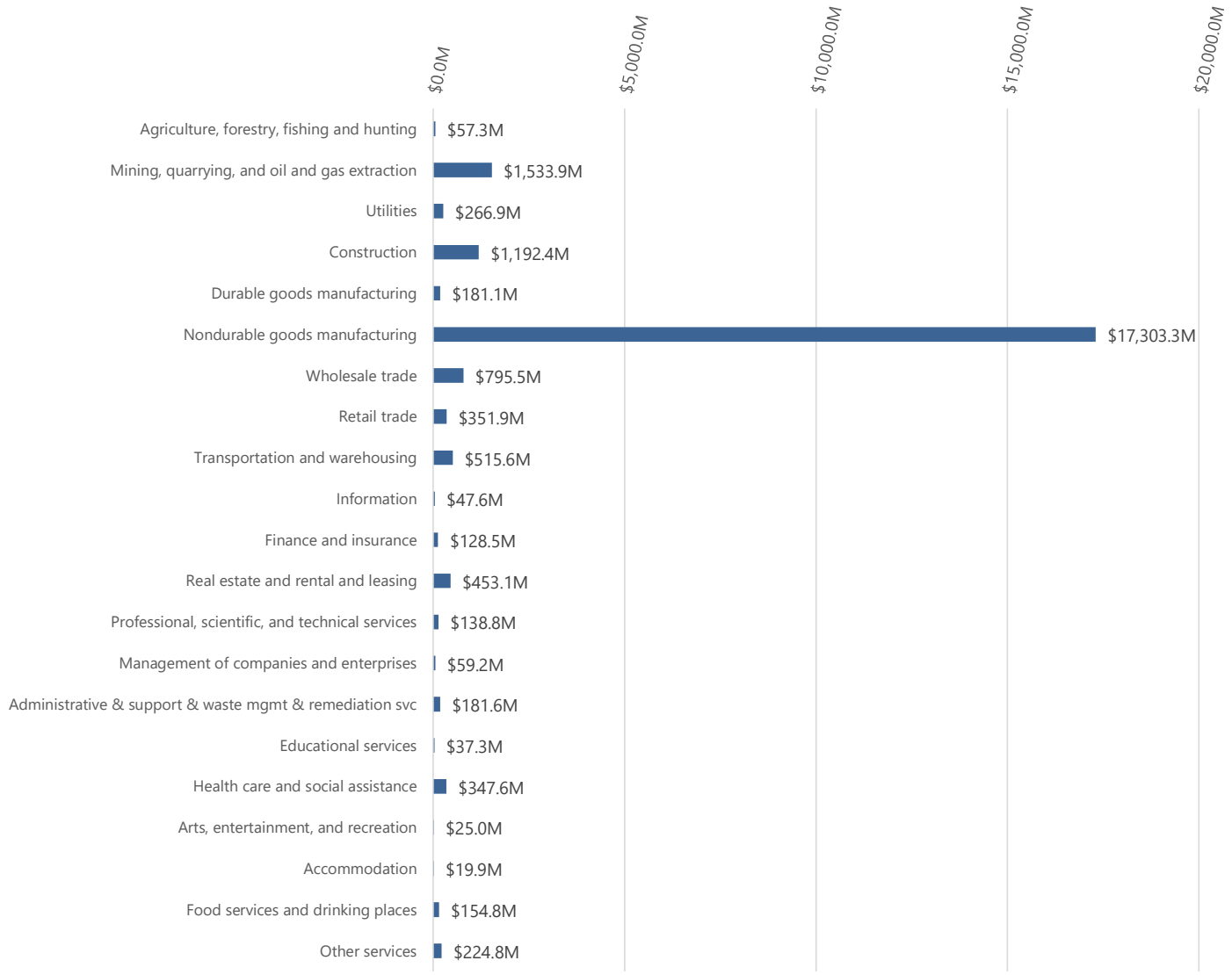
Indirect and induced impacts *represent the spin-off economic activity resulting from the business-to-business expenditures initiated by the company and the consumer-to-business expenditures initiated by workers spending a portion of their earnings on goods and services in the economy.* ***Economic output or spending*** *is gross output and is the sum of the intermediate inputs and final use. This is a duplicative total in that goods and services will be counted multiple times if they are used in the production of other goods and services. Economic output can be thought of as the value of goods and services sold in the economy or revenues for businesses in the economy.* ***Value added*** *is defined as the value of gross output less intermediate inputs.* ***Worker's earnings*** *or household earnings consist of wages and salaries, employer provided benefits, and proprietors' income. For permanent or on-going activity,* ***Employment*** *consists of a count of jobs that include both full-time and part-time workers.*

- The table below provides a summary of the total economic impact for each industry sector within the petrochemical industry, as defined in this report.

Table 2. Total Economic Impact During 2023

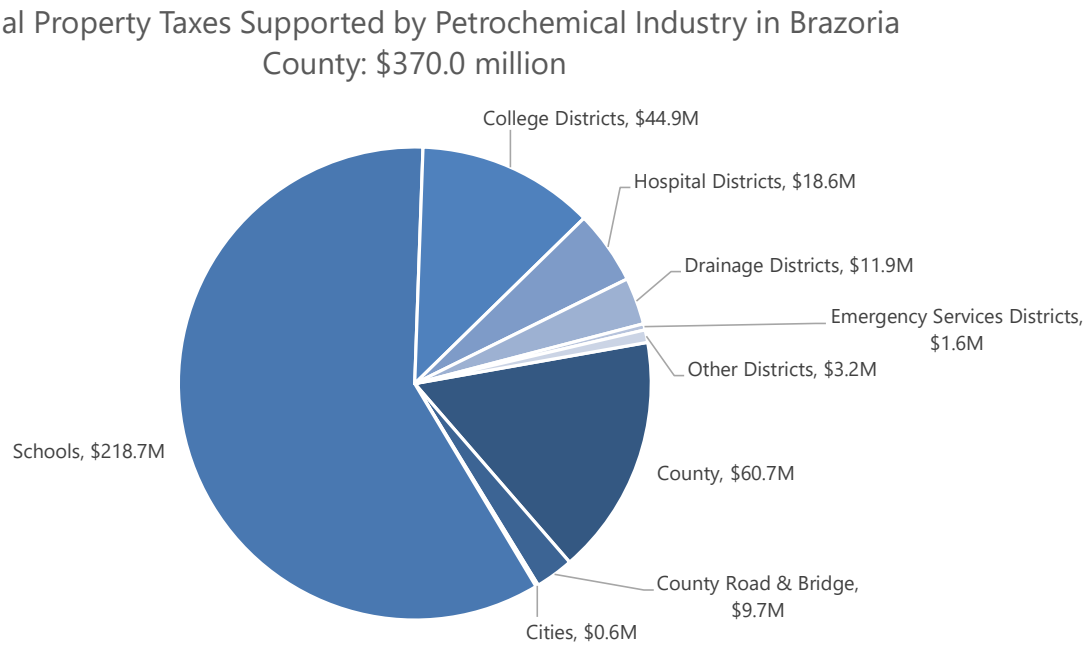
	Direct Employment	Total Economic Output or Spending	Total Employment	Total Workers' Earnings
Petroleum and Coal Products Manufacturing	*993*	$1.92B	2,818.4	$277.4M
Chemical Manufacturing	*7,344*	$20.24B	26,358.5	$2.88B
Plastics and Rubber Products Manufacturing	*137*	$132.0M	271.7	$20.0M
Oil & Gas Pipeline and Related Construction	*3,785*	$1.72B	5,506.4	$515.6M
Total	*12,259*	$24.02B	34,955.1	$3.69B

Figure 1. Total Economic Output Impact by Industry Sector



Study Highlights - Continued

- The Brazoria County petrochemical industry supported $23.2 billion of real and business personal property appraised value in 2024.
- After accounting for exemptions for pollution control equipment and abatements with the county, the industry supported $9.4 billion of taxable value.
- The petrochemical industry accounts for 46% of total non-residential appraised property value in Brazoria County and 24% of total non-residential taxable property.
- In total, the petrochemical industry in Brazoria County supported $370.0 million of property taxes in 2024. These taxes were paid to a variety of different jurisdictions in the county.
- Without the petrochemical industry's presence in Brazoria County, property tax rates would need to increase by 16% to sustain the current level of services.



Overview

This report presents the results of an economic impact analysis performed by Impact DataSource, an Austin, Texas economic consulting firm that specializes in economic and fiscal impact analysis. The purpose of the analysis is to estimate the economic impact of Brazoria County's Petrochemical industry during 2023.

Employment and Wages

For the purposes of this report, the Brazoria County petrochemical industry is defined to include the following industries:

- 324 Petroleum and Coal Products Manufacturing
- 325 Chemical Manufacturing
- 326 Plastics and Rubber Products Manufacturing
- 23712 Oil & Gas Pipeline and Related Construction

Employment and wage data for these specific industries were obtained from the Texas Labor Market Information database for calendar year 2023.

Table 3. Petrochemical Industry Employment and Wages During 2023

	Employment	Employment
Petroleum and Coal Products Manufacturing	993	$148,037,342
Chemical Manufacturing	7,344	$1,220,818,023
Plastics and Rubber Products Manufacturing	137	$9,822,802
Oil & Gas Pipeline and Related Construction	3,785	$376,559,894
Total Petrochemical Industry	12,259	$1,755,238,061

Impact DataSource estimates the total economic impact of the Brazoria County's petrochemical industry using the employment and wage data shown above. The economic impacts estimated in this report are based on the Regional Input-Output Modeling System (RIMS II), a widely used regional input-output model developed by the U. S. Department of Commerce, Bureau of Economic Analysis. The RIMS II model is a standard tool used to estimate regional economic impacts. The economic impacts estimated using the RIMS II model are generally recognized as reasonable and plausible assuming the data input into the model is accurate or based on reasonable assumptions. Additional detail on the RIMS II model is provided in the Methodology section of this report.

Economic Impacts Defined

This analysis estimates the total economic impact associated with each industry sector. The economic impacts are measured in common measures of economic activity including employment, workers' earnings, economic output, and value added. Employment consists of a count of jobs that include both full-time and part-time workers. Workers' earnings consist of wages and salaries, employer-provided benefits, and proprietors' income. Economic output is gross output and is the sum of the intermediate inputs and final use. This is a duplicative total in that goods and services will be counted multiple times if they are used in the production of other goods and services. Economic output can be thought of as the value of goods and services sold in the economy or revenues for businesses in the economy. Value added is defined as the value of gross output less intermediate inputs and represents the contribution to gross domestic product or the size of the economy.

Direct Economic Impacts

The industry sector employment and wages serve as the basis for the economic impact calculations in this analysis, representing the direct employment and workers' earnings for the given industry sector. The estimated economic output, or spending by these businesses, is derived from the direct earnings using the RIMS II model.

Spin-off Economic Impacts

The total economic impact supported by the petrochemical industry includes the direct as well as spin-off activity. The direct economic activity ripples through the economy and supports spin-off economic activity in the form of indirect and induced impacts. Indirect impacts reflect economic activity resulting from the business-to-business expenditures initiated by the direct businesses. Induced impacts refer to the consumer-to-business expenditures initiated by workers that spend a portion of their earnings on goods and services in the economy.

PETROLEUM AND COAL PRODUCTS MANUFACTURING IMPACT

Petroleum and Coal Products Manufacturing Impact

Petroleum and Coal Products Manufacturing businesses employed 993 workers and paid $148.0 million in wages during 2023. This direct spending is estimated support $1.2 billion in direct economic output or spending in the county. The total economic impact of the businesses in this sector, including the indirect and induced activity, includes 2,818 jobs, $277.4 million in workers' earnings and $1.9 billion in spending or economic output.

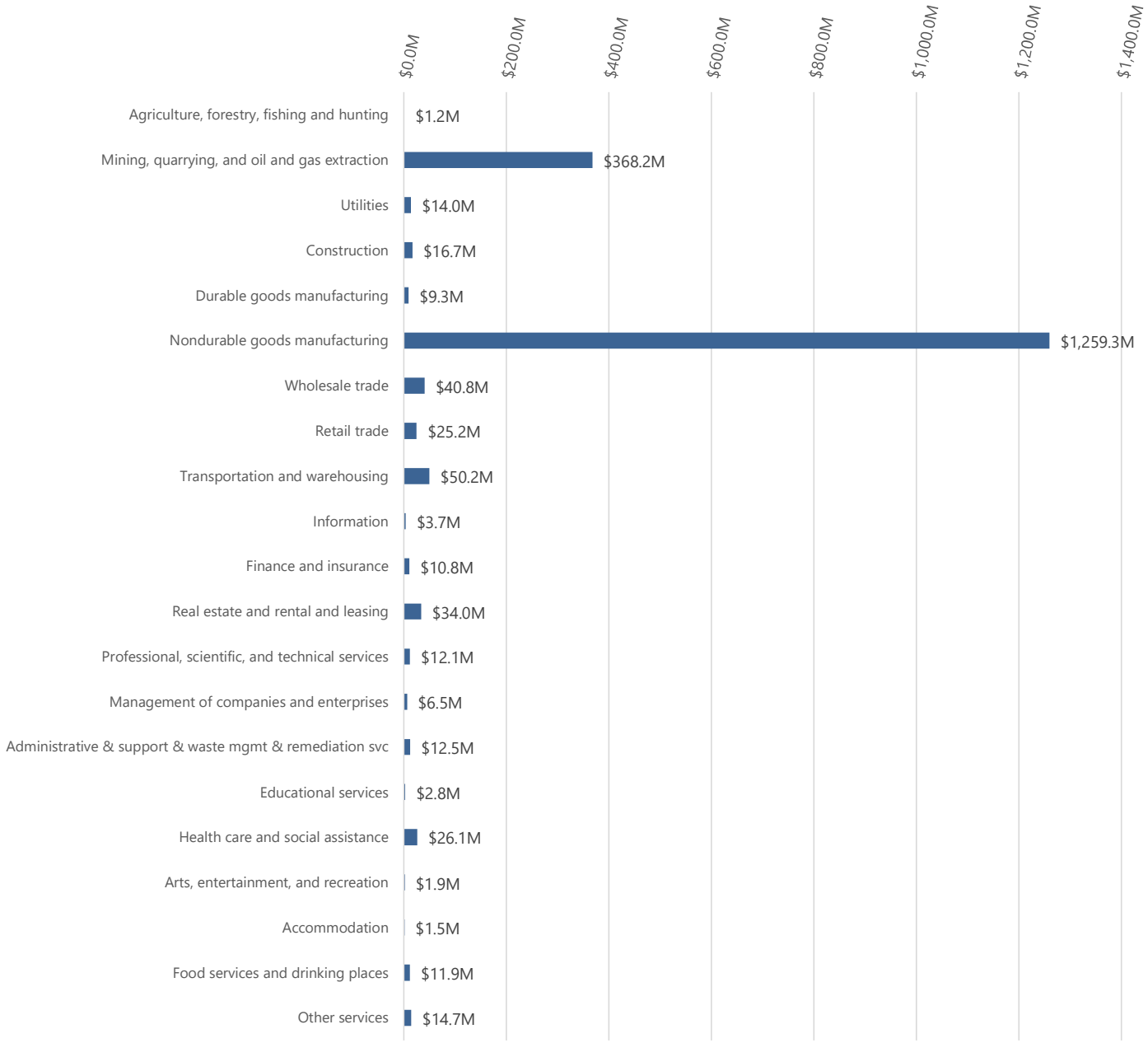
Table 4. Petroleum and Coal Products Manufacturing Economic Impact During 2023

		Annual Impact
Economic Output:		
Direct		$1,177,761,206
Indirect		$592,767,215
Induced		$152,873,405
	Total Economic Output	$1,923,401,825
Jobs:		
Direct		993.0
Indirect		621.2
Induced		1,204.2
	Total Jobs	2,818.4
Workers' Earnings:		
Direct		$148,037,342
Indirect		$92,697,048
Induced		$36,628,374
	Total Workers' Earnings	$277,362,764
Value Added:		
	Total Value Added	$635,048,842

Table 5. Total Economic Impact by Industry Sector: Petroleum and Coal Products Manufacturing

	Employment	Workers' Earnings	Economic Output	Value Added
Agriculture, forestry, fishing and hunting	15.0	$353,178	$1,177,761	$588,771
Mining, quarrying, and oil and gas extraction	293.6	$44,265,025	$368,168,153	$226,441,484
Utilities	16.1	$2,001,344	$14,015,358	$8,242,800
Construction	56.5	$3,178,606	$16,724,209	$7,183,011
Durable goods manufacturing	19.7	$1,294,987	$9,304,314	$3,414,874
Nondurable goods manufacturing	1,074.8	$158,459,372	$1,259,262,281	$232,917,970
Wholesale trade	73.1	$6,592,663	$40,750,538	$24,610,645
Retail trade	185.6	$6,592,663	$25,204,090	$16,367,845
Transportation and warehousing	197.6	$16,599,384	$50,172,627	$28,025,519
Information	7.2	$470,905	$3,651,060	$1,884,069
Finance and insurance	32.9	$2,119,070	$10,835,403	$6,594,240
Real estate and rental and leasing	179.2	$4,591,319	$34,037,299	$24,139,628
Professional, scientific, and technical services	61.7	$4,944,497	$12,130,940	$7,889,537
Management of companies and enterprises	30.8	$2,943,153	$6,477,687	$4,121,400
Administrative & support & waste mgmt & remediation svc	98.8	$4,002,688	$12,484,269	$7,771,783
Educational services	29.9	$1,059,535	$2,826,627	$1,884,069
Health care and social assistance	176.1	$9,771,269	$26,146,299	$16,603,354
Arts, entertainment, and recreation	15.3	$353,178	$1,884,418	$1,177,543
Accommodation	9.4	$353,178	$1,531,090	$942,034
Food services and drinking places	110.9	$2,825,427	$11,895,388	$6,240,977
Other services	113.3	$4,355,867	$14,722,015	$7,771,783
Households	20.8	$235,452	$0	$235,509
Total	2,818.4	$277,362,764	$1,923,401,825	$635,048,842

Figure 2. Total Economic Output Impact by Industry Sector: Petroleum and Coal Products Manufacturing



CHEMICAL MANUFACTURING IMPACT

Chemical Manufacturing Impact

Chemical Manufacturing businesses employed 7,344 workers and paid $1.2 billion in wages during 2023. This direct spending is estimated support $9.7 billion in direct economic output or spending in the county. The total economic impact of the businesses in this sector, including the indirect and induced activity, includes 26,359 jobs, $2.9 billion in workers' earnings and $20.2 billion in spending or economic output.

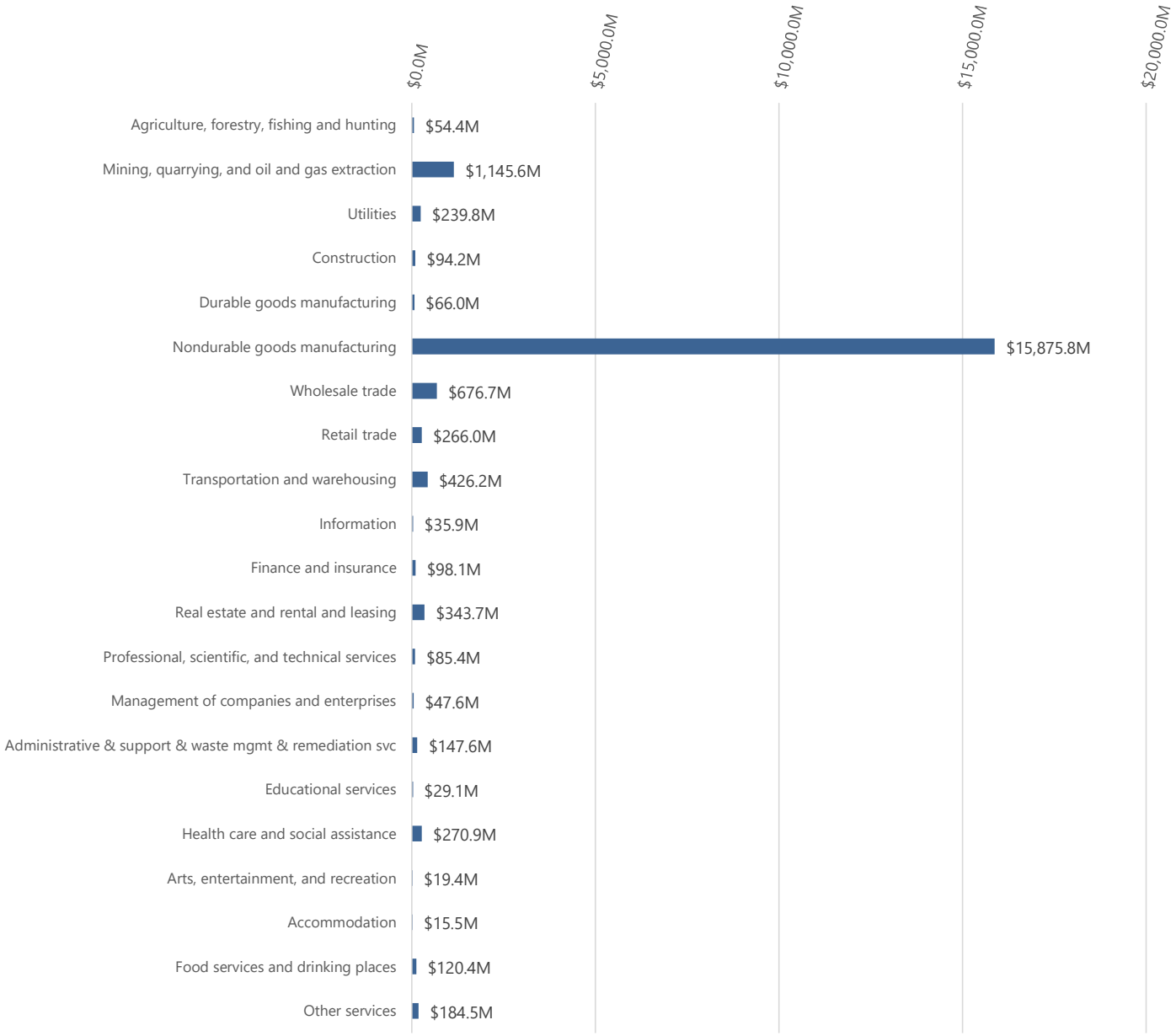
Table 6. Chemical Manufacturing Economic Impact During 2023

		Annual Impact
Economic Output:		
Direct		$9,709,685,295
Indirect		$8,948,445,968
Induced		$1,584,620,640
	Total Economic Output	$20,242,751,904
Jobs:		
Direct		7,344.3
Indirect		7,673.3
Induced		11,341.0
	Total Jobs	26,358.5
Workers' Earnings:		
Direct		$1,220,818,023
Indirect		$1,275,542,066
Induced		$380,619,664
	Total Workers' Earnings	$2,876,979,753
Value Added:		
	Total Value Added	$7,492,964,142

Table 7. Total Economic Impact by Industry Sector: Chemical Manufacturing

	Employment	Workers' Earnings	Economic Output	Value Added
Agriculture, forestry, fishing and hunting	513.0	$11,659,492	$54,369,022	$20,390,339
Mining, quarrying, and oil and gas extraction	788.8	$137,970,660	$1,145,632,961	$704,923,152
Utilities	225.2	$34,978,477	$239,806,222	$140,790,437
Construction	274.1	$18,460,863	$94,174,913	$40,780,678
Durable goods manufacturing	137.9	$10,687,868	$66,019,527	$26,216,150
Nondurable goods manufacturing	12,342.5	$1,999,602,949	$15,875,754,395	$4,892,710,420
Wholesale trade	1,045.7	$108,821,929	$676,700,148	$407,806,782
Retail trade	1,687.1	$68,985,330	$266,019,857	$171,861,430
Transportation and warehousing	1,451.6	$109,793,554	$426,214,297	$209,729,202
Information	61.7	$4,858,122	$35,922,389	$18,448,402
Finance and insurance	255.2	$19,432,487	$98,058,414	$60,200,049
Real estate and rental and leasing	1,600.6	$45,666,345	$343,689,888	$246,626,007
Professional, scientific, and technical services	393.1	$34,978,477	$85,437,034	$56,316,175
Management of companies and enterprises	194.4	$21,375,736	$47,572,894	$30,100,024
Administrative & support & waste mgmt & remediation svc	1,029.4	$44,694,721	$147,573,059	$90,300,073
Educational services	266.3	$10,687,868	$29,126,262	$19,419,371
Health care and social assistance	1,568.9	$101,048,934	$270,874,234	$171,861,430
Arts, entertainment, and recreation	131.0	$3,886,497	$19,417,508	$11,651,622
Accommodation	81.4	$2,914,873	$15,534,006	$8,738,717
Food services and drinking places	960.9	$28,177,107	$120,388,548	$62,141,986
Other services	1,163.9	$55,382,589	$184,466,324	$99,038,790
Households	185.8	$2,914,873	$0	$2,912,906
Total	26,358.5	$2,876,979,753	$20,242,751,904	$7,492,964,142

Figure 3. Total Economic Output Impact by Industry Sector: Chemical Manufacturing



PLASTICS AND RUBBER PRODUCTS MANUFACTURING IMPACT

Plastics and Rubber Products Manufacturing Impact

Plastics and Rubber Products Manufacturing businesses employed 137 workers and paid $9.8 million in wages during 2023. This direct spending is estimated support $74.5 million in direct economic output or spending in the county. The total economic impact of the businesses in this sector, including the indirect and induced activity, includes 272 jobs, $20.0 million in workers' earnings and $132.0 million in spending or economic output.

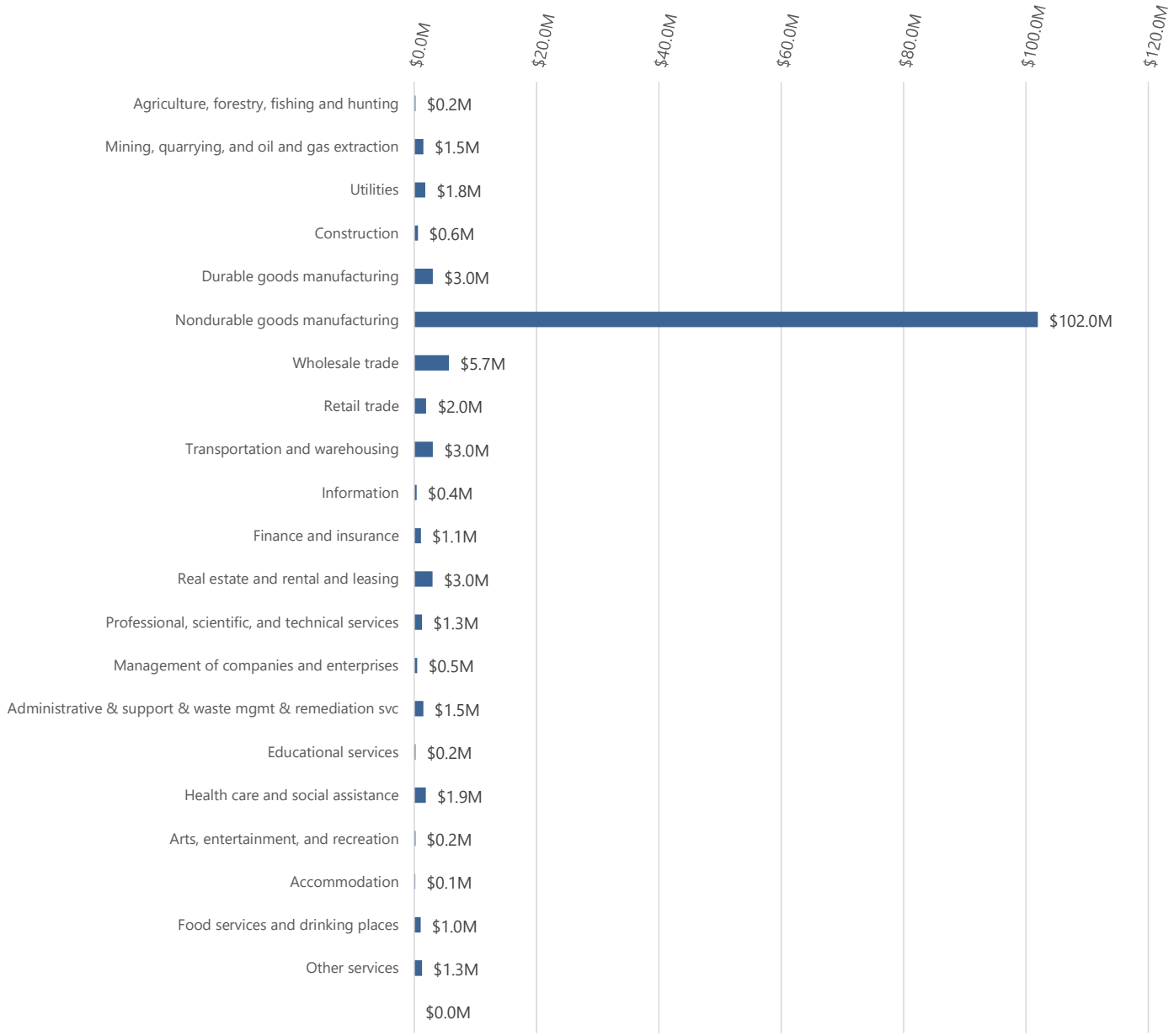
Table 8. Plastics and Rubber Products Manufacturing Economic Impact During 2023

		Annual Impact
Economic Output:		
Direct		$74,512,498
Indirect		$46,488,348
Induced		$11,005,496
	Total Economic Output	$132,006,342
Jobs:		
Direct		136.5
Indirect		104.2
Induced		31.1
	Total Jobs	271.7
Workers' Earnings:		
Direct		$9,822,802
Indirect		$7,501,354
Induced		$2,637,742
	Total Workers' Earnings	$19,961,898
Value Added:		
	Total Value Added	$49,118,639

Table 9. Total Economic Impact by Industry Sector: Plastics and Rubber Products Manufacturing

	Employment	Workers' Earnings	Economic Output	Value Added
Agriculture, forestry, fishing and hunting	2.0	$52,159	$216,086	$81,964
Mining, quarrying, and oil and gas extraction	1.0	$171,379	$1,467,896	$894,150
Utilities	1.6	$260,794	$1,773,397	$1,028,272
Construction	1.6	$111,769	$573,746	$245,891
Durable goods manufacturing	7.3	$543,941	$3,047,561	$1,311,420
Nondurable goods manufacturing	163.0	$13,315,383	$101,955,451	$31,608,202
Wholesale trade	8.3	$909,052	$5,662,950	$3,412,672
Retail trade	11.6	$514,136	$1,952,227	$1,266,712
Transportation and warehousing	10.5	$737,674	$3,017,756	$1,408,286
Information	0.6	$52,159	$357,660	$186,281
Finance and insurance	2.4	$208,635	$1,072,980	$685,515
Real estate and rental and leasing	13.1	$387,465	$2,973,049	$2,138,509
Professional, scientific, and technical services	5.2	$499,234	$1,266,712	$834,540
Management of companies and enterprises	1.9	$216,086	$484,331	$305,501
Administrative & support & waste mgmt & remediation svc	10.0	$461,977	$1,460,445	$916,504
Educational services	1.8	$81,964	$208,635	$141,574
Health care and social assistance	10.4	$700,417	$1,877,715	$1,192,200
Arts, entertainment, and recreation	1.2	$37,256	$171,379	$111,769
Accommodation	0.8	$29,805	$149,025	$89,415
Food services and drinking places	7.9	$245,891	$1,035,724	$536,490
Other services	8.2	$402,367	$1,281,615	$700,417
Households	1.2	$22,354	$0	$22,354
Total	271.7	$19,961,898	$132,006,342	$49,118,639

Figure 4. Total Economic Output Impact by Industry Sector: Plastics and Rubber Products Manufacturing



OIL & GAS PIPELINE AND RELATED CONSTRUCTION IMPACT

Oil & Gas Pipeline and Related Construction Impact

Oil & Gas Pipeline and Related Construction businesses employed 3,785 workers and paid $376.6 million in wages during 2023. This direct spending is estimated support $1.1 billion in direct economic output or spending in the county. The total economic impact of the businesses in this sector, including the indirect and induced activity, includes 5,506 jobs, $515.6 million in workers' earnings an $1.7 billion in spending or economic output.

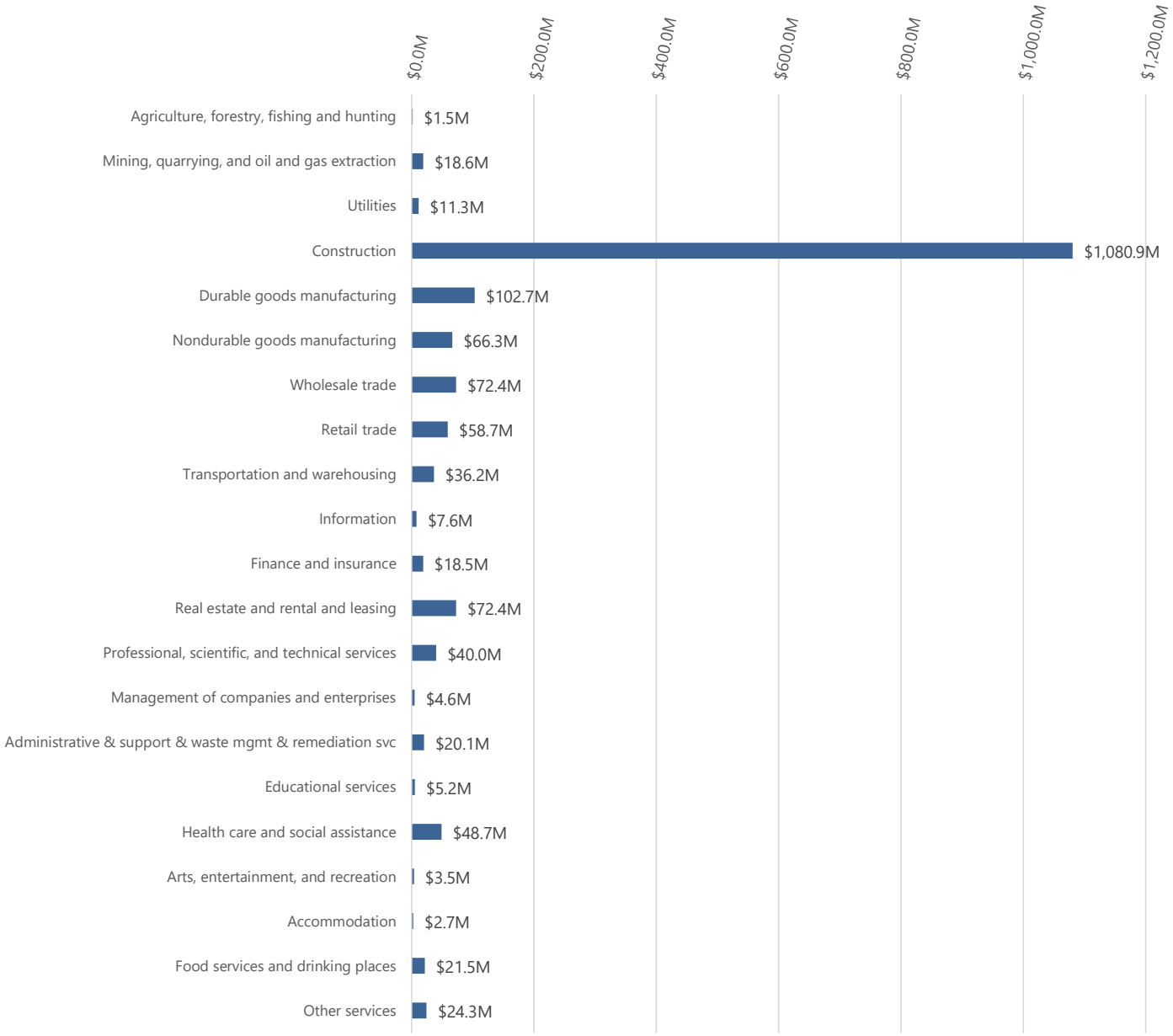
Table 10. Oil & Gas Pipeline and Related Construction Economic Impact During 2023

		Annual Impact
Economic Output:		
Direct		$1,075,257,157
Indirect		$358,383,210
Induced		$284,190,467
	Total Economic Output	$1,717,830,834
Jobs:		
Direct		3,785.0
Indirect		711.6
Induced		1,009.8
	Total Jobs	5,506.4
Workers' Earnings:		
Direct		$376,559,894
Indirect		$70,747,083
Induced		$68,278,829
	Total Workers' Earnings	$515,585,807
Value Added:		
	Total Value Added	$941,495,167

Table 11. Total Economic Impact by Industry Sector: Oil & Gas Pipeline and Related Construction

	Employment	Workers' Earnings	Economic Output	Value Added
Agriculture, forestry, fishing and hunting	12.4	$430,103	$1,505,454	$752,680
Mining, quarrying, and oil and gas extraction	10.3	$2,150,514	$18,603,113	$11,182,674
Utilities	8.0	$1,612,886	$11,290,907	$6,559,069
Construction	3,796.8	$377,630,314	$1,080,916,153	$598,380,608
Durable goods manufacturing	140.9	$14,838,549	$102,693,486	$39,892,041
Nondurable goods manufacturing	46.3	$8,494,532	$66,347,520	$15,161,126
Wholesale trade	80.1	$11,612,777	$72,369,337	$43,655,441
Retail trade	260.3	$15,376,177	$58,712,716	$39,031,835
Transportation and warehousing	107.3	$9,354,737	$36,238,435	$16,558,960
Information	9.3	$1,075,257	$7,634,804	$3,870,926
Finance and insurance	34.0	$3,655,874	$18,495,581	$11,505,252
Real estate and rental and leasing	228.8	$9,999,892	$72,369,337	$50,644,612
Professional, scientific, and technical services	114.0	$15,591,229	$40,002,070	$25,161,017
Management of companies and enterprises	13.5	$2,150,514	$4,623,895	$2,903,194
Administrative & support & waste mgmt & remediation svc	104.8	$6,881,646	$20,108,568	$12,903,086
Educational services	34.0	$1,935,463	$5,161,557	$3,548,349
Health care and social assistance	202.2	$18,171,846	$48,712,198	$30,967,406
Arts, entertainment, and recreation	17.0	$645,154	$3,548,571	$2,150,514
Accommodation	10.5	$537,629	$2,688,311	$1,612,886
Food services and drinking places	123.4	$5,161,234	$21,506,489	$11,182,674
Other services	128.8	$7,741,852	$24,302,333	$13,333,189
Households	23.8	$537,629	$0	$537,629
Total	5,506.4	$515,585,807	$1,717,830,834	$941,495,167

Figure 5. Total Economic Output Impact by Industry Sector: Oil & Gas Pipeline and Related Construction



PROPERTY VALUES AND TAXES

Property Values and Taxes

The Brazoria County petrochemical industry supports billions of dollars of property in the county and hundreds of millions of dollars in taxes for the county, cities, schools and other jurisdictions.

In total, the petrochemical industry supported $23.2 billion of real and business personal property appraised value in 2024. After accounting for exemptions for pollution control equipment and abatements with the county, the industry supported $9.4 billion of taxable value.

The table below summarizes the property supported by the petrochemical industry in Brazoria County as well as the total residential and non-residential property value in the county. As shown, the petrochemical industry accounts for 46.4% of total non-residential appraised value and 24.0% percent of total non-residential taxable property value in the county.

Table 12. Property Value in Brazoria County

	Appraised Value	Taxable Value
Petrochemical Industry		
Real Property	$21,146,762,974	$7,726,614,910
Business Personal Property	$2,063,146,800	$1,645,360,160
Total Petrochemical Industry	$23,209,909,774	$9,371,975,070
Countywide		
Residential	$37,687,953,567	$26,385,623,429
Non-Residential	$50,044,920,333	$39,105,105,841
Total Countywide	$87,732,873,900	$65,490,729,270
Petrochemical Industry as % of Non-Residential Countywide	46.4%	24.0%

Petrochemical industry property is defined as property owned by members of the Brazoria County Petrochemical Council.

All property values obtained from the Brazoria Central Appraisal District for 2024.

In total, the petrochemical industry in Brazoria County supported $370.0 million of property taxes in 2024. These taxes were paid to a variety of different jurisdictions in the county. The graph below shows the distribution of taxes and the table on the following page provides more detail.

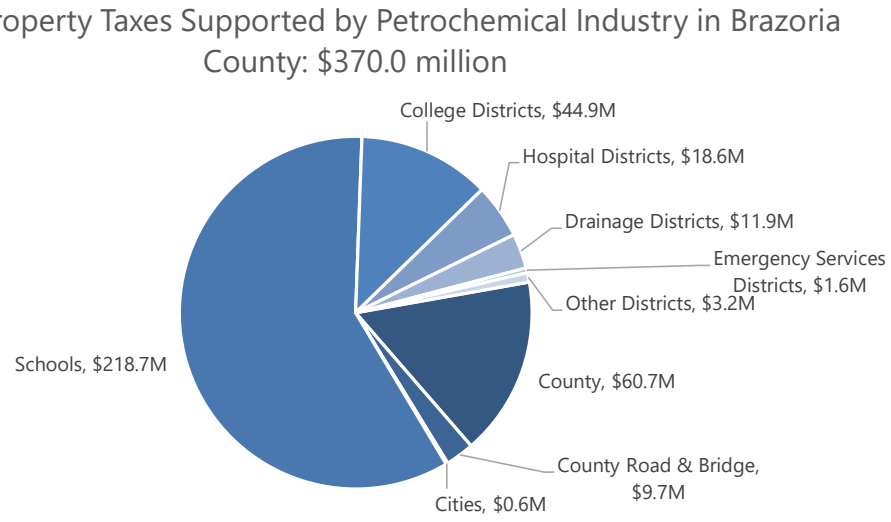


Table 13. Property Taxes Supported by the Petrochemical Industry

	Real Property Taxes	Business Personal Property Taxes	Total Taxes
County	$55,325,219	$5,397,708	$60,722,926
County Road & Bridge	$8,864,935	$864,892	$9,729,826
Cities	$265,920	$366,281	$632,200
Schools	$199,327,940	$19,410,257	$218,738,198
College Districts	$41,799,487	$3,088,812	$44,888,299
Hospital Districts	$16,268,472	$2,352,902	$18,621,374
Drainage Districts	$10,947,554	$921,254	$11,868,808
Emergency Services Districts	$1,374,160	$189,902	$1,564,062
Other Districts	$3,005,729	$200,592	$3,206,320
Total	$337,179,415	$32,792,600	$369,972,014

Property taxes reflect the taxes collected on taxable property after accounting for pollution control equipment exemptions, Freeport exemptions, and tax abatements.

Overview of Methodology

This report presents the results of an analysis undertaken by Impact DataSource, an Austin, TX based economic consulting firm.

Economic impacts can be categorized into two main types of impacts. First, the direct economic impacts are the jobs and payroll directly created by the company. Second, this economic impact analysis calculates the indirect and induced impacts that result from the facility. Indirect jobs and salaries are created in new or existing area firms, such as maintenance companies and service firms, that may supply goods and services for the facility. In addition, induced jobs and salaries are created in new or existing local businesses, such as retail stores, gas stations, banks, restaurants, and service companies that may supply goods and services to workers and their families.

Regional Input-Output Modeling System (RIMS II)

The economic impact estimates in this report are based on the Regional Input-Output Modeling System (RIMS II), a widely used regional input-output model developed by the U. S. Department of Commerce, Bureau of Economic Analysis. The RIMS II model is a standard tool used to estimate regional economic impacts. The economic impacts estimated using the RIMS II model are generally recognized as reasonable and plausible assuming the data input into the model is accurate or based on reasonable assumptions. The RIMS II model is described in basic detail below.

Generally speaking, input-output modeling attempts to estimate the changes that occur in all industries based on a change in the demand for the output of an industry. An input-output model allows an analyst to identify the subsequent changes occurring in various industries within a regional economy in order to estimate the total impact on the economy. Total economic impact is the sum of three components: (1) direct, (2) indirect, and (3) induced impacts.

If the demand for the output of an industry, measured by industry sales or revenue, increases by $1.0 million, total regional output increases by $1.0 million. This initial change in output is called the change in direct economic output and also referred to as the direct expenditure effect. The change in total economic output in the region resulting from the initial change does not stop with the change in direct economic output. Businesses in a variety of industries within the region will be called upon to increase their production to meet the needs of the industry where the initial increase in demand occurs. Further, other suppliers must also increase production to meet the needs of the group of initial supplier firms to the industry. This increase in expenditures by regional suppliers is considered the indirect economic impact of the initial $1.0 million in sales, and is classified as indirect expenditures of the total economic impact or the change in indirect economic output.

The total economic impact of the $1.0 million in sales includes one more component, the induced impact. All economic activity, whether direct or indirect, that results from the initial increase in demand of $1.0 million, requires workers, and these workers must be paid for their labor. This means that part of the direct and indirect expenditures is actually in the form of wages and salaries paid to workers in the various affected industries. These wages and salaries will in turn be spent in part on goods and services produced locally in the region. This spending is another part of the regional economic impacts referred to as induced impacts and is classified as induced expenditures or the change in induced economic output.

Based on the initial direct impact, the RIMS II model can be used to estimate the direct, indirect and induced impacts on economic output, value added, earnings and employment in a given region. Economic output is gross output and is the sum of the intermediate inputs and final use. This is a duplicative total in that goods and services will be counted multiple times if they are used in the production of other goods and services. Value added is defined as the value of gross output less intermediate inputs. Workers' earnings or earnings consist of wages and salaries, employer provided benefits and proprietors' income. Employment consists of a count of jobs that include both full-time and part-time workers.

The RIMS II model is based on regional multipliers, which are summary measures of economic impacts generated from changes in direct expenditures, earnings, or employment. Multipliers show the overall impact to a regional economy resulting from a change in demand in a particular industry. Multipliers can vary widely by region. Multipliers are higher for regions with a diverse industry mix. Industries that buy most of their materials from outside the state or region tend to have lower multipliers.

Multipliers tend to be higher for industries located in larger areas because more of the spending by the industry stays within the area.
The RIMS II model generates six types of multipliers for approximately 400 industrial sectors for any region in the United States. The multipliers include four "final-demand" multipliers and two "direct-effect" multipliers. Final demand multipliers indicate the impact of changes in final demand for the output of a particular regional industry on total regional output, earnings, employment and value added. Direct-effect multipliers indicate the impact of changes in regional earnings or employment within a particular industry on total employment or earnings within a region.

Final-demand output multipliers indicate the total regional output (direct, indirect and induced expenditures) that results from an increase in direct expenditures for a good produced by a particular regional industry. For example, if an industry in a particular region is said to have a final demand output multiplier of 2, this tells us that a $1 increase in final demand for the good produced by that industry results in a $2 increase in total output or expenditures within the regional economy. Final-demand earnings multipliers indicate the impact of an increase in final demand for the good of a particular regional industry on the total earned income of households within the region. Final-demand employment multipliers indicate the increase in total regional employment that results from a $1.0 million increase in final demand for the good produced by a particular regional industry. Final-demand value-added multipliers indicate the increase in total regional value added that results from a $1.0 million increase in final demand for the good produced by a particular regional industry. Direct-effect earnings multipliers indicate the impact of a $1 change in earnings within a particular regional industry on total earnings in all industries within a region. Direct-effect employment multipliers indicate the impact of a change in employment in a particular regional industry on total employment in all industries within a region.

Theoretically, changes in final demand drive the total change in economic output, earnings, and employment. However, these multipliers relationships can be used to estimate impacts in other ways if only limited information is known about a project. For example, the multiplier relationships can be used to estimate the increase in direct economic output based on a given level of employment in a specific industry.

Additional Notes on RIMS II
RIMS II multipliers are based on the average relationships between the inputs and outputs produced in a local economy. The multipliers are a useful tool for studying the potential impacts of changes in economic activity. However, the relative simplicity of input-output multipliers comes at the cost of several limiting assumptions.

- Firms have no supply constraints—Input-output based multipliers assume that industries can increase their demand for inputs and labor as needed to meet additional demand.
- Firms have fixed patterns of purchases—Input-output based multipliers assume that an industry must double its inputs to double its output.
- Firms use local inputs when they are available—The method used by RIMS II to develop regional multipliers assumes that firms will purchase inputs from firms in the region before using imports.

RIMS II, like all input-output models, is a "static equilibrium" model. This means that there is no specific time dimension associated with the results using the model. For the RIMS II model, it is customary to assume that the impacts occur in one year because the model is based on annual data.

About Impact DataSource

Established in 1993, Impact DataSource is an Austin, Texas-based economic consulting firm. Impact DataSource provides high-quality economic research, specializing in economic and fiscal impact analyses. The company is highly focused on supporting economic development professionals and organizations through its consulting services and software. Impact DataSource has conducted thousands of economic impact analyses of new businesses, retention and expansion projects, developments, and activities in all industry groups throughout the U.S.