Permian Basin Petroleum Association

The Permian Basin: Enriching Texas

Spring 2020

PBPA Report Developed with the TTARA Research Foundation

Permian Basin Petroleum Association
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The Permian Basin: Enriching Texas

A Study of the Financial Contributions of the Permian Basin to the Texas State Treasury Through the Years 2014 to 2019

A Special Report for the Permian Basin Petroleum Association

By the TTARA Research Foundation

Spring 2020

Summary and Key Points

The year 2020 has brought sudden unexpected challenges to Texas and to the oil and gas industry. Economic caution from the spread of a new coronavirus, coupled with a massive temporary glut of oil on world markets has put the Texas Miracle on hold, and much of the oil and gas industry with it. The story of Texas oil and gas has yet to be written for 2020. The chapters of the recent past have been about the Permian Basin, as will those of our eventual recovery. In this report, the TTARA Research Foundation reviews the contributions of the oil and gas industry to state and local finances over the past five years, and, more specifically, the ascendency of the Permian Basin.

The Permian Basin comprises 26 percent of Texas' land area and is home to 4 percent of the state's people. It is one of the thickest deposits of rock from the Permian Period (251 to 299 million years ago). It contains numerous oil and gas producing formations. In April 2019, Forbes Magazine named it the "World's Top Oil Producer," replacing Saudi Arabia's Ghawar oilfield.

Oil and gas have been a huge part of Texas' heritage since oil was first discovered at Spindletop, near Beaumont, in 1901. Twenty years later, the famous Santa Rita #1 rig put the Permian Basin on the oil and gas map, striking oil on a lease of university-owned lands. The development of the Permian grew with the advent of World War II and the post-war industrialization of the state; however, as late as 2005, less than one in five Texas rigs were drilling in the Permian.

The advent of new technologies for the recovery of oil and gas has transformed Texas' Permian counties—freeing up reserves that were previously thought to be uneconomical. From 2014 through 2019, the region has seen a huge transformation:

- Rigs Running: in 2014, half the state's operating rigs were in the Permian; in 2019 over 70 percent of the state's rigs were in the Permian,
- Oil Production: in 2014, less than half the state's oil came from the Permian; in 2019 over 2/3 of the state's oil was from the Permian Basin, and
- Natural Gas: in 2014, the Permian accounted for only 17 percent of the state's natural gas production; in 2019, it was almost 40 percent.

Essentially all of the growth in statewide oil and gas production over the past five years has been in the Permian Basin, generating huge dollars for Texas state coffers. In 2019, Texas oil and gas producers directly contributed a record $13.4 billion to the state Treasury in the form of taxes and royalties—just topping the 2014 record of $13.3 billion. Though the numbers are similar, the components were substantially different. The record in 2014 was largely price-driven, while 2019's record was production-driven (from 2014 to 2019, the price of crude oil dropped 40 percent while production rose 67 percent). The source of the money was also dramatically different. In 2014, $6.4 billion, or 48 percent was Permian-based; in 2019, the Permian Basin accounted for $9.0 billion, or 67 percent, of Texas oil and gas taxes and royalties.

The $9 billion paid by Permian producers amounted to $312 for every man, woman, and child in the state, or the equivalent of $937 for a family of three. Absent this revenue, the average Texan would either have had to accept a lower amount of services from state and local governments or would have had to pay that much more in taxes. This "Permian Dividend" may be heavily discounted in 2020. However, even though the industry may be at a pause, it is still at the forefront of the solution to the state's fiscal challenges. Oil and gas has been the chief source of revenue flowing into Texas' very robust Economic Stabilization, or "Rainy Day" Fund, and is likely to save Texans from either difficult budget cuts or higher taxes.

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The Economic Engine of the Permian Basin

The year 2020 began with great hope for American oil markets. In late 2019, the US Energy Information Agency reported that the United States had, for the first time since 1949, exported more crude oil and petroleum products than it imported[1]—starting a trend that could last into the next several decades. Key to the resurgence of the American oil industry has been the Permian Basin, which has seen tremendous growth over the past several years. In 2019, Forbes declared the Permian Basin to be the top producing area in the world, surpassing Saudi Arabia's Ghawar oilfield.

Key Facts About the Permian Oil and Gas Industry

Permian Basin Population (2018)	1,134,353
Percent of State (2018)	4.0%
Permian Basin Land Area (square miles)	68,370
Percent of State	26.2%
Permian Drilling Activity (2019 Avg Rigs Running)	336
Percent of State	72.7%
Permian Oil Production (2019 ml bbls)	1,007
Percent of State	67.9%
Permian Natural Gas Production (2019 bl cu ft)	3,795
Percent of State	39.2%
Permian Condensate Production (2019 ml bbls)	133
Percent of State	57.9%

The benefits to the nation from increased petroleum development have been almost incalculable. Instead of American dollars filling the pockets of foreign producers, those dollars have filled the pockets of American workers and the companies that employ them. A resurgent energy industry has been fuel for the longest post-war economic expansion in the nation's history. Further, US energy self-sufficiency, a key to national security, but yet a long-elusive goal, has come within reach.

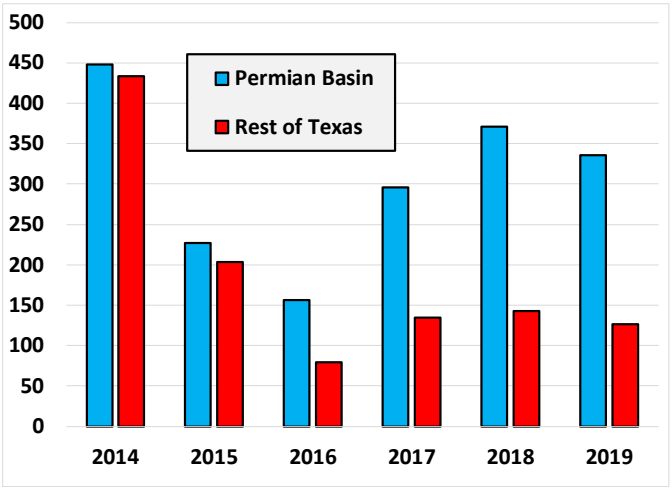
Long thought to be on a path to oblivion, the US energy industry has been reborn, led by the Permian Basin. The application of new home-grown technologies has allowed producers to develop reserves from shale formations previously thought to be unrecoverable. Though Texas is viewed as a national leader, in fact, over the past five years, the Permian Basin has accounted for essentially all of the state's increased oil and gas production.

Unfortunately, the economic prosperity and the national security of energy independence is now challenged. Petroleum demand has dropped precipitously as businesses and consumers respond to the worldwide COVID-19 pandemic. Excess supply has soared as Saudi Arabia and Russia have flooded world markets with petroleum in a battle, not just for market share, but also to drive the US domestic industry out of business. With supply exceeding demand, the

In this report, the TTARA Research Foundation evaluates the tremendous growth in oil, gas, and condensate production in Texas' Permian Basin region and statewide over the past five years. We estimate the industry's contributions to the Texas Treasury through taxes and royalties. A number of appendices are included to measure contributions to the state's Economic Stabilization Fund (aka, the "Rainy Day Fund"), as well as other topics.

[1] US Energy Information Administration, Short Term Energy Outlook, November 2019.

Figure 1
Rigs Running, 2014 - 2019
The Permian Basin and the Rest of Texas



Source: Baker Hughes.

price for crude oil has plummeted. At the start of 2020, the spot price for a barrel of West Texas Intermediate crude oil was just over $61; at the end of March, it was less than $20, with great uncertainty and volatility ahead.

Still, Texas is long used to dramatic swings in the oil and gas industry. For all the obituaries written over the years, not one has ever proven true. Though the incredible success story of the Permian Basin over the past several years may be paused, it remains one of the largest reserves of petroleum in the world. The realized and potential benefits are huge—for the Permian Basin, the state, and the nation.

The Permian Basin[2] is a large, low lying area extending across roughly 75,000 square miles of West Texas and into New Mexico. Home to just 4 percent of Texas' population, the Permian comprises over a fourth of the state's land area. The Basin is so named because it is one of the thickest deposits of rock from the Permian Period – a period lasting from 251 to 299 million years ago, long before dinosaurs walked the earth. Once a shallow seabed, heat, pressure and time have converted the remains of organic life into a number of petroleum-rich formations.[3] In 2019, the Permian Basin became the largest oil producing field in the world, according to Forbes, surpassing Saudi Arabia's Ghawar field.[4]

Permian Petroleum. Recoverable oil was first found in the Permian in 1920—almost 20 years after Spindletop had put Texas oil on the world map. The remoteness of West Texas discouraged large scale development until the demand for petroleum with the advent of World War II and post-war industrial growth made large scale development economically feasible; however, the diminishing returns of traditional vertical drilling limited investment in the region. As of 2005, only one in five rigs running in Texas was operating in the Permian.

More recently, the growth of hydraulic fracturing and horizontal drilling, coupled with an expanding pipeline network, has led to substantial investment and new production in the Permian. In 2014 just

[2] In this report, the "Permian Basin" includes the following counties: Andrews, Borden, Brewster, Cochran, Coke, Concho, Cottle, Crane, Crockett, Crosby, Culberson, Dawson, Dickens, Ector, Fisher, Floyd, Gaines, Garza, Glasscock, Hockley, Howard, Irion, Jeff Davis, Kent, King, Loving, Lubbock, Lynn, Martin, Midland, Mitchell, Nolan, Pecos, Reagan, Reeves, Runnels, Schleicher, Scurry, Sterling, Stonewall, Sutton, Terrell, Terry, Tom Green, Upton, Val Verde, Ward, Winkler, and Yoakum.

[3] Among the major producing formations of the Permian are the Yates, San Andres, Clear Fork, Spraberry, Wolfcamp, Yeso, Bone Spring, Avalon, Canyon, Morrow, Devonian, and Ellenberger.

[4] Rapier, Robert, "The Permian Basin is Now the World's Top Oil Producer," *Forbes*, April 5, 2019.

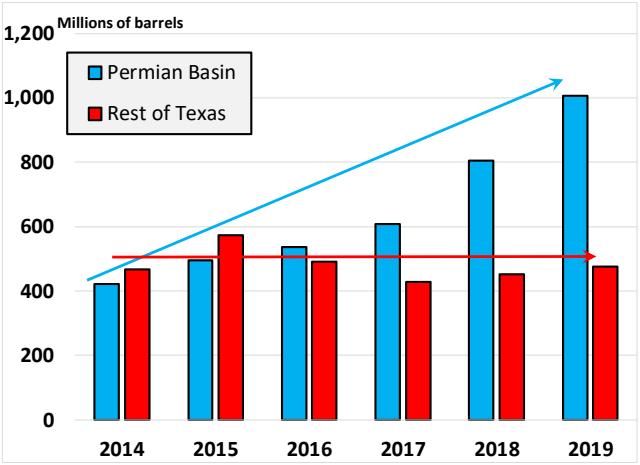
under half of all rigs running in the state were active in the Permian Basin; by the state's 2019 fiscal year,[5] well over two-thirds of the state's drilling activity was Permian-based (Figure 1 on the previous page).

That investment has paid off, resulting in a huge increase in oil, gas, and condensate production. Since 2014, oil production in the Permian Basin has increased by 140 percent as production in the rest of the state has been flat (Figure 2). That means essentially all of Texas' increased oil production over the past five years has been from the Permian.

The Permian has also become a major producer of natural gas. Over the past five years, natural gas production in the Permian has increased by 167 percent, while declining 17 percent in the rest of the state (Figure 3). In addition, Permian condensate production has increased by a whopping 950 percent, while declining by 35 percent in the rest of the state.[6]

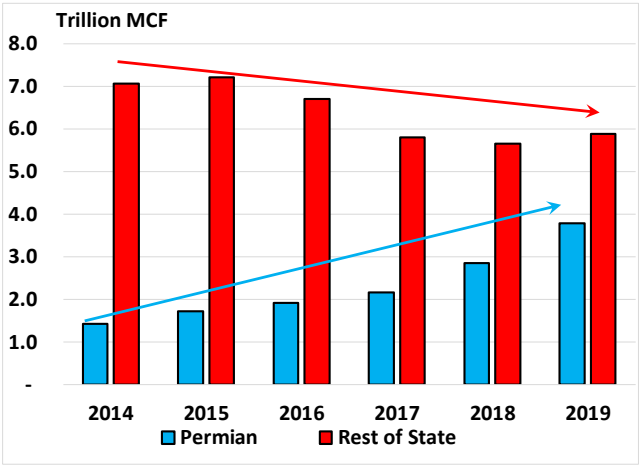
In 2019, the value of oil and gas production in the Permian Basin totaled $76 billion.[7] Most of the region's oil and gas production is concentrated in a few key counties (Table 1). Midland and Reeves Counties alone accounted for almost a third of the basin's value of oil and gas production in 2019. Adding in Martin, Loving, and Howard Counties accounts for over half the region's production. The top ten producing counties accounted for 78 percent of the region's oil and gas output.

Figure 2
Oil Production, 2014-2019
The Permian Basin and the Rest of Texas
140% Increase in Permian Basin Production



Source: Texas Railroad Commission.

Figure 3
Natural Gas Production, 2014-2019
The Permian Basin and the Rest of Texas
167% Increase in Permian Basin Production



Source: Texas Railroad Commission.

[5] Unless otherwise stated, figures shown for the years 2014 through 2019 in this report are based on the state fiscal year, which runs from September through August.
[6] Texas Railroad Commission.
[7] The value of production was estimated using oil, gas, and condensate production figures from the Texas Railroad Commission and multiplying that by the average spot price of each product for that state fiscal year.

Table 1
Top Producing Counties of the Permian Basin, 2019
Value of Production in Millions of Dollars

Rank	County	Value of Production	Pct of Permian	Pct of State
1.	Midland	$11,815	15%	9%
2.	Reeves	$11,422	15%	9%
3.	Martin	$7,156	9%	6%
4.	Loving	$6,982	9%	5%
5.	Howard	$4,968	6%	4%
6.	Upton	$4,880	6%	4%
7.	Reagan	$3,769	5%	3%
8.	Glasscock	$3,430	4%	3%
9.	Ward	$2,999	4%	2%
10.	Andrews	$2,699	4%	2%
Rest of Permian		$16,704	22%	13%
Total Permian		$76,825	100%	60%

Note: The value of production was estimated using oil, gas, and condensate production figures from the Texas Railroad Commission and multiplying that by the average spot price of each product for that state fiscal year. Numbers may not add due to rounding.

Today, one in five of the US's major producing fields are found within the Permian.[8]

Though 2020's price weakness will likely create a pause in the huge gains in production values of the past several years, the Permian Basin will remain key to the nation's oil and gas future, as the 11.1 billion barrels of proved reserves of crude oil[9] in the Permian Basin amounts to one-fourth[10] of the nation's proved reserves.

American energy independence in the foreseeable future will not occur without strong production from the Permian Basin.

[8] Timeline of Texas Oil and Gas History, braidedcord.net, August 2016.
[9] U.S. Crude Oil and Natural Gas Proved Reserves, Year End 2018, U.S. Department of Energy, Energy Information Agency, December 2019.
[10] U.S. total proved reserves of crude oil at the end of 2018 as reported by the U.S. Energy Information Agency stands at 43.8 billion barrels.

Taxes and Royalties:
Financial Contributions of the Permian Basin

Table 2

State and Local Taxes and Public Royalties Paid
Statewide Producers and Permian Producers, $ Millions

Revenue Source	2014	2015	2016	2017	2018	2019
Texas Statewide						
Taxes	$11,576.2	$9,972.1	$7,266.2	$6,990.6	$9,830.1	$11,303.3
Royalties	$1,748.9	$1,400.5	$1,018.3	$1,605.3	$1,944.5	$2,112.7
Total Taxes & Royalties	$13,325.1	$11,372.6	$8,284.5	$8,595.9	$11,774.6	$13,416.0
Permian Basin						
Taxes	$4,910.1	$4,235.7	$3,572.1	$3,796.2	$5,803.3	$6,991.7
Royalties	$1,479.9	$1,207.7	$910.3	$1,410.3	$1,800.2	$1,971.4
Total Taxes & Royalties	$6,390.1	$5,443.4	$4,482.4	$5,206.6	$7,603.5	$8,963.2
Permian as Percent of State						
Taxes	42.4%	42.5%	49.2%	54.3%	59.0%	61.9%
Royalties	84.6%	86.2%	89.4%	87.9%	92.6%	93.3%
Total Taxes & Royalties	48.0%	47.9%	54.1%	60.6%	64.6%	66.8%

Note: Numbers may not add due to rounding.
Source: Calculated by the Texas Taxpayers and Research Association. Methodology in Appendix D.

Texas' oil and gas industry,[11] and that of the Permian in particular, has proven to be a huge benefit for the State of Texas. In 2019, oil and gas producers directly paid an all-time record $13.4 billion in taxes and royalties to state and local coffers. Almost $9 billion of this, or two-thirds, came from the Permian Basin (Table 2). That contribution from the Permian equated to $937 per year for a family of three — taxes they might have had to pay otherwise absent this "Permian Dividend." Viewed another way, for every person living in the Permian Basin, the region contributes $12,171 to the state Treasury — almost three times more than the per capita contribution from the rest of the state ($4,431).

What's the Permian worth to you?

Permian producers paid $9 billion in state and local taxes and royalties in 2019. If Texas didn't have that money, the tax bill on an average Texas family of 3 could have been $937 higher.

[11] In this report, the term "oil and gas industry" applies to the producers of oil and gas under the North American Industrial Classification Code 21. Traditionally, these activities are considered the "Upstream" part of the energy business, with pipelines considered "Midstream," and refineries considered "Downstream." The definition used in this report is focused on oil and gas producers and is therefore less inclusive than that used by the Texas Oil and Gas Association (TxOGA) in its recent report, *Annual Energy Economic Impact Report, 2019*.

Table 3

State and Local Taxes Paid by the Oil and Gas Industry
Statewide and in the Permian, $ Millions

Tax	2014	2015	2016	2017	2018	2019
Texas Statewide						
Oil Production Taxes	$3,874.1	$2,879.1	$1,704.3	$2,107.3	$3,391.5	$3,886.8
Natural Gas Production Tax	$1,899.6	$1,280.4	$578.8	$982.8	$1,431.1	$1,685.7
State & Local Sales Taxes	$2,534.1	$1,910.9	$2,008.7	$2,041.1	$2,697.3	$2,915.2
Property Taxes	$2,697.9	$3,231.6	$2,553.4	$1,472.4	$1,692.1	$2,054.3
Well Servicing Tax	$129.6	$127.8	$58.4	$79.6	$186.0	$193.2
Other State & Local Taxes	$441.0	$542.3	$362.7	$307.5	$432.1	$568.1
Total State and Local Taxes	$11,576.2	$9,972.1	$7,266.2	$6,990.6	$9,830.1	$11,303.3
Permian Basin						
Oil Production Taxes	$1,834.6	$1,333.0	$891.1	$1,237.4	$2,170.5	$2,638.3
Natural Gas Production Tax	$318.2	$246.2	$129.1	$267.4	$479.5	$660.4
State & Local Sales Taxes	$1,286.8	$1,007.5	$1,334.6	$1,404.4	$1,949.2	$2,118.0
Property Taxes	$1,226.0	$1,350.2	$980.3	$648.6	$789.7	$1,056.5
Well Servicing Tax	$65.8	$67.4	$38.8	$54.8	$134.4	$140.4
Other Taxes	$178.8	$231.5	$198.2	$183.6	$280.0	$378.1
Total State & Local Taxes	$4,910.1	$4,235.7	$3,572.1	$3,796.2	$5,803.3	$6,991.7
Permian as a Percent of State						
Oil Production Taxes	47.4%	46.3%	52.3%	58.7%	64.0%	67.9%
Natural Gas Production Tax	16.7%	19.2%	22.3%	27.2%	33.5%	39.2%
State & Local Sales Taxes	50.8%	52.7%	66.4%	68.8%	72.3%	72.7%
Property Taxes	45.4%	41.8%	38.4%	44.1%	46.7%	51.4%
Well Servicing Tax	50.8%	52.7%	66.4%	68.8%	72.3%	72.7%
Other State & Local Taxes	40.5%	42.7%	54.6%	59.7%	64.8%	66.6%
Total State and Local Taxes	42.4%	42.5%	49.2%	54.3%	59.0%	61.9%

Note: Numbers may not add due to rounding.
Source: Calculated by the Texas Taxpayers and Research Association. Methodology in Appendix D.

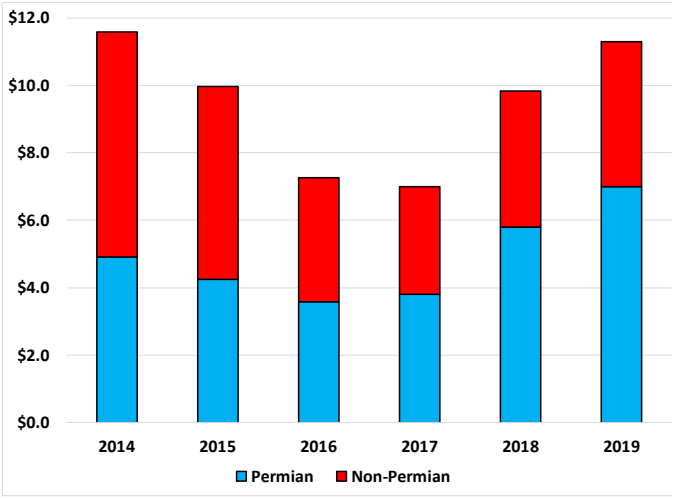
Taxes

Severance (Production) Taxes. Oil was already a part of the Texas tax system by the time production started in the Permian Basin. Texas lawmakers had imposed a tax on the production of oil in 1905, making the industry a key part of state finances (a tax on natural gas would come in 1931).

In 2019, Texas oil and gas production taxes totaled $5.6 billion, second to the 2014 all-time high of $5.8 billion (Table 3) — a year in which oil prices averaged over $100 a barrel. Permian producers accounted for $3.3 billion of that — 68 percent of the tax on oil and almost 40 percent of the tax on natural gas.

Oil production is taxed at 4.6 percent of its value—roughly within the range of other key producing states; Texas' natural gas tax rate of 7.5 percent, though, is high relative to other states.[12] In 2019 Texas production taxes accounted for 9.4 percent of state tax revenues. Though a significant source of revenue to the state, oil and gas producers pay far more than just these severance taxes. In fact, they account for less than half of the industry's total tax bill. As important as severance taxes are, the industry pays substantial amounts of sales, property, franchise, and other state and local taxes.

Figure 4
State & Local Taxes Paid by Oil and Gas
Texas and the Permian; 2014-2019 ($ billions)



Source: Texas Taxpayers and Research Association.

Sales Taxes. Drilling a well involves a rig, drill bits, pipe, drilling fluids, proppants,[13] and a tremendous amount of supporting equipment and supplies, much of which is subject to a 6.25 percent state sales tax, and, depending on location, up to a 2 percent local sales tax. Oil and gas producers account for 7.1 percent of the state sales tax — over $2 billion in 2019. Though equipment used in manufacturing is commonly exempt across the states (including Texas), equipment used to produce oil and gas is commonly subject to the sales tax.

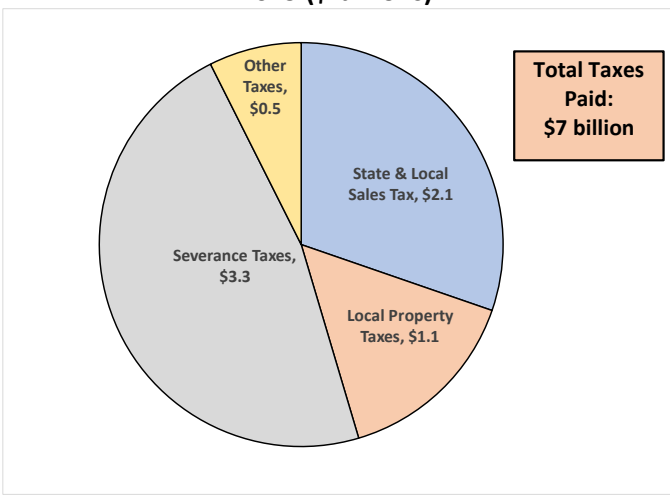
Local Property Taxes. As leases are developed, oilfield equipment and oil and gas reserves in the ground are subject to property tax—at rates typically near 2.3 percent of market value. Oil and gas property taxes totaled $2.1 billion in 2019, of which $1.1 billion came from the Permian. Texas' property tax on oil and gas is unusual. Most states apply their property tax to the value of oil and gas production; however, Texas taxes reserves in the ground that may not be produced for several years, although on a discounted basis (in some cases, reserves not expected to be produced for another 25 years may be included in the property tax base).

Well Servicing Tax. A substantial tax specific to the oil and gas industry is the well servicing tax, which applies to well services such as cementing the casing seat of a well, fracturing, or surveying a well formation. At a rate of 2.4 percent, the tax generated $193 million statewide in 2019, of which $140 million came from the Permian Basin.

State and Local Taxes in Total. All totaled, oil and gas producers accounted for $11.3 billion in state and local taxes in 2019—roughly the same as the 2014 peak of $11.6 billion (Figure 4). Though the numbers are similar, they contain two substantial differences: 1) composition and 2) source. The record in 2014

[12] Appendix C provides a comparison of the major taxes oil and gas producers pay in the top oil and gas producing states.
[13] A proppant is a solid material, such as sand or ceramics, used to "prop" open the fissures created during fracturing.

Figure 5
Permian Oil & Gas Industry State & Local Taxes
2019 ($ billions)



Source: Texas Taxpayers and Research Association.

was largely price-driven, with the price of a barrel of crude oil near $100. In 2019, the average price was near $60 – a 40 percent decline from five years earlier. However, the year 2019 saw new production records, with oil production up 67 percent statewide over 2014 and natural gas up 14 percent. The soaring production of 2019 was made possible by the huge gains in the Permian Basin.

In 2014, the Permian accounted for roughly 42 percent of total industry taxes — $4.9 billion. In 2019, the Permian's share was at 62 percent, or $7 billion (Figure 5). Over the past five years, state and local taxes generated from the Permian Basin have increased by more than $2 billion, while declining in the rest of the state by $2.3 billion.

Royalties.

Oil and gas producers commonly lease the land they develop, paying a royalty to the property owner based on the value of production. In Texas, and in particular, the Permian Basin, the state owns substantial land and mineral rights, reserving much of the income for public and higher education. In 2019, of the $2.1 billion in royalties collected across the state, $2.0 billion, or 93 percent, came from the Permian Basin (Table 4 on the following page).

In its early years as a republic and later as a state, Texas had far more land than people. Early lawmakers saw Texas' vast lands as a resource to fund the basic needs of the people. At first, Texas sold the land outright, with the idea that its highest and best use would be for livestock grazing. Ultimately, the state began to follow English common law, which permits the state to retain the minerals interests on the land it sold.

Permanent University Fund (PUF). The first successful well in the Permian was actually drilled on land leased from the Permanent University Fund, and, in fact, all of the producing PUF lands are located in the Permian Basin. The rig, named Santa Rita #1, for the patron saint of impossible causes, today sits on the campus of the University of Texas—one of the two institutions it has blessed.[14] The fund owns rights on 2.1 million acres of land, concentrated in 19 counties.[15] State law requires that a lease may not pay *less* than 1/8 of the value of production in royalties.[16] Oil and gas royalties from these lands are

[14] https://pboilandgasmagazine.com/the-well-that-launched-the-permian/
[15] Hudspeth, Crockett, Andrews, Reagan, Pecos, Upton, Ward, Crane, Terrell, Schleicher, Winkler, Culberson, Loving, Irion, Martin, El Paso, Ector, Gaines, and Dawson.
[16] Higher Education Code, 66.67.

Table 4

Oil and Gas Royalties on Public Lands
Statewide and in the Permian, $ Millions

Royalty Payment to:	2014	2015	2016	2017	2018	2019
Texas Statewide						
Permanent University Fund	$1,089.8	$777.6	$500.5	$686.8	$1,033.5	$1,024.4
Permanent School Fund	$611.6	$572.4	$492.2	$890.6	$893.4	$1,049.5
Other State Royalties	$47.5	$50.5	$25.6	$27.9	$17.6	$38.7
Total, Public Royalties	$1,748.9	$1,400.5	$1,018.3	$1,605.3	$1,944.5	$2,112.7
Permian Basin						
Permanent University Fund	$1,089.8	$777.6	$500.5	$686.8	$1,033.5	$1,024.4
Permanent School Fund	$372.6	$411.4	$399.1	$710.2	$756.9	$923.6
Other State Royalties	$17.5	$18.8	$10.7	$13.3	$9.8	$23.4
Total, Public Royalties	$1,479.9	$1,207.7	$910.3	$1,410.3	$1,800.2	$1,971.4
Permian Basin						
Permanent University Fund	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Permanent School Fund	60.9%	71.9%	81.1%	79.7%	84.7%	88.0%
Other State Royalties	36.9%	37.2%	41.7%	47.6%	55.6%	60.5%
Total, Public Royalties	84.6%	86.2%	89.4%	87.9%	92.6%	93.3%

Note: Numbers may not add due to rounding.
Source: Calculated by the Texas Taxpayers and Research Association.

deposited into the Permanent University Fund. These monies are invested, and the earnings on those investments are transferred into the Available University Fund, two-thirds of which is for the University of Texas, and one-third for the support of Texas A&M. As of the end of 2019, the Permanent University Fund was valued at $22.8 billion. Oil and gas income to the Available University Fund totaled more than $1.0 billion.[17]

Permanent School Fund (PSF). Drafters of the Texas Constitution of 1876 set aside roughly 42 million acres of land—which amounted to half of all state lands at the time—for the support of public schools. Proceeds from the land sales were to be deposited into the Permanent School Fund, invested, and the earnings on those investments transferred into the Available School Fund for direct distribution to public schools. As with the

Table 5
Permanent School Fund Royalties
Top Ten Counties, 2019 $ millions

County	Amount
1. Reeves	$525.5
2. Loving	$92.8
3. Culberson	$83.0
4. Pecos	$71.0
5. Webb*	$44.6
6. Ward	$21.7
7. Pecos	$9.8
8. Winkler	$8.6
9. Dimmit	$8.1
10. Loving	$7.2

* Non-Permian Basin County
Source: Texas General Land Office.

[17] Financial Statements and Independent Auditors' Report: Permanent University Fund, Years Ended August 31, 2019 and 2018.

Permanent University Fund, the state has retained minerals rights on these properties, with royalties now the primary source of income for the Permanent School Fund. Today roughly 13 million acres of land contribute to the Permanent School Fund. Generally, the state receives a royalty no less than 1/8 of the income from petroleum production, as required by law.[18]

Of the top ten counties with Permanent School Fund producing properties, 9 are in the Permian Basin. Producers in Reeves County alone contributed over half a billion dollars in royalties (Table 5 on the previous page), more than half of royalty deposits into the fund.

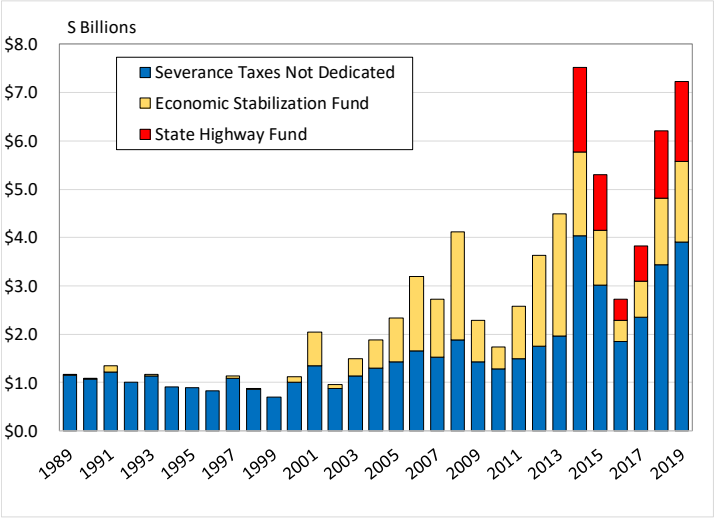
[18] Natural Resources Code, 52.022.

Appendix A: Rainy Days and Highways Severance Taxes Fund Critical Programs

In 1987, after years of continuing state budget challenges stemming from the rise and fall of oil prices, an oil-dependent legislature submitted a Constitutional amendment to voters creating the "Economic Stabilization Fund (ESF)," commonly known as the "Rainy Day Fund." As initially enacted, oil and gas production, or severance, tax collections up to the amounts collected in 1987 would be treated as they always had been: deposited into the state general revenue fund. The Constitutional amendment dedicated amounts above the 1987 benchmark ($532 million in oil production taxes and $599 million in natural gas production taxes): 75 percent to the newly created Economic Stabilization Fund and 25 percent being retained in the general revenue fund. In addition to the dedication of excess severance taxes, the Economic Stabilization Fund would also receive transfers of one-half of any unencumbered general revenue balance from the previous biennium.

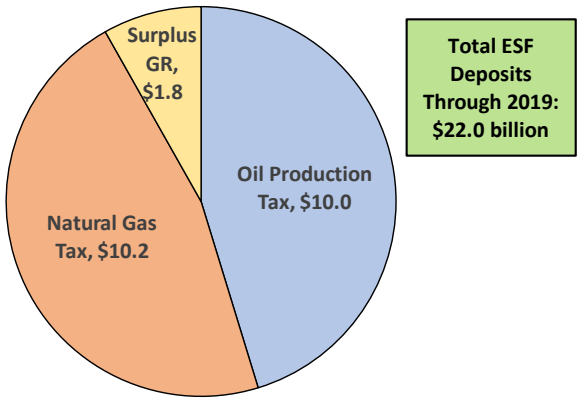
The goal of the Economic Stabilization Fund was twofold: 1) to reserve a portion of state revenue when times were good so that they could be used during times of fiscal duress, and 2) to smooth out one of the state's most volatile revenue sources. The fund has accomplished both these objectives. General revenue severance taxes, available for more discretionary spending, have been more stable (Figure A-1); at the same time, $22 billion has been deposited into the

Figure A-1
The Uses of Statewide Severance Taxes



Notes: Dedicated amounts are reserved in the year of collection. Actual transfers occur in the following fiscal year.
Source: Texas Taxpayers and Research Association.

Figure A-2
Contributions to the Economic Stabilization Fund Through 2019 ($ Billions)

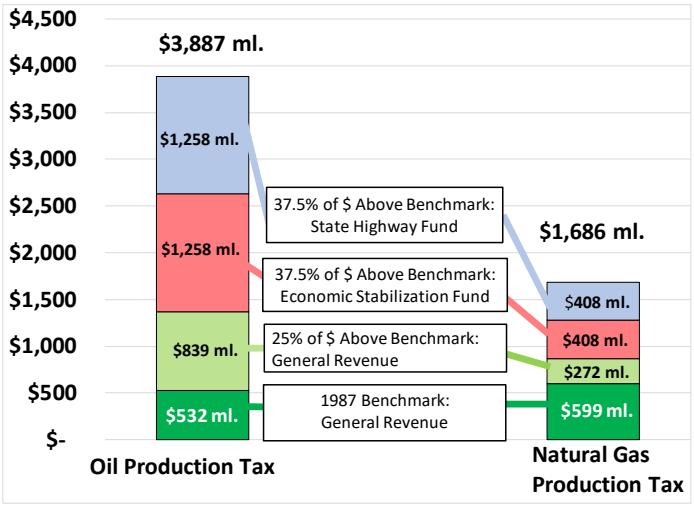


Source: Texas Comptroller of Public Accounts.

Economic Stabilization Fund, almost all of which has been from oil and gas severance taxes (Figure A-2 on the previous page), evenly split between oil and gas taxes.

In 2014 lawmakers proposed, and voters approved, a Constitutional amendment diverting a portion of the severance taxes deposited into the Economic Stabilization Fund.[19] From 2014 onward, the amount of severance taxes deposited into the Economic Stabilization Fund was reduced by half (from 75 percent above the 1987 benchmark to 37.5 percent), with the difference deposited into the State Highway Fund. The amendment was to provide additional dollars to address the state's transportation infrastructure demands. Since the passage of the amendment, severance taxes have provided an additional $5.4 billion for highways, of which almost $3.2 billion has come from the Permian Basin.

Figure A-3
The Uses of State Severance Tax Dollars
Amounts are for 2019



Source: Texas Taxpayers and Research Association and Comptroller of Public Accounts.

Figure A-3 illustrates how Texas oil and gas taxes are allocated today, based on 2019 tax revenues. The first $532 million of oil production taxes (and $599 million of natural gas production taxes) are deposited and retained in the general revenue fund. Of the amounts above that, 37.5% is transferred into the Economic Stabilization Fund, and 37.5% is transferred into the State Highway Fund. The remaining 25% remains in the general revenue fund for the legislature's discretionary use.

[19] SJR 1 by Nichols, 83rd Legislature, 3rd Called Session; approved by Texas voters in a November 2014 election by a margin of 3.2 million in favor, and 0.8 million opposed (80 – 20%).

Appendix B: Taxes Included in this Analysis

State: Oil Production Tax (Chapter 202, Tax Code). Essentially a 4.6 percent gross receipts tax on the value of production (or 4.6 cents per 42-gallon barrel, whichever is less). The tax may be paid by either the first purchaser or the producer, depending on the sales contract.

State: Natural Gas Production Tax (Chapter 201, Tax Code). A 7.5 percent gross receipts tax on the value of the production of natural gas or natural gas liquids (condensate) after exemptions.[20] The tax may be paid by either the producer or the first purchaser, depending on the sales contract.

State and Local: Sales Taxes (Chapter 151, Tax Code). Texas levies a 6.25 percent sales and use tax on the sale of all tangible personal property, unless specifically exempted, and on certain specified services. In addition to the state rate of 6.25 percent, a combination of local districts may levy up to an additional 2 percent tax. Sales taxes apply on the purchase of most items used to produce petroleum: drilling rigs, drilling pipe, drill bits, lift compressors, non-soluble chemicals, and other equipment and materials. While Texas manufacturers benefit from a limited exemption on production equipment and materials, the exemption does not extend to the production of oil and gas.

State: Well Servicing Tax (Chapter 191, Tax Code). Texas assesses a 2.42 percent gross receipts tax on the receipts from servicing an oil or gas well. Services subject to the tax include cementing the casing of a well, shooting, fracturing, or acidizing the sands or other formations of the earth, or surveying or testing formations using instruments or equipment in the well bore. Though formally called the "Oil Well Servicing Tax," it applies equally on services to a gas well.

State: Motor Vehicle Sales Taxes (Chapter 152, Tax Code). Texas assesses a separate 6.25 percent sales tax on the purchase of a "motor vehicle," which by definition in the code, includes any self-propelled vehicle (car or truck) for operation on a public road, as well as the mobile equipment it hauls (trailer, tanker, etc.). Motor vehicles rented for less than 30 days are subject to a 10 percent rental tax (the rate is 6.25 percent if the rental is more than 30 days).

State: Franchise Tax (Chapter 171, Tax Code). Liability-protected businesses (C- and S-Corporations, Limited and Limited Liability Partnerships, and Limited Liability Companies) with more than $1.18 million in total revenues (adjusted for inflation) must pay the Texas Franchise Tax for the privilege of doing business in Texas. The tax is based on a company's total revenues, less the greater of their cost of goods sold, compensation, 30 percent of total revenue, or $1 million. The result is apportioned to Texas based on the percentage of the company's business conducted in Texas. The rate of the tax is 0.75 percent; however, companies engaged in wholesale or retail trade pay a 0.375 percent rate.

State: Motor Fuels Taxes (Chapter 162, Tax Code). Motor fuel (gasoline and diesel) used to propel a vehicle on Texas public roads is subject to a 20 cent per gallon tax, collected at the wholesale level and included in the price at the pump.

State and Local: Hotel Occupancy Taxes (Chapter 156, Tax Code). A tax is imposed on the short term (less than 30 days) rental of a room or space in a hotel, motel, bed and breakfast, or similar facility costing $15 or more each day. The state hotel tax rate is 6 percent; however, local hotel taxes may bring

[20] Gas reinjected into the earth, lawfully flared gas, gas used for enhanced oil recovery, and certain other production are exempt.

the total rate up to a total of 17.5 percent (allowed in El Paso, but otherwise the maximum is generally 17 percent).

Local: Property Tax (Chapters 6 – 43, Tax Code). In Texas, school districts, counties, cities and a variety of special districts may levy a tax on real estate and on business-owned tangible personal property. The oil and gas industry pays property tax on the value of reserves in the ground and on the value of any equipment, supplies, and other tangible personal property used to extract it, as well as any physical structures (office buildings, pipelines, storage tanks, etc.). The Comptroller's Office by law provides a manual of appraisal for oil and gas properties for calculating the taxable value of reserves. Most states tax oil and gas based on the value of production in a given year. By taxing reserves, a barrel of oil or an mcf of natural gas may be taxed for several years before the company actually realizes any income from its sale. Property tax rates vary by jurisdiction, but on average, can range from a combined total of 2 to 3 percent of the market value of the property.

Appendix C: Key Oil and Gas Taxes in Top Producing States

State	Property Tax	Severance Taxes	Sales Taxes	Other Special Industry Taxes
Texas	Value of reserves in the ground using a discounted cash flow model is taxed, plus all equipment used to produce petroleum.	Oil: 4.6% of the value of production Gas & Condensate: 7.5% of value of production	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants. Repair services also taxable.	– Oil Well Servicing Tax – Oil & Gas Field Cleanup Regulatory Fee
Alaska	Valuation of real and tangible personal property used for production of gas or unrefined oil.	Oil: 35% of net production value	Alaska has no state sales tax.	– Conservation Surcharge (4cts/bbl)
California	Valuation of reserves are based on a discounted cash flow method plus value of producing equipment.	None	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants.	– Oil & Gas Production Assessment ($0.5038349/bbl; rate adjusts annually)
Colorado	The producing minerals are valued based on the prior-year wellhead sales value via a netback calculation and are assessed at 87.5%. Production equipment is valued using a schedule value and is assessed at 29%.	Oil and Natural Gas: 2-5% of gross income (rates progressively higher based on production income); but a tax credit is allowed equal to 87.5% of property taxes paid	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants; however, Colorado exempts oil and gas machinery used in a designated enterprise zone.	– Oil & Gas Conservation Levy (0.07%)
Louisiana	Neither oil and gas reserves nor production are taxed, but well equipment is subject to property tax using a valuation schedule based on producing depth plus surface equipment.	Oil: 12.5% of value Natural Gas: currently 12.5 cents per mcf (7 cents per mcf, multiplied by a "base rate adjustment" based on Henry Hub settled price relative to spot price on gas delivered to pipelines).	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants. Repair services also taxable.	– Oil Field Restoration Fee (1.5 cts/bbl)

State	Property Tax	Severance Taxes	Sales Taxes	Other Special Industry Taxes
New Mexico	Production is subject to local tax, but is valued at a 150% assessment ratio. The taxable value of the production equipment is equal to 27% of the value of production.	Oil and Natural Gas: 3.75% of taxable value	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants. Technically, NM tax is a tax on the seller's receipts, rather than on the transaction itself.	– Oil and Gas Conservation Tax (0.0019%;0.0024% if oil price >$70/bbl) – Oil & Gas Emergency School Tax (Oil: 3.15%; Natural Gas: 4%) – Natural Gas Processor Tax: rate adjusted annually
North Dakota	Oil & Gas Production Tax is imposed in lieu of property taxes.	Oil Production Tax: 5.0% of the gross value of production Natural Gas Production Tax: $0.0712 per mcf, indexed to price	Tax applies generally to equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants, but carbon dioxide is exempt.	– Oil Extraction Tax: 5% on gross value of oil produced (rate is 6% if price > calculated trigger price, currently $90)
Oklahoma	Exempt from property taxes by payment of the "in lieu" gross production tax.	Oil and Natural Gas: 5% of gross value for first 3 years of production; 7% thereafter	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants.	– Additional Excise Tax on Oil & Gas (0.085% for oil) – Oil & Gas Production Fee (0.35 cts/bbl)
Pennsylvania			Equipment and services used in mining is exempt.	– Impact Fee: A fee is calculated based on the average price of natural gas for the year. The fee is imposed on each horizontal unconventional gas well from years 1 to 15.
Wyoming	Oil & Gas Gross Production Tax Imposed in lieu of property tax. Production surface equipment is valued on a schedule at an 11.5% assessment ratio.	Oil and Natural Gas: 6% of fair market value	Tax applies generally to surface and downhole equipment and supplies, including drilling rigs, drill pipe, chemicals and proppants.	– Oil & Gas Conservation Tax (0.05%) – Oil & Gas Production Tax is valued at Gross Value less transportation at 100% assessment ratio and taxed at the local jurisdiction level

Appendix D: Methodology for Estimates of Key Industry-Paid Taxes

Property taxes. Property tax files were obtained from the State Comptroller's Office for the tax years 2013 through 2018 (which correspond to fiscal years 2014 through 2019). Files for school districts, cities, and counties included values by category of property, including category G: Oil and Gas. The property tax levy on oil and gas properties was calculated by applying reported tax rates to Category G for each type of taxing jurisdiction, statewide and for the counties of the Permian basin for school districts, counties, and cities. Special districts data on property by category is not available. To estimate the value of oil and gas property within special districts a weighted average of oil and gas values within county jurisdictions and city jurisdictions was used. The proportion of oil and gas values relative to total values was applied to special district levies to calculate special district property taxes on direct oil and gas properties.

Category G, however, only includes oil and gas wells and leases; it does not include supporting equipment such as drilling rigs, storage tanks, materials and supplies, and other items used in support of oil and gas production. These items are generally included within the categories of commercial and industrial property. To estimate the proportion of the supporting property relative to oil and gas value the sum of commercial and industrial property in a handful of rural counties with substantial oil and gas value (Glasscock, Loving, Martin, Reagan, Upton, and Reeves) was calculated. It was assumed that most of the property in these categories are used for the support of oil and gas drilling and production. In these counties the ratio of commercial and industrial property to oil and gas property was 25 percent. A more conservative estimate of 20 percent was used to calculate the amount of oil and gas equipment relative to oil and gas value.

Sales Taxes. Individual county sales tax data was provided by the Comptroller's Office; however, equipment used in the Permian is often stored in warehouses outside the area. Tax on the equipment is sourced to the warehouse, and not to the site of use, so the direct data did not appear to provide a reasonably accurate reflection of the tax cost associated with putting the equipment into use in the Permian. As an alternative, the Comptroller's Tax Exemptions and Tax Incidence Reports, required by Section 403.014 of the Government Code, were used. The percentage of tax paid by the oil and gas industry reported in the 2013, 2015, 2017, and 2019 reports and applied to the actual amount of sales taxes collected in years to derive estimates for the state. Extrapolation was used to estimate years in between. The Texas Oil and Gas Association (TxOGA) provided statewide estimates of local sales taxes paid by oil and gas producers (NAICs 21) in their Annual Energy Economic Impact Reports. These were allocated to the cities of the Permian Basin using the ratio of rigs running in the Permian Basin to statewide figures. Statewide sales tax estimates were allocated to the Permian based on the percentage of rigs running.

Oil Production and Regulation Taxes. Direct files on severance taxes paid often lag final data. Instead, state oil production and regulation taxes for 2014 through 2019 were taken from State of Texas Annual Cash Reports and allocated to the Permian Basin based on the share of oil production in Permian Counties, as reported to the Texas Railroad Commission.

Natural Gas Production Tax. Direct files on severance taxes paid often lag final data. Instead, state natural gas production taxes for 2014 through 2019 were taken from State of Texas Annual Cash Reports. Amounts were allocated to the Permian Basin based on the share of natural gas production in Permian Counties, as reported to the Texas Railroad Commission.

Franchise Tax. The Comptroller's Office provided data from their franchise tax files for each year detailing the franchise tax paid statewide by the oil and gas industry. These amounts were allocated to the Permian Basin based on the value of petroleum production.

Well Servicing Tax. Well servicing tax receipts statewide were obtained from reports from the State Comptroller. Amounts were allocated to the Permian Basin based on the proportion of rigs running in the area.

Permanent University Fund Royalties. Information on royalties paid to the Permanent University Fund were obtained from the State Comptroller's Annual Cash Reports. All of the producing leases are within the Permian Basin region, so no allocation was necessary.

Permanent School Fund Royalties. Information on royalties paid to the Permanent University Fund were obtained from the State Comptroller's Annual Cash Reports. Amounts were allocated to the Permian Basin counties using royalty payment data by county provided by the General Land Office.