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APPEALS AND ADVANCED MOTIONS

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June 14, 2016

Blake Hawthorne, Clerk
Supreme Court of Texas
PO Box 12248
Austin, Texas 78711Address

via e-Filing

Re: No. 14-0743
Southwest Royalties, Inc. v. Glenn Hegar, Comptroller of Public Accounts of the State of Texas, and Ken Paxton, Attorney General of the State of Texas

Dear Mr. Hawthorne:

In its amicus brief, Texas Oil & Gas Association challenged the Comptroller's assertion that a ruling in Southwest Royalties' favor would "produce fiscally disastrous consequences" for Texas. TXOGA presented the Court with two studies on the economic impact of manufacturing exemptions—one from Washington and one from California—that indicate that the economic activity stimulated by acknowledging the application of the processing exemption to the oil and gas industry would be far greater than the foregone taxes.

A new study from Texas, conducted by The Perryman Group, is consistent with the Washington and California studies. The Perryman report concludes that "[a]lthough a sales tax exemption on equipment used in downhole processing would have the initial effect of causing the State to forego tax receipts, it would also lead to incremental drilling and increases in State and local tax receipts. In fact, within a few years, the net dynamic tax effect would be positive."

Because the conclusions in the Perryman report directly relate to TXOGA's prior briefing, a copy of the report is attached here. Please circulate this letter and the attached report to the Justices.

TXOGA is paying all fees and expenses to prepare this letter. *See* TEX. R. APP. P. 11(c).

Kindest Regards,

KUHN HOBBS PLLC

By: _____
Lisa Bowlin Hobbs

CERTIFICATE OF SERVICE

I hereby certify that, on June 14, 2016, I served electronically a copy of this letter on counsel of record, as listed below, in accordance with the Court's rules on electronic filing:

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May 2016

The Potential Effect of Exempting Downhole Processing Equipment from Taxation on State of Texas Tax Receipts

Prepared for the

Texas Association of Business

TEXAS ASSOCIATION OF BUSINESS
THE TEXAS STATE CHAMBER

by

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Contents

Introduction

One of the basic tenets of the social contract underlying modern Western societies is that some portion of private resources (both from individuals and business enterprises) is paid to government for the provision of essential and desired public goods and services. While there is substantial and ongoing debate about the optimal extent of such activity, it is widely recognized that public safety and health, education, transportation and other infrastructure, and some form of safety net must be provided in a collective manner. Consequently, all governments must typically have various taxes and other revenue sources to provide the fiscal capacity to fulfill their functions.

Although exempting below-ground assets from sales tax would initially reduce sales tax collections, it would also tend to increase exploration activity by reducing costs to drill and stimulating incremental production.

As would be expected, different public-sector entities have evolved alternative mechanisms for raising revenues. All of these approaches have advantages and disadvantages. The State of Texas and many of its municipal subdivisions obtain a substantial portion of their revenues from a sales tax levy. Conceptually, a sales tax should be applied to purchases of final goods and services rather than intermediate items used in the production process. In practice, however, it is typical for states and localities to include substantial "business-to-business" transactions in their base for sales tax levies. As a result, a pyramiding process is created which results in multiple rounds of taxation for some purchases, as well as unequal levels of embodied taxation. In addition to equity concerns, the consequences include, among others, (1) inefficient decision making by producers, (2) distorted consumer choices from inappropriate relative prices, and (3) diminished economic competitiveness.[1] In fact, oil and gas extraction has by far the largest sales tax pyramid of any sector,[2] and it is amplified in Texas by the relatively high sales tax rate.[3]

[1] Cline, Robert, John Mikesell, Tom Neubig, and Andrew Phillips, Sales Taxation of Business Inputs, Existing Tax Distortions and the Consequences of Extending the Sales Tax to Business Services, Council on State Taxation, January 25,2005.

[2] Cline, Robert, John Mikesell, Tom Neubig, and Andrew Phillips, Sales Taxation of Business Inputs, Existing Tax Distortions and the Consequences of Extending the Sales Tax to Business Services, Council on State Taxation, Table 3, January 25,2005.

In recognition of and partial response to this concern, the State of Texas enacted an exemption in 1963 (shortly after the sales tax was initiated) for equipment used in the "actual manufacturing, processing, or fabrication of tangible personal property."[4] Although this provision is commonly called the "manufacturing exemption," the language is somewhat broader and the coverage of the exemption has been extended beyond traditional manufacturing in certain contexts.[5] One area of controversy is the proper treatment of the various items (such as casings, tubing, chemicals, and other materials) used in the downhole processing of oil and natural gas. The State maintains that this activity does not qualify for the exemption, while industry participants take the opposing view. Significant litigation is currently ongoing in an effort to resolve the issue.[6]

The Perryman Group found that total State and local tax gains outweigh losses stemming from an exemption for downhole processing equipment within five years, and net effects continue to grow over time.

Irrespective of the ultimate outcome of this matter, downhole processing has many of the characteristics which suggest that, from the perspective of economic analysis and tax policy, it should not be subject to sales taxes. Downhole processing occurs after the minerals have been removed from their original position and involves the transformation of an intermediate good. In fact, the affected activity involves the application of temperature and pressure, which is common to many other activities that are routinely exempted. Moreover, because the tax is levied on something other than final goods and services, it is subject to all of the inefficiencies and adverse outcomes noted above. **Thus, it might well be beneficial to grant the**

Between 2017 and 2030, the present value of the net State and local tax benefits (calculated using a 3% real discount rate as of 2016) was found to be approximately $345.8 million. In addition, incremental royalties to the State over the same period are estimated at $401.5 million (on a net present value (NPV) basis).

[3] Drenkard, Scott and Jared Walczak, State and Local Sales Tax Rates in 2015, Tax Foundation, April 8, 2015, http://taxfoundation.org/article/state-and-local-sales-tax-rates-2015, last accessed 5-27-16.
[4] TEX. TAX CODE §151.318.
[5] EOG Resources Inc., Amicus Curiae Brief, p.21, December 8, 2015.
[6] *Southwest Royalties, Inc., v. Glenn Hegar, Comptroller of Public Accounts of the State of Texas, and Ken Paxton, Attorney General of the State of Texas*, No. 14-0743, in the Supreme Court of Texas.

exemption going forward in terms of both economic performance and dynamic fiscal revenues.

Because (1) the State also levies a franchise tax which falls disproportionately on high value sectors and a severance tax on extracted oil and gas and (2) many local governments levy a substantial property tax which applies to mineral resources, this industry pays a disproportionate share of business taxes in Texas and is not always competitive with other major producing areas.[7] In addition, royalty and lease payments to the State are vital to the funding of both public and higher education in Texas.

Although exempting the below-ground assets from sales tax would initially reduce sales tax collections, it would also tend to increase exploration activity by reducing costs to drill and stimulating incremental production.[8] Oil and gas exploration and production results in substantial gains in economic activity, not only providing opportunities for Texas businesses and workers but also generating tax receipts. In fact, The Perryman Group (TPG) found that total State and local tax gains outweigh losses stemming from an exemption for downhole processing equipment within five years, and net effects continue to grow over time. **Between 2017 and 2030, the present value of the net State and local tax benefits (calculated using a 3% real discount rate as of 2016) was found to be approximately $345.8 million. In addition, incremental royalties to the State over the same period are estimated at $401.5 million (on a net present value (NPV) basis).**

At the request of the Texas Association of Business, The Perryman Group recently examined the economic and fiscal implications of exempting equipment used in downhole processing of oil and natural gas from sales taxes. This report presents the results of the analysis.

[7] http://www.ogfj.com/articles/print/volume-9/issue-07/departments/capital-perspectives/texas-sales-tax-ruling-disallows.html; and http://www.ncsl.org/research/energy/oil-and-gas-severance-taxes.aspx, last accessed 5-23-16.
[8] Texas Severance Tax Incentives: Past and Present, Railroad Commission of Texas, July 21, 2015, http://www.rrc.state.tx.us/oil-gas/publications-and-notices/texas-severance-tax-incentives-past-and-present/ last accessed 5-27-16.

Potential Past Claims Associated with the Sales Tax Exemption

Despite its compelling economic rationale, exempting any good or service from taxation that was previously subject to levy has the initial effect of reducing total tax collections (though the long-term, dynamic effects may well be positive once the exemption is integrated into decision-making and business activity). If the State of Texas exempts equipment used in downhole processing, it will initially forego some tax receipts due to the lag involved in adjusting behavior. Moreover, if a judicial outcome ultimately determines that the exemption is appropriate under current law, refunds will potentially be required for the past four years as well as for prior periods for taxpayers with open audits (plus interest). Because the existence of the exemption was not known at the time, there is no offsetting gain to be observed over this period. As a preliminary phase of this analysis, The Perryman Group estimated the magnitude of these refunds.[9]

The Perryman Group used a large sample of actual data regarding sales taxes paid for equipment used in downhole processing as a starting point for calculating the potential refunds if the exemption for past amounts paid is upheld. The dataset included sales tax information covering a number of years and representing approximately 43,500 wells, thus providing a very large sample from which to generate the estimates.

Total sales taxes paid by each firm for downhole processing expenses was divided by wells drilled by that firm over the relevant time period in order to obtain an estimate of taxes paid on a per-well basis. The average of the per-well estimates was then applied to total wells drilled in relevant time periods based on information maintained by the Texas Railroad Commission to derive an approximation of the total eligible sales tax

[9] In February 2012, the Comptroller's office estimated the potential fiscal implications of a potential sales tax exemption and found that the liability would total $4.4 billion for past claims and the five years after implementation (excluding any interest), with future effects of $500 million per year thereafter. However, this estimate was prepared at a time when oil prices were in the $100 per barrel range compared to $30-$50 per barrel more recently. Given the dramatically lower level of drilling activity now occurring, the potential claims are substantially lower. Although this calculation is dated and for a specific set of conditions, it is routinely cited in the media coverage and court documents as the current fiscal effect of a ruling in favor of the oil and gas producers to the point that it has become conventional wisdom. In addition, with respect to the future patterns, the State's analysis is static in nature and ignores any offsetting benefits associated with incremental drilling stimulus stemming from lower costs due to the potential sales tax exemption.

refunds potentially at issue. These estimates were then adjusted to reflect time required for firms to become aware of and file for the exemption and the likelihood that some firms would not claim the exemption. More specific details regarding methods and assumptions for each step of the analysis are described in the Appendices to this report.

The Perryman Group estimated the potential claims for a period approximating the four-year statutory timeframe for filing a claim for past taxes paid (as well as potential claims prior to that period for firms with open audits, which would also be eligible to file for refunds). **Total past potential claims were estimated to be about $2.2 billion** (excluding interest).[10]

For 2016, The Perryman Group projected drilling activity based on annualizing actual permits for the January through April period based on current projections for drilling activity for the remainder of the year from the Texas Econometric Model (see Appendices for more detail). The per-well amount was then applied, resulting in 2016 claims of an additional **$156.1 million**, for a **total of past and 2016 claims of approximately $2.4 billion, which is well below the value that is frequently reported.**[11] Moreover, a simulation of the period between 2001 and 2016 indicates that, **if the exemption had been available and fully known to decision makers during that time frame, the State and local governments would have seen a net dynamic gain (in constant 2016 dollars) of $834.6 million in tax revenues as well as $359.4 million in royalty payments.**[12] The economic stimulus would also be significant, representing **more than $36.7 billion in cumulative gross product and almost 300,000 person-years of employment over the 16-year period.**

[10] Note that it is likely that approximately 20% of this amount will reflect refunds to local governments, with the exact amount depending on the total local (city, special district, etc.) sales tax rate at the various points of sale.
[11] See for example, https://www.texastribune.org/2016/01/30/drillers-lawsuit-could-cost-state-billions-tax-ref/; https://www.texastribune.org/2016/03/08/oil-tax-challenge-court-grapples-billion-dollar-qu/, last accessed 5-27-16; and *Southwest Royalties, Inc., v. Glenn Hegar, Comptroller of Public Accounts of the State of Texas, and Ken Paxton, Attorney General of the State of Texas*, Defendants' Exhibit G.
[12] Gains would also likely have occurred in earlier years, but changes in historical data classifications preclude quantitative analysis.

Potential Future Economic and Fiscal Effects of the Sales Tax Exemption

Although the State would continue to forgo some direct sales tax revenues, a tax exemption for equipment used in downhole processing going forward would also reduce the total cost of drilling, thereby stimulating additional drilling activity. The resulting economic stimulus would generate significant tax benefits for the State and local governments.

A tax exemption for equipment used in downhole processing going forward would reduce the total cost of drilling, thereby stimulating additional drilling activity.

In addition, such an exemption would have the effect of making the overall Texas tax profile more efficient. As previously described, retail sales taxes are ideally and properly designed to apply only to final consumption, not business purchases of goods and services used in production. However, current state and local tax imposes significant taxes on business purchases of inputs, thereby increasing the cost of doing business and reducing the competitiveness of the state. As noted earlier, sales taxes on business inputs are inconsistent with tax policy principles (such as economic growth, efficiency, equity, simplicity) and can cause notable economic distortions (particularly in the case of the multiple rounds of pyramiding associated with oil and gas extraction).[13]

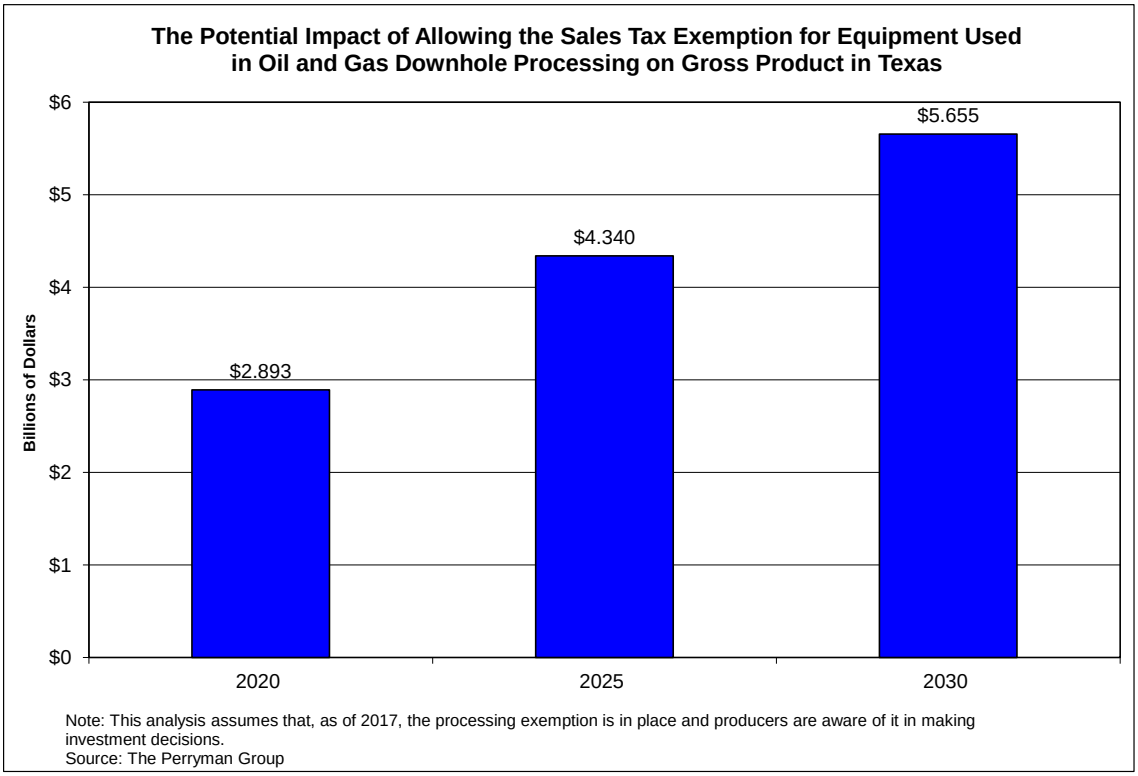
Potential Incremental Drilling Activity

The Perryman Group measured the potential additional drilling based on an analysis of the responsiveness of the industry to drilling costs and the likely impact of a sales tax reduction. Estimated gains in business activity were quantified using typical investment levels and other industry information, as well as past studies examining the

[13] Cline, Robert, John Mikesell, Tom Neubig, and Andrew Phillips, Sales Taxation of Business Inputs, Existing Tax Distortions and the Consequences of Extending the Sales Tax to Business Services, Council on State Taxation, January 25,2005.

responsiveness of investment to sales tax exemptions.[14] The results are fully adjusted for the probable timing lags in adjusting decision making in light of the new fiscal environment (see the Appendices for more detail).

Incremental drilling activity associated with a sales tax exemption would result in notable gains in business activity in Texas. If the exemption went into effect in 2017, by 2020, the overall annual economic benefits (including multiplier effects) would total an estimated **$2.9 billion** in gross product and more than **23,500 jobs**. These gains would increase over time.



[14] See for example, Lerch, Stephen, Impacts of Tax Exemptions: An Overview, Washington State Institute for Public Policy, January 2004; Devol, Ross C., Armen Bedroussian, and Perry Wong, The Economic Impact of a Sales Tax Reduction on Manufacturing Equipment, Milken Institute, Policy Brief Number 29, June 2002; Machinery & Equipment Exemption Key to Keeping Jobs, Investments in Washington, Washington Research Council, Policy Brief PB12-02, January 30, 2012; and Texas Severance Tax Incentives: Past and Present, Railroad Commission of Texas, July 21, 2015, http://www.rrc.state.tx.us/oil-gas/publications-and-notices/texas-severance-tax-incentives-past-and-present/ last accessed 5-27-16.

Results by year are provided in the table below.

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas

(Monetary Values in Billions of Constant 2016 Dollars)

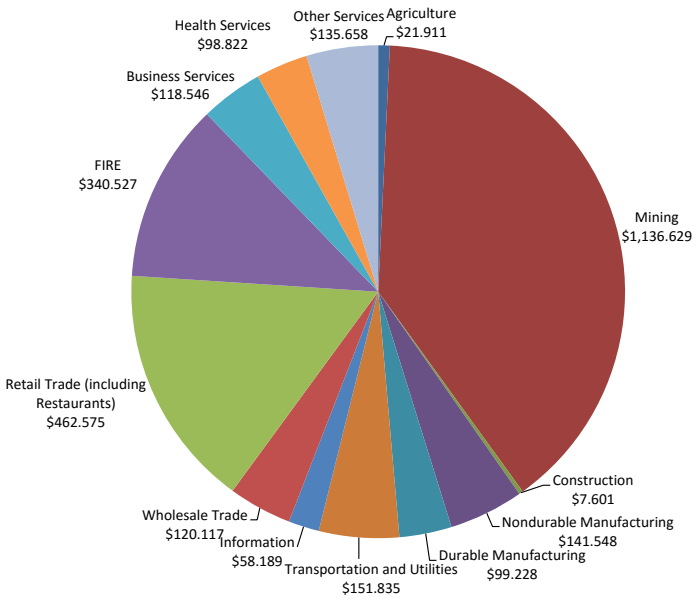
	Total Expenditures	Gross Product	Personal Income	Retail Sales	Employment
2017	$2.805	$0.953	$0.523	$0.205	7,746
2018	$5.838	$1.984	$1.089	$0.426	16,121
2019	$7.378	$2.507	$1.376	$0.538	20,372
2020	$8.516	$2.893	$1.588	$0.621	23,514
2021	$9.507	$3.230	$1.773	$0.694	26,251
2022	$10.380	$3.527	$1.935	$0.757	28,662
2023	$11.190	$3.802	$2.086	$0.817	30,899
2024	$11.987	$4.073	$2.235	$0.875	33,101
2025	$12.774	$4.340	$2.382	$0.932	35,274
2026	$13.560	$4.607	$2.528	$0.989	37,444
2027	$14.340	$4.872	$2.674	$1.046	39,596
2028	$15.113	$5.134	$2.818	$1.103	41,731
2029	$15.883	$5.396	$2.962	$1.159	43,859
2030	$16.645	$5.655	$3.104	$1.215	45,962

* NOTE: This analysis assumes that the processing exemption is in place and producers are aware of it in making investment decisions.
SOURCE: The Perryman Group

Economic Benefits by Industry Group

While oil and gas extraction and the associated downhole processing would be a primary beneficiary of the additional business activity, with gains in output of about $1.1 billion, other industry groups would also see substantial gains. As of 2020, the total benefits in terms of output by industry also include $462.6 million in wholesale and retail trade and $340.5 million in finance, insurance, and real estate.

The Potential 2020 Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Texas Output by Sector



Note: This analysis assumes that as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions.
Source: The Perryman Group

Additional results by detailed industrial sector are included in the Appendices to this report.

Measuring Economic Impacts

Any economic stimulus, whether positive or negative, generates multiplier effects throughout the economy. In this instance, reducing the cost of drilling by implementing a tax exemption leads to incremental drilling activity and a significant economic stimulus. These effects ripple through the economy, leading to additional gains.

Incremental drilling was based on estimates of responsiveness of the industry to the reduction in overall costs. The multiplier effects associated with this stimulus were measured using The Perryman Group's input-output assessment model (the US Multi-Regional Impact Assessment System), which is described in further detail in the Appendices to this report. The system has been consistently maintained and updated since it was developed by the firm some 30 years ago, and has been used in hundreds of analyses for clients ranging from major corporations to government agencies. It uses a variety of data (from surveys, industry information, and other sources) to describe the various goods and services (known as resources or inputs) required to produce another good/service. This process allows for estimation of the total economic impact (including multiplier effects) of the crude oil storage and associated facilities. The models used in the current analysis reflect the specific industrial composition and characteristics of Texas. The model is also linked to a system for quantifying the State and local tax effects associated with the gains business activity such as increases in retail sales taxes and property taxes.

The total economic effects are quantified for key measures of business activity:

- **Total expenditures** (or total spending) measures the dollars changing hands as a result of the economic stimulus.
- **Gross product** (or output) is production of goods and services that will come about in each area as a result of the activity. This measure is parallel to the gross domestic product numbers commonly reported by various media outlets and is a subset of total expenditures.
- **Personal income** is dollars that end up in the hands of people in the area; the vast majority of this aggregate derives from the earnings of employees, but payments such as interest and rents are also included.
- **Job gains** are expressed as person-years of employment for cumulative effects and permanent jobs for ongoing operational effects.

Summary results are included in the body of this report, with other measures and industry-level detail in the Appendices. Monetary values were quantified on a constant (2016) dollar basis except where noted. See the Appendices to this report for additional information regarding the methods and assumptions used in this analysis.

Tax Receipts Associated with Economic Benefits

The notable incremental drilling activity associated with the sales tax exemption would also lead to additional tax receipts. Business operations generate taxes for the State as well as local governmental entities (including cities, counties, schools, and special districts) in multiple ways. Firms pay taxes directly, including, among others, sales taxes on non-exempt items, franchise taxes, severance taxes, and property taxes. In addition, taxes are generated through the business activity related to additional drilling and when multiplier effects flow through the economy. For example, the oil and gas industry serves as a source of jobs, therefore increasing the demand for housing and, hence, property taxes, as well as sales taxes on eligible consumer purchases. Suppliers to the industry also provide revenues to state and local governments. When the total economic effects are considered (such as described in the prior section), the gains in State and local taxes from these indirect sources are significant.

The Perryman Group estimates that by 2020, business activity associated with incremental drilling due to the sales tax exemption on downhole processing equipment would generate **increases in State and local taxes of more than $214.4 million**, with significant increases after that time (as noted in the table below).

Potential State and Local Tax Receipts Due to Increased Economic Activity Associated with a Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing

(Monetary Values in Millions of Constant 2016 Dollars)

	State Taxes	Local Taxes	TOTAL Taxes
2017	$45.437	$25.202	**$70.639**
2018	$94.561	$52.449	**$147.010**
2019	$119.492	$66.277	**$185.769**
2020	$137.925	$76.501	**$214.426**
2021	$153.978	$85.405	**$239.384**
2022	$168.118	$93.248	**$261.367**
2023	$181.237	$100.525	**$281.762**
2024	$194.154	$107.689	**$301.843**
2025	$206.899	$114.759	**$321.658**
2026	$219.627	$121.818	**$341.446**
2027	$232.252	$128.821	**$361.073**
2028	$244.773	$135.766	**$380.538**
2029	$257.255	$142.689	**$399.944**
2030	$269.594	$149.533	**$419.127**

NOTE: This analysis assumes that the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding. See the Appendices to this report for additional information regarding methods and assumptions used.
SOURCE: The Perryman Group

Dynamic Future Tax Effects

Although the initial effect of a sales tax exemption on equipment used in downhole processing would be foregone tax receipts, reducing sales taxes would also stimulate incremental drilling and generate economic benefits as noted in the preceding section. The dynamic tax effects include both the initial losses as well as the offsetting increases in tax receipts.

Net Tax Effects

The Perryman Group estimated the potential future sales tax losses for the exemption going forward based on projected drilling activity and the per-well average taxes previously described. In 2017, potential foregone taxes are estimated to be approximately $175.5 million, with annual losses rising thereafter as drilling activity recovers and the exemption becomes more widely recognized and claimed. Estimated annual foregone tax revenues through 2030 are presented in the table below.

Reducing sales taxes would stimulate incremental drilling and generate economic benefits which would lead to offsetting increases in tax receipts.

Combining the initial sales taxes foregone and incremental taxes associated with additional drilling and the resulting economic stimulus yields an estimate of the net dynamic fiscal effects. As noted in the table below, total state and local tax gains outweigh losses stemming from an exemption for downhole processing equipment within five years, and net effects continue to grow over time. **For the 2017 through 2030 time period, the net present value of the net State and local tax benefits (calculated using a 3% real discount rate) was found to be approximately $345.8 million.** In addition, the **present value of incremental royalties paid to the State is estimated at $401.5 million over the same horizon.**

Net Dynamic Tax Effects of an Exemption for Equipment Used in Oil and Gas Downhole Processing

(Monetary Values in Millions of Constant 2016 Dollars)

	Foregone Sales Tax	Incremental State and Local Tax from Increased Drilling Activity	NET TAX EFFECT
2017	$175.465	$70.639	**-$104.826**
2018	$197.356	$147.010	**-$50.346**
2019	$210.611	$185.769	**-$24.843**
2020	$217.784	$214.426	**-$3.358**
2021	$225.093	$239.384	**$14.291**
2022	$232.498	$261.367	**$28.869**
2023	$239.930	$281.762	**$41.832**
2024	$247.445	$301.843	**$54.398**
2025	$255.038	$321.658	**$66.620**
2026	$262.701	$341.446	**$78.745**
2027	$270.427	$361.073	**$90.645**
2028	$278.209	$380.538	**$102.330**
2029	$286.037	$399.944	**$113.906**
2030	$293.906	$419.127	**$125.222**

NOTE: This analysis assumes that the processing exemption is in place and producers are aware of it in making investment decisions. Foregone tax revenue based on (1) projected drilling activity and (2) per-well sales tax calculations by The Perryman Group. Foregone sales tax is adjusted for time required for firms to learn about and file for the exemption and other factors previously described. Incremental tax collections based on the increase in economic activity due to the drilling stimulus associated with lower drilling costs. Columns may not sum to net due to rounding. See the Appendices to this report for additional information regarding methods and assumptions used.

SOURCE: The Perryman Group

Conclusion

Although a sales tax exemption on equipment used in downhole processing would have the initial effect of causing the State to forego tax receipts, it would also lead to incremental drilling and increases in State and local tax receipts. In fact, within a few years, the net dynamic tax effect would be positive.

Although a sales tax exemption on equipment used in downhole processing would cause the State to forego tax receipts, it would also lead to incremental drilling and increases in State and local tax receipts.

The Perryman Group estimates that even when the initial effect of foregone sales taxes are considered, the total net present value of 2017-2030 State and local tax benefits (calculated using a 3% real discount rate) of a sales tax exemption for downhole processing equipment would be nearly **$345.8 million**, with an **additional $401.5 million in royalties** as well.

In any assessment of the implications of tax policy, it is important to consider dynamic effects. As is illustrated in this instance, the initial foregone taxes are more than recovered over time. These tax receipts would provide much-needed resources to be used for public goods and services throughout Texas. **The bottom line is simply that exempting items used in downhole processing from sales tax levies is both economically appropriate and a fiscally sound policy that will pay dividends to business activity and taxpayers for decades to come.**

APPENDIX A

About The Perryman Group

- The Perryman Group (TPG) is an economic research and analysis firm based in Waco, Texas. The firm has more than 30 years of experience in assessing the economic impact of corporate expansions, regulatory changes, real estate developments, public policy initiatives, and myriad other factors affecting business activity. TPG has conducted hundreds of impact analyses for local areas, regions, and states throughout the United States. Impact studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations.

- Dr. M. Ray Perryman, founder and President of the firm, developed the US Multi-Regional Impact Assessment System (used in this study) in the early 1980s and has consistently maintained, expanded, and updated it since that time. The model has been used in hundreds of diverse applications and has an excellent reputation for reliability. A major study developed using the relevant model was recently published in *The Journal of Medical Economics*. In addition to producing a regular forecast for the area for decades, TPG has conducted numerous major studies for projects in the Houston area and Gulf Coast Region, including major economic development assessments for the Greater Houston Partnership.

- The firm has conducted numerous investigations related to the oil and gas, refining, and chemicals industries. These analyses have included, among others, forecasts, impact assessments, regulatory and environmental issues, and legislative and policy initiatives. Information has been prepared for the Interstate Oil Compact Commission, the US Department of Energy, the US Department of the Interior the Texas Railroad Commission, and numerous legislative committees and administrative bodies regarding energy policy.

- TPG also has extensive experience in studying the economic effects of taxes and has studied the implications for business activity of changes in tax law. In addition, the firm has quantified fiscal effects of economic stimuli on numerous occasions. In particular, studies have been performed regarding energy taxation policy in multiple states.

- Further information regarding the firm's experience and representative clients is available at www.perrymangroup.com.

Methods Used

Determination of Foregone Sales Tax

- The Perryman Group used an extensive sample of actual data regarding sales taxes paid for equipment used in downhole processing as a starting point for calculating the potential foregone sales tax revenue if an exemption is implemented. The information utilized was extracted from a dataset that included information regarding sales taxes paid with accompanying documentation. Total sales taxes paid by each firm for relevant items was divided by wells drilled by that firm over the relevant time period in order to obtain an estimate of taxes paid on a per-well basis. The average of the per-well estimates was then applied to total wells drilled in relevant time periods to derive an approximation of the total sales tax potentially foregone. More specific methods and assumptions for each step of the analysis are described below. Note that this data set is quite extensive and allowed for consideration of approximately 43,500 wells. The large size of this sample and geographic diversity of the included wells assures that it will be representative of the industry as a whole, thus permitting a high degree of accuracy. In fact, the 95% confidence interval around the estimates is only about +/- 0.4%. Moreover, a sample of this magnitude assures that factors such as out-of-state purchases, varying cost patterns over time and in different production areas, and differing local sales tax rates in various jurisdictions are fully factored into the analysis.

- Three time periods are relevant to this analysis:
    1. the four-year period prior to the date the tax exemption is implemented during which firms who had paid taxes would be entitled to request reimbursement, which was assumed herein to cover the period between March 2012 through the end of 2015;
    2. payments prior to March 2012 for firms with open audits or claims filed as of that time; and
    3. going forward, with 2016 treated as part of the historical/current period and 2017 through 2030 as a future projection horizon.

- Potential claims were quantified for (1) firms that were included in the database and (2) other companies. For those for which the information was available, claim estimates were based on actual taxes paid which would be subject to exemption. For other firms, the calculated average sales tax per well (described below) was applied to the number of wells based on the Texas Railroad Commission Drilling Permit (W-1) Query System.

- The starting point of the calculation of **sales tax per well** was actual sales taxes paid by firms in the dataset for items potentially exempted from sales taxes if an exemption on downhole

processing equipment is implemented. These amounts were then divided by the well counts of those clients during the relevant time period based on Texas Railroad Commission data. Using this data, it was determined that the average actual sales tax per well for downhole processing equipment was **$21,593.27**. This amount was tested for reasonableness using typical costs of the potentially exempt items on a national basis and applying the appropriate tax rate and found to be in the appropriate range.[15]

- The potential claims for the **period prior to March 2012**, which would only be relevant for firms which had open audits as of March 2012 (or four years prior to court decision if the exemption is found to apply to downhole processing equipment) were calculated based on the database as well as data from the Texas Railroad Commission for the 30 largest oil and gas producers in 2012.

    1. For those firms in the database, the potential claim equals sales taxes paid in the pre-March 2012 period by firms with open audits as of March 2012.

    2. To estimate claims for firms which were not in the dataset, well counts for the 30 largest Texas oil and gas producers with open audits or hearings as of March 2012 were determined using the Texas Railroad Commission Drilling Permit (W-1) Query System. The per-well sales tax amount was then applied to determine potential claims prior to March 2012 for the 30 largest producers with open audits or hearings which were not in the database; this amount was then increased by 10% to reflect other potential claims from smaller producers.

    3. Summing the amounts for (1) the firms in tha database and (2) other firms yields total potential claims for the pre-March 2012 period. TPG then reduced the likely total (multiplying by 90%) as a conservative factor to account for potential denied claims and those not requested.

- For the period from **March 2012 through December 2015**, potential claims for firms in the dataset were again quantified based on actual sales taxes paid. For firms that were not included, TPG first determined well counts for the period using the Texas Railroad Commission Drilling Permit (W-1) Query System. TPG then applied the per well sales tax amount to the well counts (adjusted for those drilled by firms in the database) to determine the potential claims for that period. TPG applied a 75% factor to the potential claims to account for the number of small producers who may not file claims and to account for producers that are non-permitted that will have to gather refund assignment forms from vendors, which is time consuming and typically not fully successful.

[15] Calculations by the Perryman Group from data found in Trends in US Oil and Natural Gas Upstream Costs, US Energy Information Administration, March 2016.

- TPG also calculated the current and potential future **losses going forward** in sales tax collections to the State for the period from January 2016 through 2030. TPG determined the well count for January through April 2016 using the Texas Railroad Commission Drilling Permit (W-1) Query System. TPG then projected the remainder of 2016 as well as 2017 through 2030. Given current market conditions, drilling activity is projected to be somewhat slower than the rate reflected by simply annualizing the partial 2016 data which is available, with the pace of activity increasing thereafter and showing net gains beginning in 2018. These projections were determined based on simulations of expected future oil and gas activity derived from the Texas Econometric Model, which is described in detail below, and the anticipated increment associated with implementing the exemption on an ongoing basis. TPG then applied the sales tax cost per well figure to the projected well counts. Adjustment factors were applied in 2016 (85%), 2017 (90%), and subsequent years (95%) to allow time for all producers to become aware of the exemption, reflect the fact that not all producers will provide exemption certificates, and account for errors in the collections of tax.

Economic Impact Assessment

- The direct losses in the forecast period, of course, are offset by the dynamic response of oil and gas investment to a more favorable tax environment. This process is described below.
- The basic modeling technique employed in this segment of the investigation is known as dynamic input-output analysis. This methodology, which is also commonly known as economic impact assessment, essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process. The present implementation also integrates the projections through 2030 from the Texas Econometric Model on an annual basis which provides the dynamic component.
- There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. In this instance, The Perryman Group projected incremental drilling activity based on analysis of industry responses to changes in drilling costs. Initially, a model was developed based on several studies of the effects of sales tax exemptions on manufacturing investment, with full allowance for an adjustment period.[16] This ramp up occurs as a result of capital budgets, lags in recognizing the full effects of the exemption, response time, scale, and other factors.
- Although results vary based on industrial structure and composition, overall tax structure, and other factors, the consensus results for prior analyses indicate that a 1% reduction in sales taxes on manufacturing processes results in increases investment of 0.2%-0.3%.[17] It should be noted, however, that the responsiveness is somewhat less in the oil and gas extraction sector because (1) its high value-added nature results in a less substantial effect of costs on investment and (2) it is subject to higher overall levels of taxation than traditional manufacturing. In fact, implementing this approach for the relevant sector within the context of the economic and fiscal framework of Texas reveals that, in the initial period, a 1% reduction in sales tax only generated a 0.006% investment stimulus (the percentage increases modestly over time to about

[16] See for example, Lerch, Stephen, Impacts of Tax Exemptions: An Overview, Washington State Institute for Public Policy, January 2004; Devol, Ross C., Armen Bedroussian, and Perry Wong, The Economic Impact of a Sales Tax Reduction on Manufacturing Equipment, Milken Institute, Policy Brief Number 29, June 2002; and Machinery & Equipment Exemption Key to Keeping Jobs, Investments in Washington, Washington Research Council, Policy Brief PB12-02, January 30, 2012.

[17] , Lerch, Stephen, Impacts of Tax Exemptions: An Overview, Washington State Institute for Public Policy, January 2004.

0.021%). Because of the significant spinoff activity associated with oil and gas activity, however, the ultimate effects are quite notable.

- The direct increase in business activity associated with additional drilling was estimated based on typical drilling costs and resulting employment patterns. These values were generated for each year between 2017 and 2030 and served as inputs to the dynamic impact assessment process. An analogous derivation was conducted for the 2001-2016 historical period in order to estimate the economic and fiscal outcome if the exemption had been known and available in the past.

- Once this direct increase in business activity was quantified, the next phase of the analysis involved the simulation of the US Multi-Regional Impact Assessment System (USMRIAS) which was developed and is maintained by The Perryman Group. This model has been used in hundreds of diverse applications across the country and has an excellent reputation for accuracy and credibility. The system used in the current simulations reflects the unique industrial structure and characteristics of the Texas economy.

- The USMRIAS is somewhat similar in format to the Input-Output Model of the United States and the Regional Input-Output Modeling System, both of which are maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9) comprehensive linkage and integration capabilities with a wide variety of econometric, real estate, occupational, and fiscal impact models. The model has been thoroughly tested for reasonableness and historical reliability.

- The impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The

initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

- Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, health care services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the *ACCRA Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

- Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources.

- Impacts were measured in 2016 dollars to eliminate the effects of inflation.

- The USMRIAS generates estimates of the effect on several measures of business activity. The most comprehensive measure of economic activity used in this study is **Total Expenditures**. This measure incorporates every dollar that changes hands in any transaction. For example, suppose a farmer sells wheat to a miller for $0.50; the miller then sells flour to a baker for $0.75; the baker, in turn, sells bread to a customer for $1.25. The Total Expenditures recorded in this instance would be $2.50, that is, $0.50 + $0.75 + $1.25. This measure is quite broad, but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

- A second measure of business activity frequently employed in this analysis is that of **Gross Product**, the most commonly reported statistic regarding national economic performance. It is defined as the value of all final goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is $1.25 (the value of the bread) rather than $2.50. Alternatively, it may be viewed as the sum of the value-added by the farmer, $0.50; the miller, $0.25 ($0.75 - $0.50); and the baker, $0.50 ($1.25 - $0.75). The total value-added is, therefore, $1.25, which is equivalent to the final value

of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

- The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry.

- The fourth measure, **Retail Sales**, represents the component of Total Expenditures which occurs in retail outlets (general merchandise stores, automobile dealers and service stations, building materials stores, food stores, drugstores, restaurants, and so forth). Retail Sales is a commonly used measure of consumer activity.

- The final aggregates used are **Permanent Jobs and Person-Years of Employment**. The Person-Years of Employment measure reveals the full-time equivalent jobs generated by an activity. It should be noted that, unlike the dollar values described above, Permanent Jobs is a "stock" rather than a "flow." In other words, if an area produces $1 million in output in 2014 and $1 million in 2015, it is appropriate to say that $2 million was achieved in the 2014-2015 period. If the same area has 100 people working in 2014 and 100 in 2015, it only has 100 Permanent Jobs. When a flow of jobs is measured, such as in a construction project or a cumulative assessment over multiple years, it is appropriate to measure employment in Person-Years (a person working for a year). This concept is distinct from Permanent Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

Fiscal Impact Assessment

- The Perryman Group estimated the potential tax effects of incremental oil and gas drilling and production associated with the sales tax exemption. Tax effects for the State and local governments stem from direct taxes paid by firms involved and indirect tax effects generated as a result of the increase in economic activity and property values.
- In order to measure overall tax effects, The Perryman Group utilized the firm's Fiscal Impact Assessment System which is linked to the US Multi-Regional Impact Assessment System. Tax increases are based on gains stemming from the various levies associated with both the direct increase in extraction activity and the associated indirect and induced spending and production.
- The Perryman Group's model uses empirical evidence of the linkages between economic activity and tax collections, and reflects the specific tax structure of Texas and local areas within the state. All monetary values are given in constant (2016) dollars, and a 3% real (inflation-adjusted) discount rate is employed in net present value calculations. Similarly, because of stable long-term relationships between royalty payments to the State and both direct tax payments by the industry and its economic output, a model can also be developed to estimate these benefits as well.

Texas Econometric Model

- The Texas Econometric Model was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group, more than 30 years ago and has been consistently maintained, expanded, and updated since that time. In this case, it was used in deriving expected future oil and gas activity which was then used to quantify losses in sales tax collections to the State going forward. It also provided the baseline projections which were employed in calculating the incremental responses to allowing the exemption in the future.
- The model is formulated in an internally consistent manner and is designed to permit the integration of relevant global, national, state, and local factors into the projection process. It is the result of more than three decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, Texas, and Texas metropolitan area economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations.
- This section describes the forecasting process in a comprehensive manner, focusing on both the modeling and the supplemental analysis. The overall methodology, while certainly not ensuring perfect foresight, permits an enormous body of relevant information to impact the economic outlook in a systematic manner.

Model Logic and Structure

- The Texas Econometric Model revolves around a core system which projects output (real and nominal), income (real and nominal), and employment by industry in a simultaneous manner. For purposes of illustration, it is useful to initially consider the employment functions. Essentially, employment within the system is a derived demand relationship obtained from a neo-Classical production function. The expressions are augmented to include dynamic temporal adjustments to changes in relative factor input costs, output and (implicitly) productivity, and technological progress over time. Thus, the typical equation includes output, the relative real cost of labor and capital, dynamic lag structures, and a technological adjustment parameter. The functional form is logarithmic, thus preserving the theoretical consistency with the neo-Classical formulation.
- The income segment of the model is divided into wage and non-wage components. The wage equations, like their employment counterparts, are individually estimated at the 3-digit North American Industry Classification System (NAICS) level of aggregation. Hence, income by place of work is measured for approximately 90 production categories. The wage equations measure real

compensation, with the form of the variable structure differing between "basic" and "non-basic."

- The basic industries, comprised primarily of the various components of Mining, Agriculture, and Manufacturing, are export-oriented, i.e., they bring external dollars into the area and form the core of the economy. The production of these sectors typically flows into national and international markets; hence, the labor markets are influenced by conditions in areas beyond the borders of the particular region. Thus, real (inflation-adjusted) wages in the basic industry are expressed as a function of the corresponding national rates, as well as measures of local labor market conditions (the reciprocal of the unemployment rate), dynamic adjustment parameters, and ongoing trends.

- The "non-basic" sectors are somewhat different in nature, as the strength of their labor markets is linked to the health of the local export sectors. Consequently, wages in these industries are related to those in the basic segment of the economy. The relationship also includes the local labor market measures contained in the basic wage equations.

- Note that compensation rates in the export or "basic" sectors provide a key element of the interaction of the regional economies with national and international market phenomena, while the "non-basic" or local industries are strongly impacted by area production levels. Given the wage and employment equations, multiplicative identities in each industry provide expressions for total compensation; these totals may then be aggregated to determine aggregate wage and salary income. Simple linkage equations are then estimated for the calculation of personal income by place of work.

- The non-labor aspects of personal income are modeled at the regional level using straightforward empirical expressions relating to national performance, dynamic responses, and evolving temporal patterns. In some instances (such as dividends, rents, and others) national variables (for example, interest rates) directly enter the forecasting system. These factors have numerous other implicit linkages into the system resulting from their simultaneous interaction with other phenomena in national and international markets which are explicitly included in various expressions.

- The output or gross area product expressions are also developed at the 3-digit NAICS level. Regional output for basic industries is linked to national performance in the relevant industries, local and national production in key related sectors, relative area and national labor costs in the industry, dynamic adjustment parameters, and ongoing changes in industrial interrelationships (driven by technological changes in production processes).

- Output in the non-basic sectors is modeled as a function of basic production levels, output in related local support industries (if applicable), dynamic temporal adjustments, and ongoing patterns. The inter-industry linkages are obtained from the input-output (impact assessment)

system which is part of the overall integrated modeling structure maintained by The Perryman Group. Note that the dominant component of the econometric system involves the simultaneous estimation and projection of output (real and nominal), income (real and nominal), and employment at a disaggregated industrial level.

- This process, of necessity, also produces projections of regional price deflators by industry. These values are affected by both national pricing patterns and local cost variations and permit changes in prices to impact other aspects of economic behavior. Income is converted from real to nominal terms using the Texas Consumer Price Index, which fluctuates in response to national pricing patterns and unique local phenomena.

- Several other components of the model are critical to the forecasting process. The demographic module includes (1) a linkage equation between wage and salary (establishment) employment and household employment, (2) a labor force participation rate function, and (3) a complete population system with endogenous migration. Given household employment, labor force participation (which is a function of economic conditions and evolving patterns of worker preferences), and the working age population, the unemployment rate and level become identities.

- The population system uses Census information, fertility rates, and life tables to determine the "natural" changes in population by age group. Migration, the most difficult segment of population dynamics to track, is estimated in relation to relative regional and extra-regional economic conditions over time. Because evolving economic conditions determine migration in the system, population changes are allowed to interact simultaneously with overall economic conditions. Through this process, migration is treated as endogenous to the system, thus allowing population to vary in accordance with relative business performance (particularly employment).

- Real retail sales is related to income, interest rates, dynamic adjustments, and patterns in consumer behavior on a store group basis. It is expressed on an inflation-adjusted basis. Inflation at the state level relates to national patterns, indicators of relative economic conditions, and ongoing trends. As noted earlier, prices are endogenous to the system.

- A final significant segment of the forecasting system relates to real estate absorption and activity. The short-term demand for various types of property is determined by underlying economic and demographic factors, with short-term adjustments to reflect the current status of the pertinent building cycle. In some instances, this portion of the forecast requires integration with the Multi-Regional Industry-Occupation System which is maintained by The Perryman Group. This system also allows any employment simulation or forecast from the econometric model to be translated into a highly detailed occupational profile.

- The overall Texas Econometric Model contains numerous additional specifications, and individual expressions are modified to reflect alternative lag structures, empirical properties of the estimates, simulation requirements, and similar phenomena. Moreover, it is updated on an ongoing basis as new data releases become available. Nonetheless, the above synopsis offers a basic understanding of the overall structure and underlying logic of the system.

Model Simulation and Multi-Regional Structure

- The initial phase of the simulation process is the execution of a standard non-linear algorithm for the state system and that of each of the individual sub-areas. The external assumptions are derived from scenarios developed through national and international models and extensive analysis by The Perryman Group.
- Once the initial simulations are completed, they are merged into a single system with additive constraints and interregional flows. Using information on minimum regional requirements, import needs, export potential, and locations, it becomes possible to balance the various forecasts into a mathematically consistent set of results. This process is, in effect, a disciplining exercise with regard to the individual regional (including metropolitan and rural) systems. By compelling equilibrium across all regions and sectors, the algorithm ensures that the patterns in state activity are reasonable in light of smaller area dynamics and, conversely, that the regional outlooks are within plausible performance levels for the state as a whole.
- The iterative simulation process has the additional property of imposing a global convergence criterion across the entire multi-regional system, with balance being achieved simultaneously on both a sectoral and a geographic basis. This approach is particularly critical on non-linear dynamic systems, as independent simulations of individual systems often yield unstable, non-convergent outcomes.
- It should be noted that the underlying data for the modeling and simulation process are frequently updated and revised by the various public and private entities compiling them. Whenever those modifications to the database occur, they bring corresponding changes to the structural parameter estimates of the various systems and the solutions to the simulation and forecasting system. The multi-regional version of the Texas Econometric Model is re-estimated and simulated with each such data release, thus providing a constantly evolving and current assessment of state and local business activity.

The Final Forecast

- The process described above is followed to produce an initial set of projections. Through the comprehensive multi-regional modeling and simulation process, a systematic analysis is generated which accounts for both historical patterns in economic performance and inter-relationships and best available information on the future course of pertinent external factors. While the best available techniques and data are employed in this effort, they are not capable of directly capturing "street sense," i.e., the contemporaneous and often non-quantifiable information that can materially affect economic outcomes. In order to provide a comprehensive approach to the prediction of business conditions, it is necessary to compile and assimilate extensive material regarding current events and factors both across the state of Texas and elsewhere.

- This critical aspect of the forecasting methodology includes activities such as (1) daily review of hundreds of financial and business publications and electronic information sites; (2) review of major newspapers and online news sources in the state on a daily basis; (3) dozens of hours of direct telephone interviews with key business and political leaders in all parts of the state; (4) face-to-face discussions with representatives of major industry groups; and (5) frequent site visits to the various regions of the state. The insights arising from this "fact finding" are analyzed and evaluated for their effects on the likely course of the future activity.

- Another vital information resource stems from the firm's ongoing interaction with key players in the international, domestic, and state economic scenes. Such activities include visiting with corporate groups on a regular basis and being regularly involved in the policy process at all levels. The firm is also an active participant in many major corporate relocations, economic development initiatives, and regulatory proceedings.

- Once organized, this information is carefully assessed and, when appropriate, independently verified. The impact on specific communities and sectors that is distinct from what is captured by the econometric system is then factored into the forecast analysis. For example, the opening or closing of a major facility, particularly in a relatively small area, can cause a sudden change in business performance that will not be accounted for by either a modeling system based on historical relationships or expected (primarily national and international) factors.

- The final step in the forecasting process is the integration of this material into the results in a logical and mathematically consistent manner. In some instances, this task is accomplished through "constant adjustment factors" which augment relevant equations. In other cases, anticipated changes in industrial structure or regulatory parameters are initially simulated within the context of the Multi-Regional Impact Assessment System to estimate their ultimate effects by sector. Those findings are then factored into the simulation as constant adjustments on a distributed temporal basis. Once this scenario is formulated, the extended system is again balanced across regions and sectors through an iterative simulation algorithm analogous to that described in the preceding section.

APPENDIX B

Detailed Sectoral Results

History/Current

The Historical Cumulative Impact (2001-2016) if the Sales Tax Exemption Had Been Allowed for Oil and Gas Downhole Processing Equipment on Business Activity in Texas				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$934,193,669	$277,956,804	$181,990,655	2,909
Mining	$59,508,170,497	$14,419,120,436	$7,503,502,590	56,117
Construction	$178,595,951	$96,425,270	$79,460,431	1,133
Nondurable Manufacturing	$6,468,711,710	$1,795,661,545	$934,221,767	15,237
Durable Manufacturing	$3,153,082,961	$1,258,789,996	$831,309,440	11,433
Transportation and Utilities	$5,322,301,155	$1,926,155,803	$1,091,959,027	11,771
Information	$1,199,259,820	$738,173,498	$318,420,179	3,042
Wholesale Trade	$2,254,861,739	$1,523,781,911	$878,626,200	10,125
Retail Trade	$7,882,858,028	$5,868,156,071	$3,402,228,949	107,319
Finance, Insurance, and Real Estate	$13,390,408,656	$4,319,874,514	$1,250,809,970	12,657
Business Services	$2,564,697,496	$1,503,859,088	$1,226,763,609	15,143
Health Services	$1,794,129,001	$1,253,636,645	$1,059,961,381	17,761
Other Services	$3,378,746,041	$1,720,939,165	$1,383,683,306	33,653
TOTAL	**$108,030,016,724**	**$36,702,530,748**	**$20,142,937,506**	**298,300**

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group
NOTE: This analysis assumes a counterfactual situation in which the processing exemption was in place historically and producers were aware of it in making investment decisions.

Forecast

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2017				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$24,259,649	$7,218,134	$4,726,032	76
Mining	$1,545,340,547	$374,443,564	$194,855,037	1,457
Construction	$4,637,877	$2,504,024	$2,063,472	29
Nondurable Manufacturing	$167,983,025	$46,630,716	$24,260,379	396
Durable Manufacturing	$81,880,974	$32,688,943	$21,587,896	297
Transportation and Utilities	$138,212,412	$50,019,462	$28,356,586	306
Information	$31,143,031	$19,169,291	$8,268,908	79
Wholesale Trade	$58,555,476	$39,570,398	$22,816,643	263
Retail Trade	$204,706,346	$152,387,469	$88,350,932	2,787
Finance, Insurance, and Real Estate	$347,729,417	$112,180,852	$32,481,714	329
Business Services	$66,601,460	$39,053,031	$31,857,265	393
Health Services	$46,590,918	$32,555,118	$27,525,654	461
Other Services	$87,741,115	$44,690,284	$35,932,241	874
TOTAL	**$2,805,382,247**	**$953,111,286**	**$523,082,760**	**7,746**

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group
NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2018				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$50,487,829	$15,021,977	$9,835,555	157
Mining	$3,216,076,534	$779,271,056	$405,521,434	3,033
Construction	$9,652,091	$5,211,235	$4,294,382	61
Nondurable Manufacturing	$349,596,900	$97,045,245	$50,489,348	823
Durable Manufacturing	$170,406,115	$68,030,405	$44,927,524	618
Transportation and Utilities	$287,639,961	$104,097,713	$59,014,145	636
Information	$64,813,140	$39,894,059	$17,208,791	164
Wholesale Trade	$121,862,391	$82,351,704	$47,484,725	547
Retail Trade	$426,023,427	$317,140,300	$183,871,031	5,800
Finance, Insurance, and Real Estate	$723,675,064	$233,464,530	$67,599,131	684
Business Services	$138,607,243	$81,274,989	$66,299,562	818
Health Services	$96,962,419	$67,751,896	$57,284,855	960
Other Services	$182,601,914	$93,006,927	$74,780,175	1,819
TOTAL	**$5,838,405,027**	**$1,983,562,037**	**$1,088,610,658**	**16,121**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2019				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$63,798,730	$18,982,457	$12,428,657	199
Mining	$4,063,981,423	$984,722,553	$512,435,433	3,832
Construction	$12,196,823	$6,585,155	$5,426,578	77
Nondurable Manufacturing	$441,766,635	$122,630,810	$63,800,649	1,041
Durable Manufacturing	$215,332,961	$85,966,332	$56,772,475	781
Transportation and Utilities	$363,475,013	$131,542,632	$74,572,973	804
Information	$81,900,848	$50,411,958	$21,745,815	208
Wholesale Trade	$153,990,891	$104,063,380	$60,003,870	691
Retail Trade	$538,342,690	$400,752,990	$232,347,846	7,329
Finance, Insurance, and Real Estate	$914,468,914	$295,016,460	$85,421,354	864
Business Services	$175,150,452	$102,702,794	$83,779,160	1,034
Health Services	$122,526,148	$85,614,395	$72,387,763	1,213
Other Services	$230,744,132	$117,527,807	$94,495,650	2,298
TOTAL	**$7,377,675,661**	**$2,506,519,725**	**$1,375,618,224**	**20,372**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2020				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$73,640,546	$21,910,757	$14,345,945	229
Mining	$4,690,905,438	$1,136,629,305	$591,485,519	4,424
Construction	$14,078,348	$7,601,004	$6,263,701	89
Nondurable Manufacturing	$509,915,104	$141,548,269	$73,642,761	1,201
Durable Manufacturing	$248,550,979	$99,227,800	$65,530,396	901
Transportation and Utilities	$419,545,942	$151,834,860	$86,076,861	928
Information	$94,535,160	$58,188,683	$25,100,401	240
Wholesale Trade	$177,746,066	$120,116,562	$69,260,278	798
Retail Trade	$621,389,320	$462,574,551	$268,190,639	8,460
Finance, Insurance, and Real Estate	$1,055,538,093	$340,526,732	$98,598,751	998
Business Services	$202,169,775	$118,546,087	$96,703,226	1,194
Health Services	$141,427,461	$98,821,572	$83,554,553	1,400
Other Services	$266,339,530	$135,658,059	$109,072,880	2,653
TOTAL	**$8,515,781,761**	**$2,893,184,241**	**$1,587,825,912**	**23,514**

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group
NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2021				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$82,211,756	$24,461,006	$16,015,706	256
Mining	$5,236,891,822	$1,268,924,473	$660,330,019	4,938
Construction	$15,716,962	$8,485,704	$6,992,749	100
Nondurable Manufacturing	$569,265,416	$158,023,431	$82,214,229	1,341
Durable Manufacturing	$277,480,457	$110,777,175	$73,157,645	1,006
Transportation and Utilities	$468,377,958	$169,507,304	$96,095,566	1,036
Information	$105,538,347	$64,961,412	$28,021,900	268
Wholesale Trade	$198,434,381	$134,097,233	$77,321,657	891
Retail Trade	$693,714,399	$516,414,776	$299,406,028	9,444
Finance, Insurance, and Real Estate	$1,178,394,849	$380,161,503	$110,074,910	1,114
Business Services	$225,700,828	$132,343,967	$107,958,760	1,333
Health Services	$157,888,562	$110,323,666	$93,279,680	1,563
Other Services	$297,339,464	$151,447,644	$121,768,149	2,962
TOTAL	**$9,506,955,203**	**$3,229,929,294**	**$1,772,636,998**	**26,251**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2022				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$89,761,460	$26,707,319	$17,486,467	280
Mining	$5,717,808,243	$1,385,452,871	$720,969,719	5,392
Construction	$17,160,289	$9,264,967	$7,634,910	109
Nondurable Manufacturing	$621,542,434	$172,535,104	$89,764,160	1,464
Durable Manufacturing	$302,962,158	$120,950,111	$79,875,888	1,099
Transportation and Utilities	$511,390,237	$185,073,569	$104,920,253	1,131
Information	$115,230,188	$70,926,975	$30,595,219	292
Wholesale Trade	$216,657,090	$146,411,706	$84,422,292	973
Retail Trade	$757,419,867	$563,838,392	$326,901,206	10,312
Finance, Insurance, and Real Estate	$1,286,609,693	$415,072,651	$120,183,355	1,216
Business Services	$246,427,480	$144,497,433	$117,872,874	1,455
Health Services	$172,387,850	$120,454,954	$101,845,778	1,707
Other Services	$324,644,865	$165,355,447	$132,950,413	3,234
TOTAL	**$10,380,001,854**	**$3,526,541,500**	**$1,935,422,533**	**28,662**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2023				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$96,765,745	$28,791,350	$18,850,975	301
Mining	$6,163,981,445	$1,493,562,818	$777,228,578	5,813
Construction	$18,499,344	$9,987,932	$8,230,679	117
Nondurable Manufacturing	$670,042,763	$185,998,399	$96,768,655	1,578
Durable Manufacturing	$326,602,964	$130,388,115	$86,108,780	1,184
Transportation and Utilities	$551,295,146	$199,515,269	$113,107,412	1,219
Information	$124,221,854	$76,461,563	$32,982,632	315
Wholesale Trade	$233,563,321	$157,836,535	$91,009,950	1,049
Retail Trade	$816,523,012	$607,835,947	$352,410,029	11,116
Finance, Insurance, and Real Estate	$1,387,006,688	$447,461,687	$129,561,527	1,311
Business Services	$265,656,760	$155,772,887	$127,070,755	1,569
Health Services	$185,839,655	$129,854,320	$109,793,029	1,840
Other Services	$349,977,620	$178,258,498	$143,324,827	3,486
TOTAL	**$11,189,976,318**	**$3,801,725,320**	**$2,086,447,827**	**30,899**

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group
NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2024				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$103,662,233	$30,843,308	$20,194,483	323
Mining	$6,603,287,993	$1,600,008,941	$832,621,607	6,227
Construction	$19,817,791	$10,699,772	$8,817,278	126
Nondurable Manufacturing	$717,796,666	$199,254,493	$103,665,351	1,691
Durable Manufacturing	$349,879,935	$139,680,867	$92,245,747	1,269
Transportation and Utilities	$590,585,915	$213,734,709	$121,168,570	1,306
Information	$133,075,137	$81,910,974	$35,333,302	338
Wholesale Trade	$250,209,363	$169,085,534	$97,496,223	1,123
Retail Trade	$874,716,553	$651,156,374	$377,526,269	11,909
Finance, Insurance, and Real Estate	$1,485,858,563	$479,352,251	$138,795,369	1,405
Business Services	$284,590,100	$166,874,810	$136,127,079	1,680
Health Services	$199,084,435	$139,109,029	$117,617,971	1,971
Other Services	$374,920,502	$190,962,969	$153,539,578	3,734
TOTAL	**$11,987,485,186**	**$4,072,674,030**	**$2,235,148,825**	**33,101**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2025				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$110,467,276	$32,868,057	$21,520,176	344
Mining	$7,036,769,502	$1,705,043,628	$887,280,146	6,636
Construction	$21,118,756	$11,402,172	$9,396,100	134
Nondurable Manufacturing	$764,917,370	$212,334,815	$110,470,599	1,802
Durable Manufacturing	$372,848,263	$148,850,401	$98,301,340	1,352
Transportation and Utilities	$629,355,703	$227,765,604	$129,122,840	1,392
Information	$141,811,030	$87,288,127	$37,652,803	360
Wholesale Trade	$266,634,685	$180,185,376	$103,896,490	1,197
Retail Trade	$932,138,469	$693,902,389	$402,309,476	12,690
Finance, Insurance, and Real Estate	$1,583,399,699	$510,819,959	$147,906,773	1,497
Business Services	$303,272,391	$177,829,526	$145,063,320	1,791
Health Services	$212,153,594	$148,241,024	$125,339,157	2,100
Other Services	$399,532,651	$203,498,984	$163,618,885	3,979
TOTAL	**$12,774,419,389**	**$4,340,030,064**	**$2,381,878,104**	**35,274**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2026				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$117,263,060	$34,890,052	$22,844,065	365
Mining	$7,469,661,140	$1,809,935,387	$941,864,306	7,044
Construction	$22,417,951	$12,103,617	$9,974,134	142
Nondurable Manufacturing	$811,973,954	$225,397,339	$117,266,587	1,913
Durable Manufacturing	$395,785,336	$158,007,457	$104,348,693	1,435
Transportation and Utilities	$668,072,733	$241,777,407	$137,066,286	1,478
Information	$150,535,034	$92,657,964	$39,969,147	382
Wholesale Trade	$283,037,656	$191,270,114	$110,288,048	1,271
Retail Trade	$989,482,247	$736,590,236	$427,058,959	13,471
Finance, Insurance, and Real Estate	$1,680,808,103	$542,244,847	$157,005,778	1,589
Business Services	$321,929,259	$188,769,335	$153,987,400	1,901
Health Services	$225,204,969	$157,360,592	$133,049,836	2,229
Other Services	$424,111,308	$216,017,940	$173,684,476	4,224
TOTAL	**$13,560,282,750**	**$4,607,022,286**	**$2,528,407,717**	**37,444**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2027				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$124,003,459	$36,895,567	$24,157,165	386
Mining	$7,899,024,853	$1,913,972,312	$996,003,624	7,449
Construction	$23,706,557	$12,799,345	$10,547,458	150
Nondurable Manufacturing	$858,647,042	$238,353,407	$124,007,189	2,023
Durable Manufacturing	$418,535,479	$167,089,887	$110,346,762	1,518
Transportation and Utilities	$706,474,233	$255,675,018	$144,944,995	1,562
Information	$159,187,941	$97,984,037	$42,266,615	404
Wholesale Trade	$299,306,948	$202,264,514	$116,627,517	1,344
Retail Trade	$1,046,358,693	$778,930,192	$451,606,742	14,245
Finance, Insurance, and Real Estate	$1,777,422,661	$573,413,632	$166,030,630	1,680
Business Services	$340,434,080	$199,619,989	$162,838,752	2,010
Health Services	$238,149,979	$166,405,839	$140,697,676	2,358
Other Services	$448,489,657	$228,434,871	$183,668,036	4,467
TOTAL	**$14,339,741,583**	**$4,871,838,609**	**$2,673,743,162**	**39,596**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2028				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$130,688,615	$38,884,646	$25,459,503	407
Mining	$8,324,869,512	$2,017,156,554	$1,049,699,217	7,850
Construction	$24,984,603	$13,489,371	$11,116,082	158
Nondurable Manufacturing	$904,937,598	$251,203,287	$130,692,546	2,132
Durable Manufacturing	$441,099,163	$176,097,877	$116,295,671	1,599
Transportation and Utilities	$744,560,995	$269,458,725	$152,759,131	1,647
Information	$167,769,929	$103,266,459	$44,545,252	426
Wholesale Trade	$315,442,898	$213,168,805	$122,915,028	1,416
Retail Trade	$1,102,768,980	$820,923,130	$475,953,332	15,013
Finance, Insurance, and Real Estate	$1,873,245,369	$604,326,958	$174,981,514	1,771
Business Services	$358,787,236	$210,381,710	$171,617,559	2,118
Health Services	$250,988,893	$175,376,951	$148,282,834	2,485
Other Services	$472,668,201	$240,750,033	$193,569,772	4,708
TOTAL	**$15,112,811,990**	**$5,134,484,503**	**$2,817,887,442**	**41,731**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2029				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$137,353,056	$40,867,561	$26,757,806	428
Mining	$8,749,394,624	$2,120,021,062	$1,103,228,425	8,251
Construction	$26,258,688	$14,177,259	$11,682,945	167
Nondurable Manufacturing	$951,084,716	$264,013,350	$137,357,187	2,240
Durable Manufacturing	$463,592,930	$185,077,954	$122,226,146	1,681
Transportation and Utilities	$782,529,739	$283,199,720	$160,549,053	1,731
Information	$176,325,324	$108,532,512	$46,816,828	447
Wholesale Trade	$331,528,847	$224,039,307	$129,183,057	1,489
Retail Trade	$1,159,004,471	$862,785,946	$500,224,481	15,779
Finance, Insurance, and Real Estate	$1,968,771,154	$635,144,494	$183,904,663	1,861
Business Services	$377,083,521	$221,110,085	$180,369,163	2,226
Health Services	$263,788,023	$184,320,265	$155,844,489	2,611
Other Services	$496,771,825	$253,027,034	$203,440,825	4,948
TOTAL	**$15,883,486,918**	**$5,396,316,548**	**$2,961,585,067**	**43,859**
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.				

The Potential Impact of Allowing the Sales Tax Exemption for Equipment Used in Oil and Gas Downhole Processing on Business Activity in Texas 2030				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2016 Dollars)	(2016 Dollars)	(2016 Dollars)	(Jobs)
Agriculture	$143,941,262	$42,827,793	$28,041,257	448
Mining	$9,169,063,614	$2,221,708,909	$1,156,145,316	8,647
Construction	$27,518,198	$14,857,278	$12,243,323	174
Nondurable Manufacturing	$996,703,960	$276,676,880	$143,945,592	2,348
Durable Manufacturing	$485,829,391	$193,955,308	$128,088,783	1,762
Transportation and Utilities	$820,064,160	$296,783,533	$168,249,867	1,814
Information	$184,782,854	$113,738,327	$49,062,420	469
Wholesale Trade	$347,430,791	$234,785,462	$135,379,385	1,560
Retail Trade	$1,214,596,687	$904,169,896	$524,217,992	16,536
Finance, Insurance, and Real Estate	$2,063,204,225	$665,609,510	$192,725,740	1,950
Business Services	$395,170,517	$231,715,738	$189,020,658	2,333
Health Services	$276,440,744	$193,161,276	$163,319,646	2,737
Other Services	$520,599,728	$265,163,599	$213,198,963	5,185
TOTAL	**$16,645,346,131**	**$5,655,153,509**	**$3,103,638,943**	**45,962**

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group
NOTE: This analysis assumes that, as of 2017, the processing exemption is in place and producers are aware of it in making investment decisions. Columns may not sum to total due to rounding.