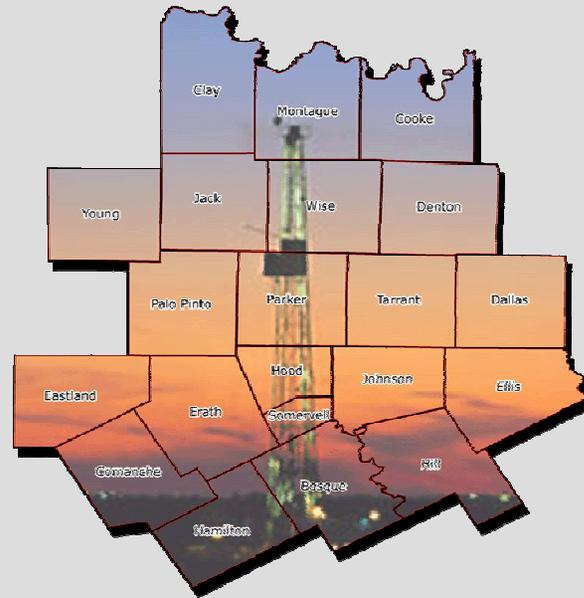


Drilling for Dollars:

An Assessment of the Ongoing and Expanding Economic Impact of Activity in the Barnett Shale on Fort Worth and the Surrounding Area



Barnett Shale Expo

March 2008

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EXECUTIVE SUMMARY



Activity in the Barnett Shale Continues to Transform Fort Worth and the Surrounding Area

- **Activity in the Barnett Shale generates** thousands of jobs and tens of billions of dollars in investment. **Royalty and bonus payments** to area residents, cities, school districts, and others continue to rise, as do **property tax receipts** to local taxing authorities.
- Already one of the largest natural gas fields in North America, the **scope of the Barnett Shale is expanding**, with exploration and development pushing boundaries and reserve estimates outward and upward.
- The Barnett Shale generates a multi-billion-dollar direct impact on the economy, with multiplier effects rippling through **virtually all regional industries**.

“In 2007, our analysis of the impact of the Barnett Shale indicated it was like ‘icing on the cake’ for the already healthy Fort Worth-area economy. This year, we found that activity in the Barnett Shale is making an even bigger difference, with expansion in benefits surpassing expectations.”

Dr. M. Ray Perryman



Barnett Shale Activity Insulates the Area from the National Economic Slowdown

Although the national economy is definitely slowing, activity in the Barnett Shale continues to serve as a catalyst for ongoing economic vitality in Fort Worth and the surrounding region.



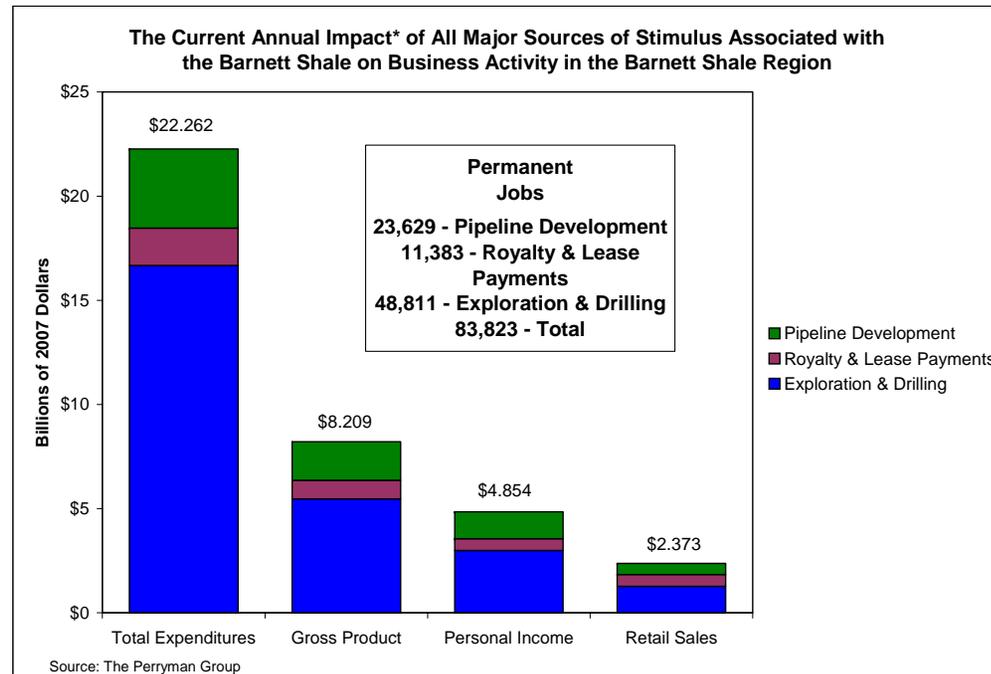
- In recent months, signs of sluggishness in the national economy have begun to surface. While Texas is in a better position than the nation as a whole, the state's economy is also likely to cool to some degree.
- By contrast, the Fort Worth area economy is projected to maintain a healthy pace of growth.
- As a large source of business activity, investment, and jobs, the Barnett Shale is one reason for continued growth at this healthy pace.
- The diverse Fort Worth economy has many sources of future growth, but the Barnett Shale will serve as both a catalyst for expansion and a source of stability.



Gains for the Fort Worth Area are Exceeding Expectations

- Activity in the Barnett Shale and, hence, the economic benefits for the area are growing faster than expected. In fact, based on year-end 2007 levels, the area was experiencing **gains of \$8.2 billion in annual output (8.1% of total output) and 83,823 jobs (8.9% of total jobs)**, up from \$5.2 billion in annual output and 55,385 permanent jobs last year. **The performance represents a net gain of more than 50% in a single year.**

Prior estimates of the future impact of the Barnett Shale have proven to be far below the actual effect of exploration, drilling, and production on regional business activity.

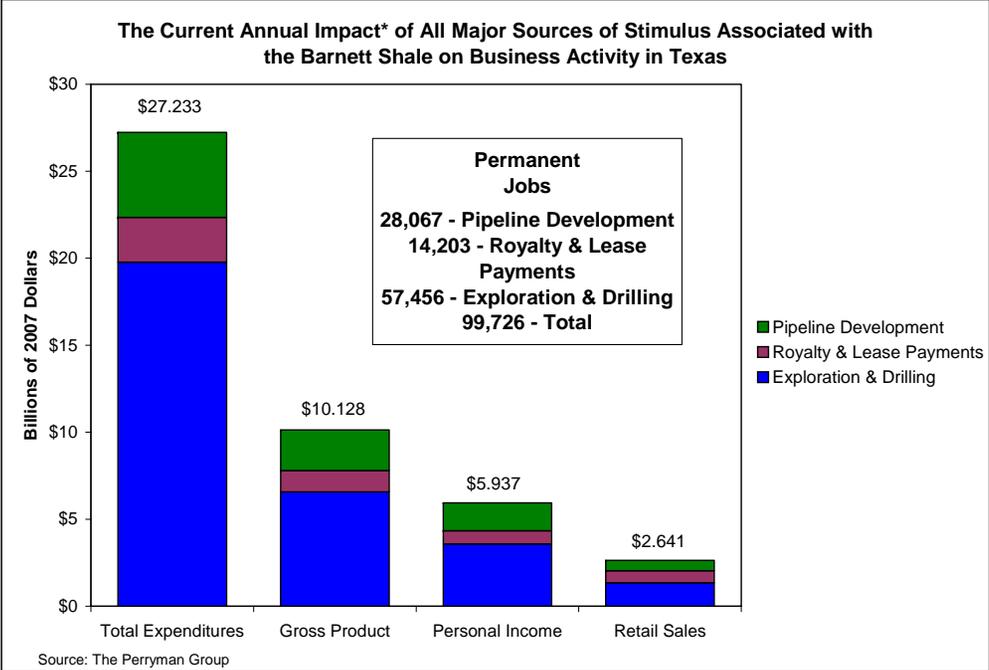


*Impact based on activity levels as of year-end 2007.



The State Economy Also Benefits

- The state benefits through increased economic activity of an estimated **\$10.1 billion in annual output and 99,726 jobs** (based on year-end 2007 levels of activity). This is a significant rise from the \$6.4 billion in annual output and 65,953 jobs reported last year.



*Impact based on activity levels as of year-end 2007.

In addition to billions of dollars in economic activity, the State of Texas receives an estimated \$212.1 million in severance taxes from activity in the Barnett Shale. Other types of State tax revenues and fees are also positively affected with the total fiscal stimulus reaching \$715.5 million.



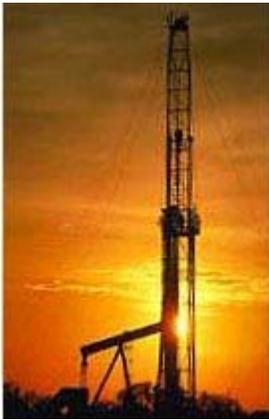
Individuals, Organizations, and Local Governments are Sharing in the Gains

- Individuals and organizations (as well as local governments) have received **sizable bonus payments and royalty interests**. This additional income is enhancing quality of life as well as economic opportunity for individuals throughout the area.
- Taxing entities benefit from property taxes paid on oil and gas properties as well as tax receipts stemming from enhanced retail sales and real estate development due to the economic impact of the Barnett Shale. **Total State and local tax receipts generated by activity in the Barnett Shale and the resulting multiplier effect exceed \$1 billion per year.**
- Revenue to local governments in the region (both **direct and indirect**) was estimated to total **\$378.7 million (excluding royalty and lease payments), up from \$227.7 million** as of 2006. With continued expansion in drilling and exploration activity and production, these receipts will almost certainly increase over time. **The State of Texas received an estimated \$715.5 million from all taxes associated with Barnett Shale activity**, up from approximately \$490.9 million in 2006.
- State and local governments also benefit from **permits and fees as well as other types of levies** such as hotel/motel occupancy taxes and receipts stemming from various types of taxable activity. In the aggregate, **Barnett Shale activity is responsible for almost \$1.1 billion in annual fiscal revenues.**



The Barnett Shale Will Enhance Prosperity for Decades to Come

The economic impact of the Barnett Shale is expanding even faster than anticipated. People from all walks of life are sharing in the gains, both directly and indirectly.



Although virtually all business activity involves trade-offs, the downside elements of the Barnett Shale (such as noise, water use, and infrastructure needs) are being dealt with proactively to minimize the negative elements. Moreover, the **increased funds available to local governments are being put to good use through lasting investments and improvements.** In addition, many individuals have been able to enhance their financial situations significantly through royalty payments and lease bonuses.

The Barnett Shale is a catalyst for ongoing economic vitality. Recent growth has exceeded expectations, and the resulting business and investment activity will help insulate the regional economy from the national slowdown.





INTRODUCTION



Introduction

- **Exploration, drilling, and production in the Barnett Shale continue to serve as a key economic generator for Fort Worth and the surrounding area.** As one of the largest onshore natural gas fields in North America (the largest in Texas), activity in the Shale generates
 - thousands of jobs and millions of dollars in personal income;
 - significant gains in output across a broad spectrum of industries;
 - a substantial stimulus to pipeline construction and operations;
 - sizable lease bonus and royalty payments to local individuals, organizations, and government entities; and
 - notable enhancement of the property tax base and sales potential and, hence, receipts to local taxing authorities.

- The production area encompasses a significant segment of north and central Texas, and is unique in that much of it is occurring within the Fort Worth-Arlington metropolitan area. As exploratory wells are developed, the parameters of the field continue to broaden.



Purpose of This Study and Key Findings

- The Perryman Group (TPG) measured the impact of activity within the Barnett Shale last year and was recently asked to provide an update of its overall economic impact on the surrounding area. The results of this analysis are provided in the current report.
- TPG's research indicates that Barnett Shale activity is growing at a notable pace, even surpassing the expected rate of expansion by a wide margin.
- The contribution to the regional economy and the opportunities for area residents is substantial. The Barnett Shale touches virtually every aspect of the local economy and provides an excellent stimulus and a buffer against national economic slowdowns and other adverse phenomena.



The Perryman Perspective

- The Perryman Group is a Texas-based economic research and analysis firm with more than 20 years of experience in assessing the economic impact of corporate expansions, regulatory changes, real estate developments, and myriad other phenomena affecting business activity.
- TPG has conducted hundreds of impact analyses for the US and Texas economies as well as all Texas metro areas and counties. The firm has maintained an extensive set of economic models for more than two decades, including econometric, impact assessment, demographic, occupational, and real estate absorption models developed to specifically reflect the underlying structures of the economies of Fort Worth and the surrounding area. 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.
- TPG has extensive experience in analyzing the Fort Worth area and its economy. The firm has been performing regular forecasts for the area and conducting economic outlook conferences for more than 20 years.
 - In 2007, TPG performed a comprehensive assessment of the impact of the Barnett Shale on the local area.
 - Studies have also been completed for a number of local projects and initiatives, such as the development of the Fort Worth Alliance Airport, the Joint Strike Fighter Program at Lockheed Martin, major corporate relocations and expansions, large tourism venues, and infrastructure investments. The firm has conducted numerous investigations related to the oil and gas industry. These analyses include an assessment of the effects of offshore drilling for the US Department of the Interior, several studies of specific production areas, and projections of natural gas prices and output.





CURRENT BARNETT SHALE ACTIVITY



Current Activity in the Barnett Shale

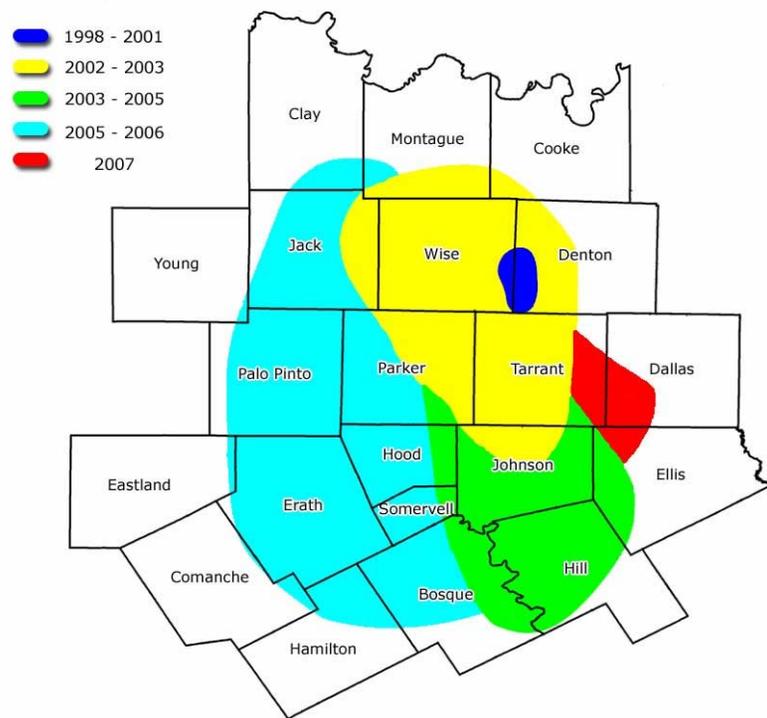
- Over the past year, activity in the Barnett Shale has expanded at a faster-than-anticipated rate, producing over 1 trillion cubic feet of gas, a 29% increase over 2006. (Note that this estimate includes wells in the Texas Railroad Commission's pending well file which are not yet tracked in the regular databases.)
- Although the field was discovered in the early 1980s, little activity took place until a combination of technological improvements in recovery methods in the late 1990s and a favorable price environment led to substantial development beginning in approximately 2001.
- The Newark, East Field is the core area of the Barnett Shale located in Wise, Denton, and Tarrant counties. The heaviest concentration of recent well development has been in Tarrant, Johnson, and Parker counties.
- The Barnett Shale is unique in that much of it is located in a highly urbanized area; there are an estimated 541 producing gas wells currently within the Fort Worth city limits, up from less than 500 in 2006.



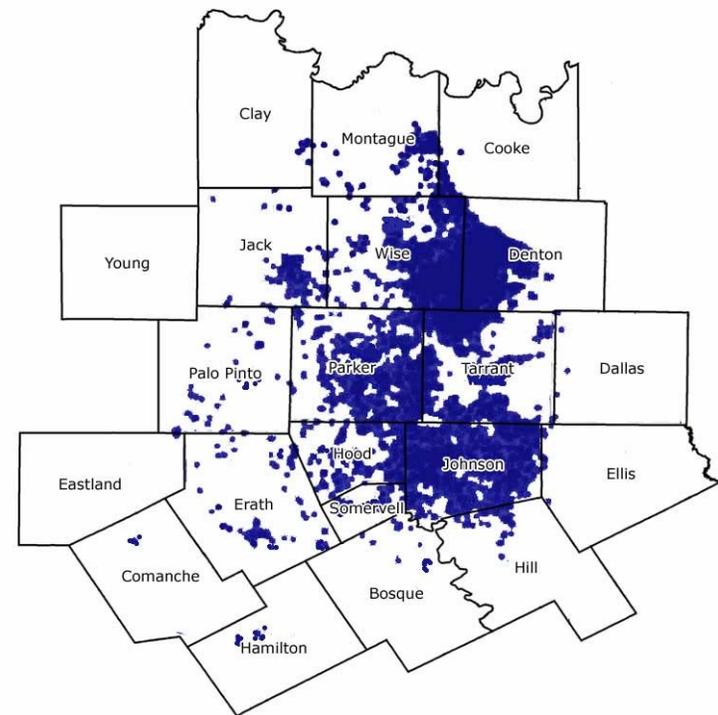
The Barnett Shale Formation

- The Barnett Shale covers a sizable area of north and central Texas; the known boundaries continue to move outward as exploration provides better information.

Stages of Exploration

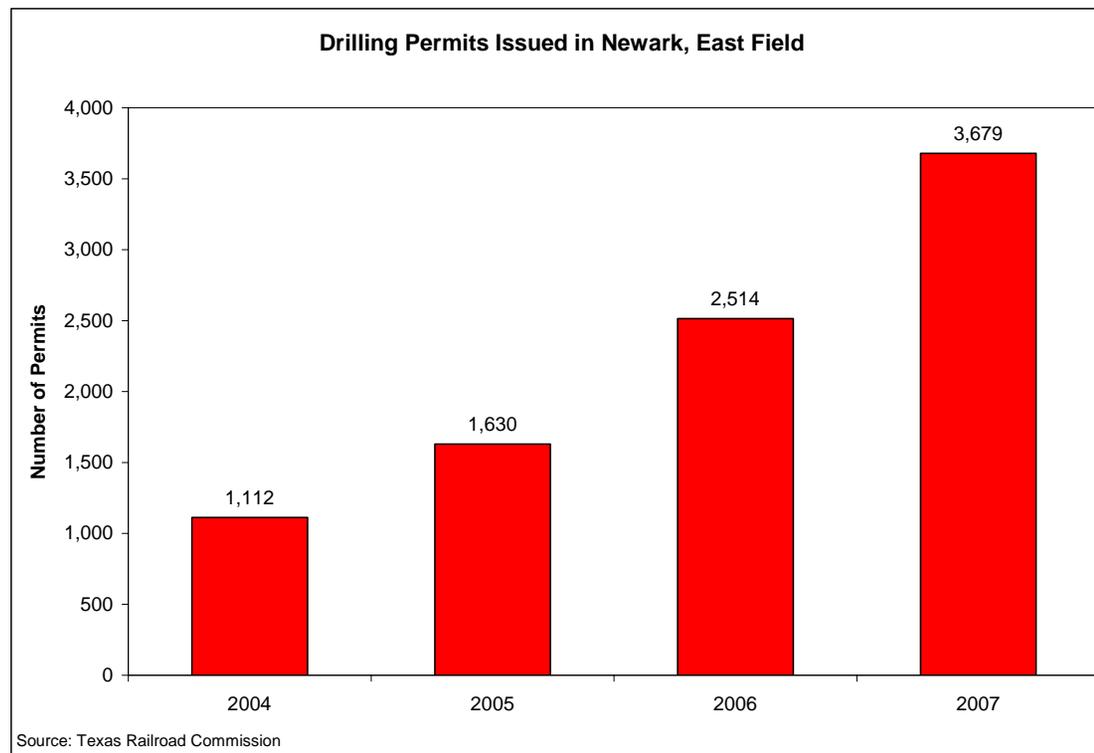


Barnett Shale Wells



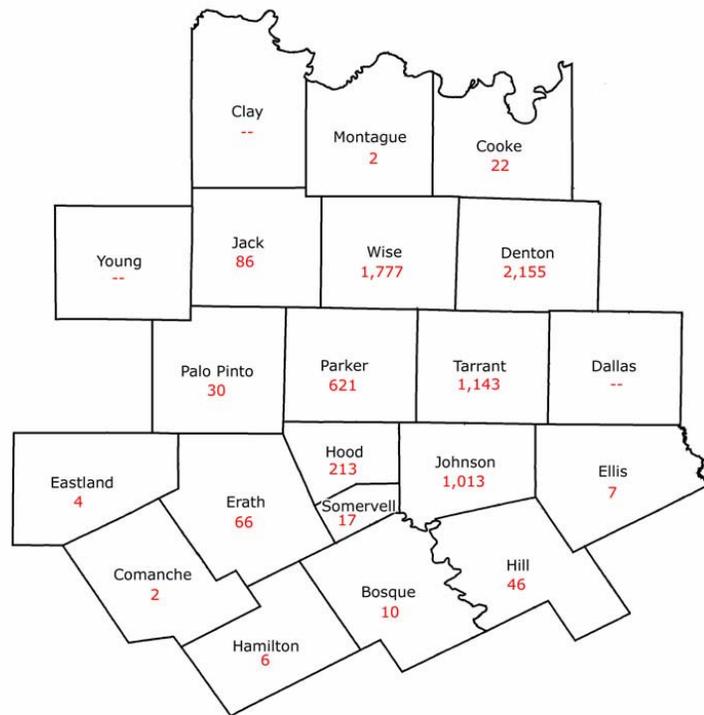
Drilling Activity in the Barnett Shale

- Drilling permits continue to rise, reaching 3,679 at the end of 2007. When pending wells (where paperwork has not yet been completed) are included, the **January 23, 2008, total number of gas wells reaches 7,170, with 4,350 permitted locations** in the Newark, East (Barnett Shale) Field.



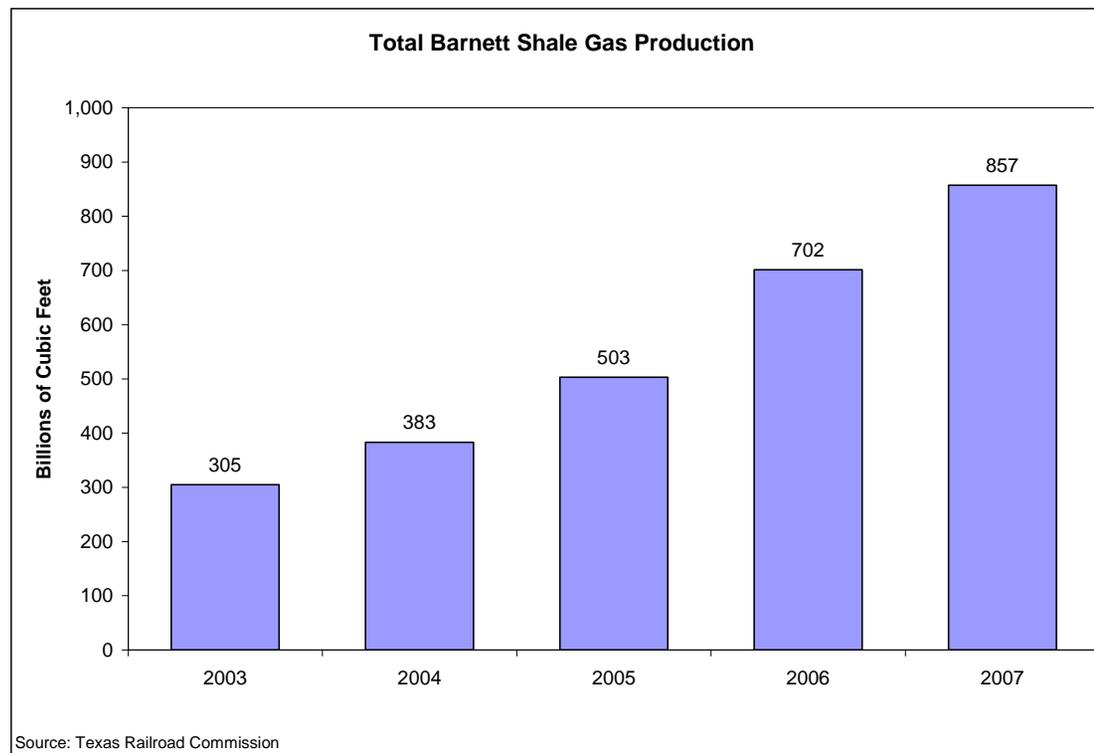
Leases by County in the Barnett Shale

- There are roughly 7,220 leases in the Barnett Shale, with Denton, Wise, and Tarrant counties holding the highest number of leases followed closely by Johnson County.



Production in the Barnett Shale

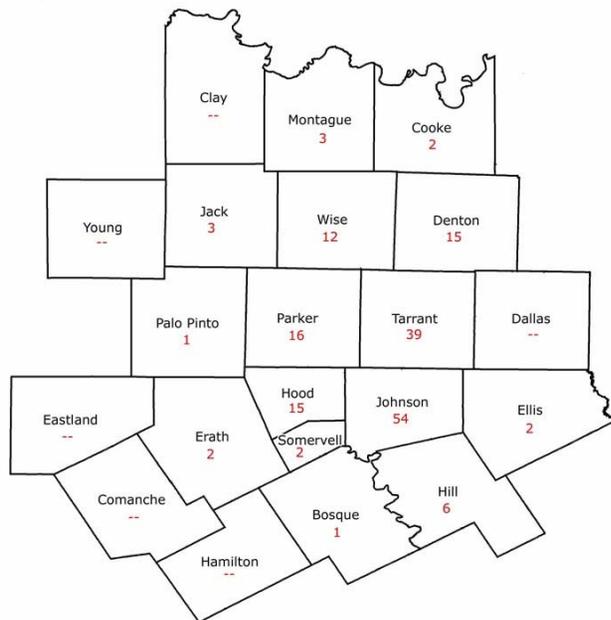
- **Total gas production in the Barnett Shale continues to rise sharply, reaching 857 billion cubic feet in 2007** (based on data from the Texas Railroad Commission which does not include the most recent wells) and accounting for an estimated 13%-15% of Texas production, up from 12% in 2006.



Rig Count and Production by County in the Barnett Shale

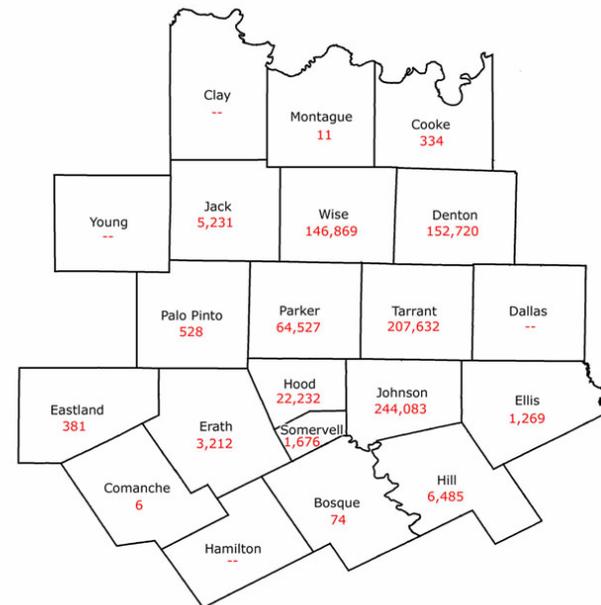
- Current rig activity is concentrated in Johnson and Tarrant counties, which also had the highest total production last year.

Rig Count
(as of March 17, 2008)



Source: Baker Hughes and The Perryman Group

2007 Production
(in millions of cubic feet)



Source: Texas Railroad Commission and The Perryman Group



Projected Future Barnett Shale Activity

- Activity in the Barnett Shale has not yet peaked and is, in fact, growing faster than anticipated. **Production has reached an estimated level of 3.7 billion cubic feet per day, and accounted for 4.3% of US total production in 2007.** Projections are that production in the field will continue to rise, reaching between 6.5 and 9.7 billion cubic feet per day by 2014-2015.
- Many firms with activity in the Barnett Shale have indicated they will continue to expand their investments in the local area in the years to come. Five survey responders provided information regarding their likely future investments; these companies alone are planning to spend some \$4.5 billion in the next year and \$34 billion over the next 10 years.
- At this time, estimates of the amount of natural gas still to be extracted in the Barnett Shale total 39 trillion cubic feet, but ongoing exploration and advances in recovery methods are likely to further increase this estimate.
- While future production patterns will be determined by many factors (including the pace of technological development, natural gas prices, geology, and demand from major sectors), there is little doubt that the field will be a growing source of economic activity for years to come.





FIRMS OPERATING IN THE BARNETT SHALE



Firms Operating in the Barnett Shale

- As of January 2008, 191 companies were operating in the Barnett Shale. The largest of these are noted in the table below.

Major Operators in the Barnett Shale (2007)				
Operator Name	Oil (BBL)	Casinghead (MCF)	GW Gas (MCF)	Condensate (BBL)
Devon Energy Production Co., L.P.	11,587	817,032	307,796,815	469,175
XTO Energy Inc.	12,454	493,740	123,581,245	14,416
Chesapeake Operating Inc.	0	0	97,699,144	17,577
EOG Resources Inc.	0	0	95,337,979	55,819
EnCana Oil & Gas (USA) Inc.	65,911	1,325,010	47,988,907	114,976
Burlington Resources O&G Co., L.P.	0	0	31,068,630	310,855
Range Production Company	0	0	20,635,039	44,208
Quicksilver Resources Inc.	0	0	14,117,169	75,478
J-W Operating Co.	0	0	13,419,201	0
Denbury Onshore LLC	0	0	12,400,871	9,940

Source: Texas Railroad Commission



Survey of Companies Operating in the Barnett Shale

- As in 2007, The Perryman Group again developed an extensive questionnaire designed to gather information regarding operations in the Barnett Shale.

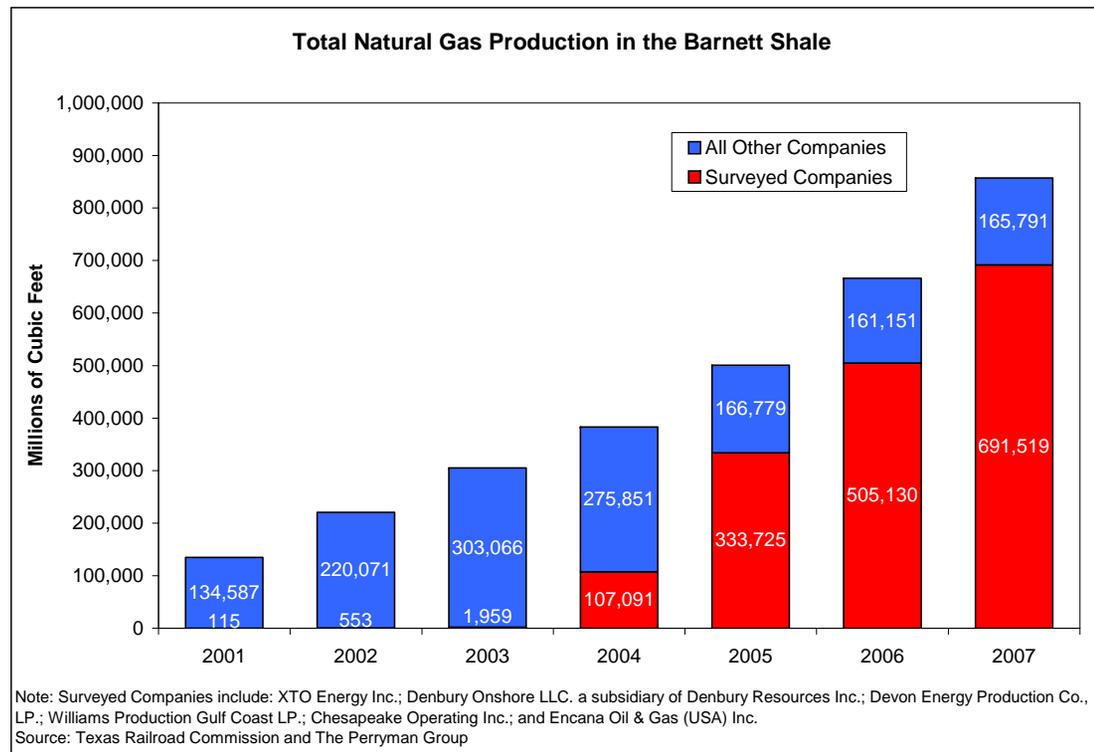
- The survey was sent, in cooperation with the Fort Worth Chamber of Commerce, to all companies with significant Barnett Shale activity.

- Six firms responded to the survey; together, they comprise about 81% of total Barnett Shale production.
 - ▣ Chesapeake Operating Inc.
 - ▣ Denbury Resources Inc.
 - ▣ Devon Energy Production Co., L.P.
 - ▣ EnCana Oil & Gas (USA) Inc.
 - ▣ Williams Production Gulf Coast LP
 - ▣ XTO Energy Inc.



Survey Respondents' Proportion of Total Production

- While relatively few companies responded to the survey, they represent the majority of Barnett Shale production.



Taxes Paid to Local Governments by Survey Respondents

- The **six survey respondents paid a total of \$97.13 million in direct taxes to local governmental entities in 2007**. This represents only a portion of the direct taxes paid by companies active in exploration, drilling, servicing, and production of the Barnett Shale.
- Over time, companies are paying more in taxes as their presence in the Barnett Shale rises. Payments by survey respondents who also completed last year's survey totaled \$89.12 million, an increase from the \$85.50 million those companies reported for 2006.
- Many public entities are also receiving substantial royalty and lease payments.
- These payments are allowing for significant enhancements to infrastructure, parks, and other immediate needs. They are also being used to establish endowments and foundations which will continue to benefit residents for decades to come.





THE POSITIVE EFFECTS OF THE BARNETT SHALE ON THE REGION



Positive Effects of the Barnett Shale on the Region

- In 2007, The Perryman Group measured the economic impact of the Barnett Shale activity to include gains of some \$5.2 billion in annual output and 55,385 jobs. **This year, the benefits to the local economy have grown to \$8.2 billion in output and 83,823 positions.**
- Not only does this activity lead to a substantial direct business stimulus, it also serves as a catalyst for the creation of jobs and economic opportunities for thousands of area residents and companies.
- The **real estate market** of the region has seen enhanced activity stemming from companies directly involved in the Barnett Shale, both through demand for office and other commercial and industrial space and an increased need for housing for employees. In addition, the economic opportunities and aggregate growth supported by this vast natural gas area contribute to a need for real estate assets of various types.
- **Property taxes** generated by the expansion associated with the natural gas reserves continue to reshape the budgets of local school districts, cities, and others. Retail sales taxes, occupancy taxes, and other sources of fiscal revenue have also risen as the increase in activity works its way through the local and regional economies.
- Companies operating in the Barnett Shale have been important corporate citizens of the area, donating millions of dollars and substantial time to local **charities**.





The Current Economic Impact of Activity in the Barnett Shale



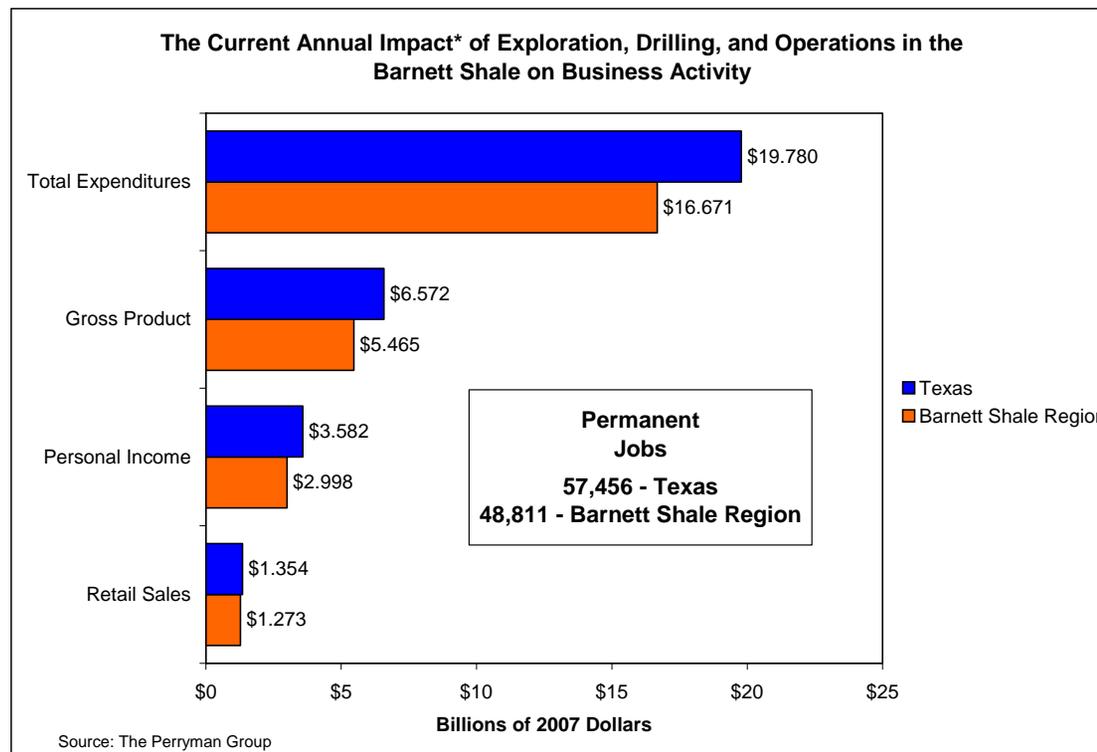
Measuring the Economic Impact of Barnett Shale Activity

- Like all investments or corporate activity, the outlays related to the Barnett Shale are generating multiplier effects through the economy. Exploration, drilling, production, servicing, pipeline development and operations, royalty payments, and other direct expenditures bring substantial gains. In addition, these effects initiate a chain of spillover business stimulus throughout the area.
- Spillover effects include, among other things:
 - oil field service companies raising incomes, payrolls, and purchasing due to expanded business;
 - restaurants and retailers seeing increased patronage from drilling crews, royalty recipients, and others;
 - professionals such as attorneys, accountants, and engineers enlarging their client base with Barnett Shale-related transactions;
 - hotels and motels selling room-nights associated with business travel related to the Barnett Shale;
 - myriad other businesses enjoying higher volumes both directly and indirectly as a consequence of the Barnett Shale; and
 - residential development and other real estate activity as a result of increasing incomes and employment in the production area.
- The Perryman Group quantified these overall benefits utilizing the firm's impact assessment system which measures multiplier effects across industrial categories and geographic areas. (An explanation of this system, as well as terms used herein, may be found in Appendix A of this report; detailed findings by industry are presented in Appendix B.)



Current Impact of Exploration, Drilling, and Operations

- Exploration, drilling, and operations activity are a sizable stimulus for the region, generating almost **\$5.5 billion in annual output and 48,811 jobs.**

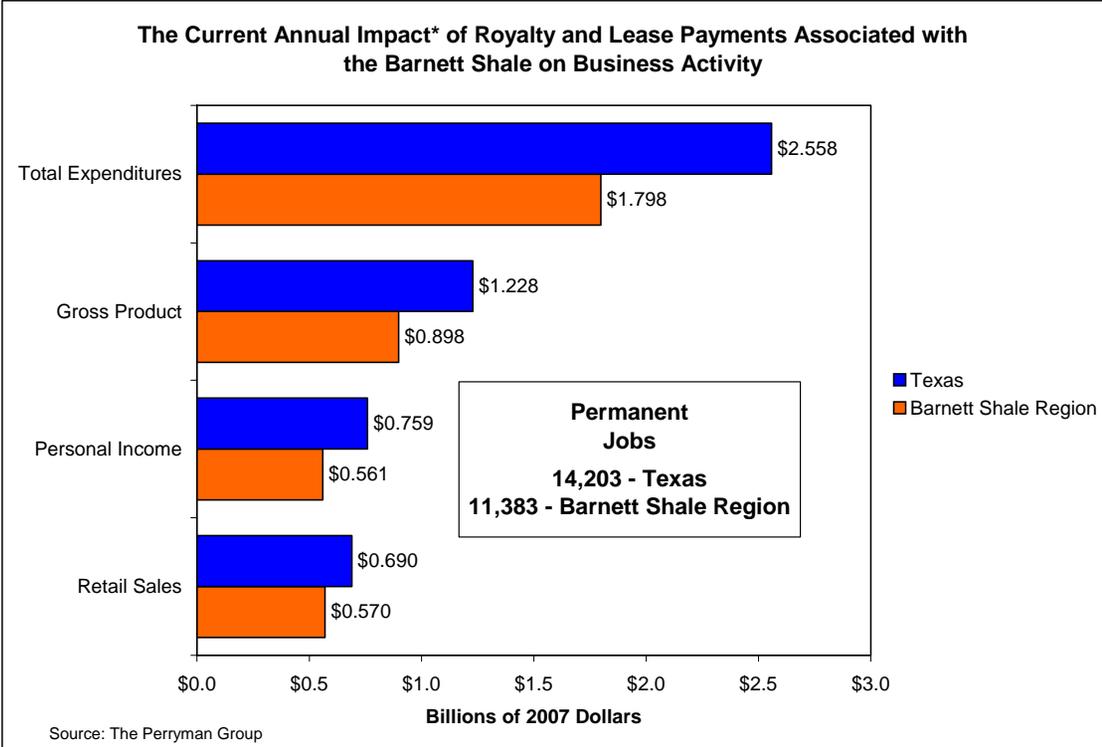


*Impact based on activity levels as of year-end 2007.



Current Impact of Royalty and Lease Payments

- Individuals, organizations, and government entities are receiving millions of dollars in lease bonus payments and royalties. These, in turn, lead to a substantial addition to business activity of **\$898 million in annual output and 11,383 jobs in the region.**

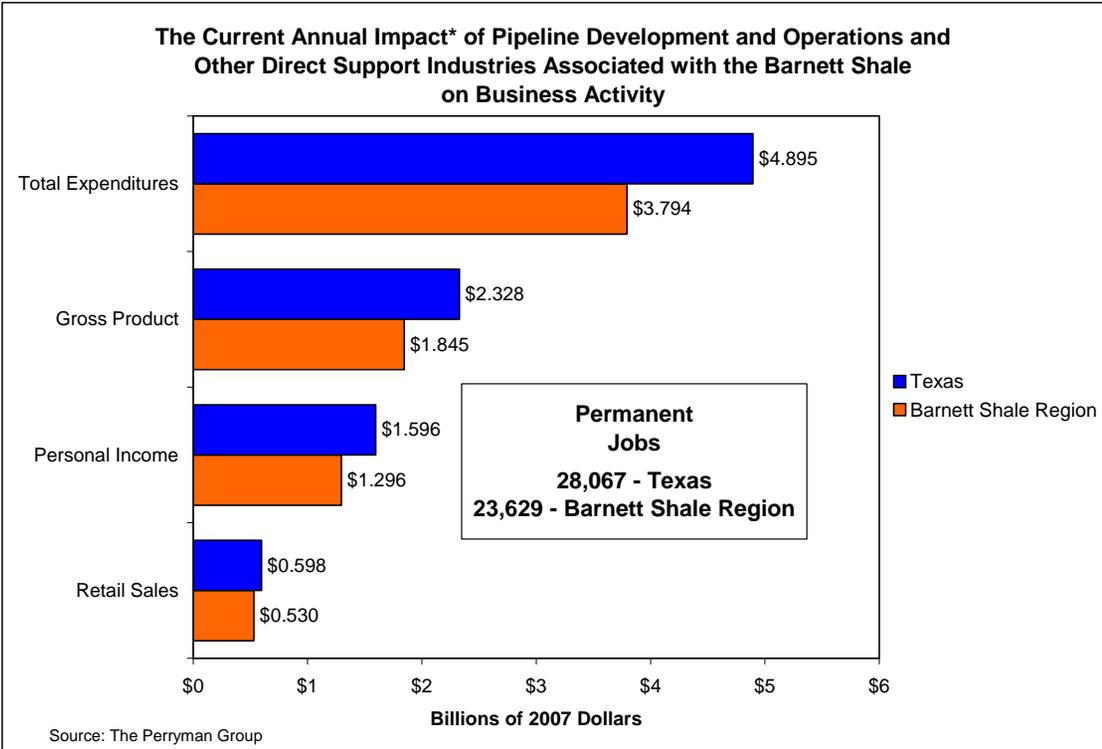


*Impact based on activity levels as of year-end 2007.



Current Impact of Pipeline Development and Operations and Other Direct Support Industries

- The expansion of production from the Barnett Shale leads to a need for additional pipeline infrastructure. The current effect of such development and operations includes more than **\$1.8 billion in annual output and 23,629 jobs in the region.**

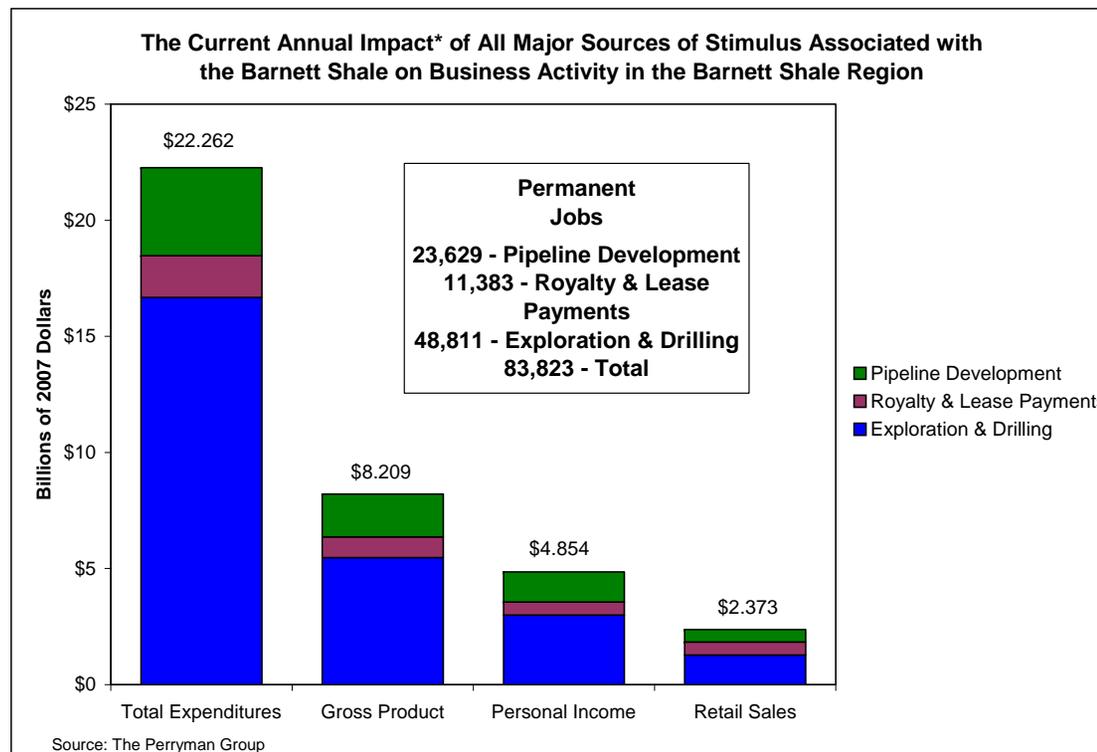


*Impact based on activity levels as of year-end 2007.



Current Impact of Activity in the Barnett Shale

- The total effects of Barnett Shale activity (based on year-end 2007 levels) were found to include **\$8.2 billion in annual output, \$2.4 billion in annual retail sales, and 83,823 permanent jobs**. This level represents a significant gain (more than 50%) from the estimated impact of almost \$5.2 billion in annual output and 55,385 permanent jobs in 2006.



*Impact based on activity levels as of year-end 2007.



Barnett Shale Activity as a Percentage of Total Economic Activity

- Even in the large and dynamic Fort Worth-area economy, the Barnett Shale is a major economic generator. The Perryman Group calculated the percentage of total private-sector activity linked to the Barnett Shale.

- The total impact of Barnett Shale activity represents
 - ▣ 8.1% of gross product,
 - ▣ 7.8% of personal income, and
 - ▣ 8.9% of employment.

- Clearly, exploration and production of natural gas from the Barnett Shale is a significant source of business activity. The achievement of such a large proportion of activity in an already dynamic and growing urban center is most impressive.





The Current Effect of Activity Related to the Barnett Shale on Selected Components of the Local Real Estate Market



Real Estate Market Effects

- Any economic activity has the potential to stimulate the real estate market. As companies expand, they may have need of additional office, industrial, retail, and other space.
- The commercial real estate market in the Fort Worth area is healthy, with falling vacancy rates (downtown office buildings are virtually full) and notable rent increases, particularly in the central business district (23.1%) and east side (24.3%). Much of this upward movement is credited to Barnett Shale activity.
- Moreover, as employment opportunities are generated, they lead to housing demand through the resulting inflow of people to the area, and increases in income and job security for workers.
- Barnett Shale activity has also supported the real estate market through royalty and bonus payments and other cash infusions to many local residents, with the increased volume of activity supporting retail development.
- The Perryman Group has developed models of the linkages of employment to demand for various types of real estate assets. (This system, the Texas Real Estate Absorption System, is described in further detail in Appendix A.)



Effect of Barnett Shale Activity on the Need for Office, Industrial, and Retail Space

- The estimated 83,823 persons working in the local area whose jobs are linked (either directly or through spillover effects) to the Barnett Shale lead to a notable need for office and industrial space.
- The Perryman Group's Multi-Regional Real Estate Absorption System allocates these jobs into occupational categories based on typical industry patterns. The resulting employment estimates by type of job are translated into office and industrial space requirements. It also permits the evaluation of retail space needs based on economic growth.
- Based on year-end 2007 levels of activity in the Barnett Shale (and related multiplier effects throughout the economy), the **incremental demand for office space that has developed since the inception of major drilling activity is estimated to be 3.93 million square feet.**
- There has also been a **cumulative increase of 6.18 million square feet in industrial space throughout the region and 5.09 million square feet in retail outlets.**



Examples of Direct Needs for Office Space

- The companies involved in exploration, drilling, production, and so on directly utilize space in the local area, and business in the Barnett Shale has led to expansion of office space for oil and gas related companies.
- Following are just a few examples of recent announcements.
 - In Plano, Denbury Resources Inc., is adding 350 additional employees and developing a new 102,000 square-foot building and parking garage in addition to the 100,000 square foot building they already occupy.
 - Range Resources Corp., moved into new offices in Fort Worth in the first half of 2007 occupying five floors and 80,000 square feet of space.
 - In Las Colinas, Pioneer Natural Resources added 70,000 square feet of Class A property in addition to their already occupied 223,000 square feet. Currently, the company has plans to reside in the area at least through 2020.
 - Crosstex Energy, LP, recently opened a new 12,000 square-foot regional office in Fort Worth, driven by its growth in the Barnett Shale region.



Effect of Barnett Shale Activity on the Need for Housing

- As noted, economic activity increases the demand for housing. The sizable economic stimulus provided by the Barnett Shale generates needs for residences for employees and their families.
- The Perryman Group's system translates incremental employment into additional housing units required, fully accounting for facts such as
 - some people involved in Barnett Shale work already living in the area,
 - not each additional worker involves an additional household, and
 - other factors influencing the translation of jobs to residential needs.
- Based on TPG's assessment, **activity in the Barnett Shale has led to an incremental need for housing totaling some 38,100 units over the past few years.**





Effect of the Barnett Shale on Local Government Tax Receipts



Effect of the Barnett Shale on Local Government Tax Receipts

- The effect of the Barnett Shale on local taxing entities stems from **two primary sources**:
 - **property taxes** paid on oil and gas properties and
 - **enhanced retail sales and real estate development** due to the economic impact of the Barnett Shale.

- Activity related to the Barnett Shale also leads to payments of
 - royalties and bonuses directly to cities, school districts, and others;
 - **severance taxes of approximately \$212.1 million to the State of Texas (up from \$165.4 million in 2006)**;
 - permits and fees payable to local governments;
 - other types of levies such as sales and hotel/motel occupancy taxes; and
 - additional State revenues stemming from various types of taxable activity.

- TPG estimated that the overall direct and indirect fiscal contribution (excluding royalty and lease payments to public entities) of Barnett Shale activity in 2006 totaled about \$718.5 million, including \$490.9 million in State revenues and \$227.7 million to local governments. **Based on year-end 2007 data, these tax receipts to State and local governments now exceed \$1 billion per year (\$715.5 million to the State and \$378.7 million to counties, cities, and school districts.**



Tax Effects by County

- Companies operating in the Barnett Shale paid approximately **\$155.1 million** in direct local taxes last year. Payments from other firms and indirect taxes also enhance the tax receipts. The total annual amount includes an estimated **\$82.9 million to counties, \$119.6 million to municipalities, and \$176.3 million to school districts.**

Estimated 2007 Tax Revenue by County Stemming From Barnett Shale Activity				
	Taxes Paid to the County	Taxes Paid to All Cities Within the County	Taxes Paid to All School Districts Within the County	County Totals
Bosque County	\$44,673	\$125,783	\$93,135	\$263,591
Clay County	\$44,438	\$136,817	\$92,284	\$273,539
Comanche County	\$34,947	\$106,608	\$72,604	\$214,159
Cooke County	\$3,908,812	\$11,981,780	\$8,118,965	\$24,009,556
Denton County	\$9,807,767	\$6,057,055	\$21,113,501	\$36,978,323
Eastland County	\$1,145,706	\$3,467,186	\$2,381,122	\$6,994,015
Ellis County	\$75,903	\$33,063	\$163,826	\$272,792
Erath County	\$352,414	\$577,348	\$747,539	\$1,677,301
Hill County	\$722,074	\$1,198,080	\$1,531,190	\$3,451,345
Hood County	\$2,617,445	\$4,544,592	\$5,544,175	\$12,706,211
Jack County	\$1,899,672	\$5,021,930	\$3,970,553	\$10,892,156
Johnson County	\$16,545,426	\$12,360,020	\$35,551,689	\$64,457,135
Montague County	\$799,125	\$2,458,560	\$1,659,580	\$4,917,266
Palo Pinto County	\$679,589	\$2,008,925	\$1,413,864	\$4,102,377
Parker County	\$5,174,657	\$5,732,525	\$11,061,262	\$21,968,444
Somervell County	\$90,952	\$15,159	\$197,062	\$303,172
Tarrant County	\$23,476,193	\$39,460,120	\$49,766,605	\$112,702,918
Wise County	\$15,437,794	\$24,315,696	\$32,776,664	\$72,530,153
TOTAL	\$82,857,587	\$119,601,247	\$176,255,621	\$378,714,455

Notes:
Individual entities are not presented due to data limitations and disclosure issues. Allocations across counties, cities, and school districts were based on observed patterns in drilling, employment, housing, and key economic variables, as well as survey responses. Significant fluctuations can occur from year to year and are based on drilling patterns and other factors.

Source: Survey Responses and The Perryman Group



Royalties, Bonuses, and Other Payments to Local Governments and Schools

- The terms of mineral lease offers have become increasingly favorable for landowners. In 2003, lease offers included signing bonuses of about \$150/acre and royalties ranging from 12.5%-18.75%. In 2007, the City of Fort Worth leased a tract of land for a bonus of \$23,511/acre and a 26% royalty.
- The City of Fort Worth has estimated it will earn \$972 million from lease signing bonuses and royalty payments over the next 20-30 years, up from an estimate of \$732 million dollars in 2007. Plans for the use of the money include the establishment of a trust fund and various long-term capital projects. For example, Fort Worth plans to use \$117 million from natural gas drilling revenue for a number of improvements to Lake Worth.
- The City of Arlington has used revenues from natural gas drilling on city property to fund \$500,000 in grant money for the Arlington Tomorrow Foundation. The City of Arlington leased 4,266 acres for horizontal drilling; the first two wells drilled on city-owned property began producing at the end of November 2007 and earned the city \$54,000 in royalties in approximately three months leading into March 2008.
- Johnson County has seen \$827,000 in contributions from energy companies from May-December 2007 to help with road and bridge repairs. The county said that the money is not required of energy companies but is a way to be a good neighbor.
- Chesapeake Energy has made arrangements with Tarrant County commissioners to drill for natural gas on 30.3 acres of county property with reported lease terms of \$6,220/acre signing bonus (total of \$219,597) with 25% royalty.
- Other cities and counties, as well as schools, continue to receive royalties, bonuses, and substantial gains in the size of the tax base.



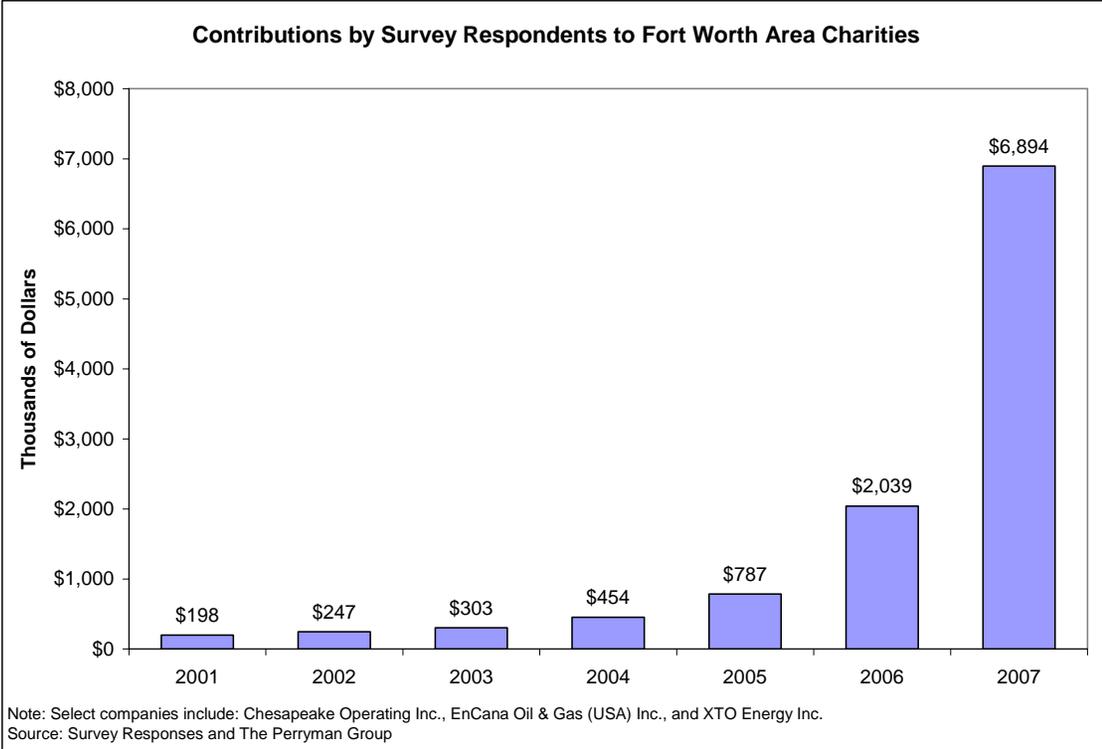


Charitable Contributions and Other Positive Effects of Barnett Shale Activity



Charitable Contributions

- The **companies operating in the Barnett Shale are contributing millions of dollars and many hours of employee time to local charities of many types.** Based on information provided by four survey respondents, donations from these firms alone total over \$6.8 million per year, more than tripling last year's reported numbers. This amount represents only a portion of the donations by firms operating in the Barnett Shale.



Representative Charitable Contributions

- **Contributions by firms operating in the Barnett Shale have provided funds for many types of charities,** and community projects throughout the Barnett Shale area receive assistance from oil and gas companies. The following list includes examples of some of these initiatives.
 - Devon Energy contributed \$215,556 in December 2007 to the Wise County United Way, putting the organization over its goal of \$325,000. Last year, Devon gave \$125,000 to the Wise County United Way. It also gave \$200,000 to support a new police and firefighter's memorial in Fort Worth.
 - XTO Energy funds the Tarrant Area Food Bank's "BackPacks for Kids" program, which extends to area schools in several counties. The program sends children home with a backpack full of food each weekend.
 - Friends of Tillery Park is building a new \$175,000 playground at Tillery Park. Last fall, Chesapeake Energy announced a donation of \$10,000. XTO and its agent, Fort Worth Energy, also donated \$25,000 each.
 - EnCana Oil & Gas donated 12 portable defibrillators to 5 north Texas school districts as part of their collaboration with HeartSine Technologies.
 - Chesapeake Energy gave a \$25,000 donation toward the Chesapeake Scholars Program, which awards \$5,000 scholarships college-bound graduates of Cleburne High School.
 - In addition, many firms have in-house programs that promote employee giving of both time and resources; for example, EnCana matches donations made by employees up to \$25,000 per employee each year, while EOG Resources matches gifts of up to \$60,000 per employee per year.



Royalties and Other Payments to Individuals and Organizations

- Individuals and organizations are benefiting from sizable lease bonus and royalty payments. In many areas, homeowners and neighborhoods have come together to negotiate leases.
 - A \$6,500/acre signing bonus and a 25% royalty was offered to Colleyville homeowners.
 - Caldwell Creek reported an offer of \$7,000/acre bonus and 25% royalty.
 - In 2007, the highest neighborhood lease went to a southwest Arlington neighborhood at \$16,850/acre signing bonus plus 25% royalty.
 - More recently (in 2008), a lease involving a \$22,000/acre bonus and 25% royalty was reached by Southeast Arlington Property Owners (SEAPO).

- In addition to these payments to individuals, many other organizations ranging from the Dallas/Fort Worth International Airport to local churches to various clubs have received sizable sums for leases on their property.





CONCLUSION



Conclusion

- Last year, the Barnett Shale produced an estimated 1 trillion cubic feet of gas, a 29% increase over 2006. Production growth has outpaced and exceeded predictions. In 1996, the US Geological Survey estimated that the Barnett Shale would produce 3 trillion cubic feet (TCF); in 2004, the number was increased to 26 TCF due to development. By 2006, estimates reached 39 TCF.
- Recent growth in the effect of the Barnett Shale on business activity has also been remarkable. **In the 2007 study, The Perryman Group projected (based on plans provided by the companies) that the economic impact would increase by a rate of about 19.4% per year relative to the 2006 levels. In reality, it expanded by 51.5% in 2007 alone.** Moreover, the prospects for additional expansion are outstanding.
- Experts are predicting 20 to 30 more years of Barnett Shale activity, with decades more production. The ultimate development of the Barnett Shale will depend on factors such as the pace of technological advancement, gas prices, and geology. Although the level of activity will peak at some point and then decline, the investment of the payments currently being received stands to permanently change the economy.
- Without a doubt, **exploration and production in the Barnett Shale is providing a major source of stimulus to the Fort Worth-area economy, helping ensure prosperity even in the face of a national economic slowdown.**
- Tens of billions of dollars of additional investment in the region will further enhance these positive economic effects, providing a wealth of **opportunities for individuals and firms from a variety of industries.**





APPENDICES





APPENDIX A: Methods and Terms Used in This Analysis





Methodology: Impact Assessment System



Impact System Methodology

- The basic modeling technique employed in this study is known as dynamic input-output analysis. This methodology 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.
- 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. The second step is the simulation of the input-output system to measure overall economic effects. In the case of a prospective evaluation, it is necessary to first calculate reasonable estimates of the direct activity.
- Once the direct input values were determined, the present study was conducted within the context 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. In addition, the model has been in operation and continually updated for over two decades. The systems used in the current simulations reflect the unique industrial structures of the economies of the areas analyzed.



Impact System Methodology (continued)

- In this instance, The Perryman Group utilized a variety of public and private sources of data regarding current and future production in the Barnett Shale, tax rates and collections, and other information necessary to the analysis. In addition, an extensive survey of the companies with operations in the Barnett Shale was conducted. While only six responses were obtained, the firms represent approximately 81% of total production.
- The direct inputs for assessing the value of exploration, drilling, and production activity were obtained from (1) survey responses; (2) data from the Texas Railroad Commission and various industry sources; and (3) employment information from the Texas Workforce Commission. This material was compiled on a county basis.
- The direct effects of royalties and related payments are based on current production levels and typical royalty rates. The amounts were fully adjusted to reflect those funds that are paid outside the region (and state) and are further reduced to account for out-of-area spending, savings, and taxes. The remaining financial resources are assumed to be spent in accordance with typical consumer patterns in the region as detailed by the US Department of Labor and ACCRA.



Impact System Methodology (continued)

- The direct effects of pipeline development and operations was derived from (1) survey research, (2) published reports and secondary research related to pipeline investments, and (3) standard employment data in this sector. The estimates are also incorporated in a multiple regression analysis of patterns of pipeline and field development in other areas. The relevant equations exhibited excellent empirical properties and conformed to observed patterns.
- As noted earlier, as the direct effects are determined, they are simulated within the context of the relevant geographic submodels of the USMRIAS. 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 models used for the present investigation have been thoroughly tested for reasonableness and historical reliability.



Impact System Methodology (continued)

- 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, healthcare 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.



Impact System Methodology (continued)

- 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. Note that all monetary values, unless otherwise noted, are given in constant (2007) dollars to eliminate the effects of inflation.
- The fiscal impacts are determined based on (1) direct tax payments as reported in the survey with appropriate extrapolations to other producers and (2) a fiscal report system that links the industrial findings for the assessment described above to the specific tax structure of Texas and the relevant local areas.
- 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.



Impact System Methodology (continued)

- A second measure of business activity frequently employed in this analysis is that of **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of, say, Amarillo is the amount of US output that is produced in that area. 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.



Impact System Methodology (continued)

- 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 1999 and \$1 million in 2000, it is appropriate to say that \$2 million was achieved in the 1999-2000 period. If the same area has 100 people working in 1999 and 100 in 2000, 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.





Methodology: Real Estate Absorption System



Texas Multi-Regional Real Estate Absorption System

- The Texas Multi-Regional Real Estate Absorption System is a model developed by The Perryman Group which allows such applications as (1) historical characterization of real estate absorption by category (office, industrial, retail, distribution, housing, etc.); (2) projections of future absorption; and (3) measurement of the impact of specific economic patterns or events (such as exploration and production and related activity in the Barnett Shale).
- The system is based on the simple notion that economic activity ultimately determines the need for real estate. Industrial space is needed when production increases, retail space is needed when purchasing expands, office space demands depend on the number of office workers, and housing is required when population expands. Although real estate is subject to cycles, long-term patterns are highly correlated with business activity.
- The first step in the process is to obtain the requisite information on employment by industry. This information may be derived from historical data, forecasts, or an impact assessment, as in the present instance. This information is then simulated for the study area to obtain employment by occupation using the relevant submodel of the Texas Multi-Regional Industry-Occupation System. The results are then linked to estimates of the square footage requirements for various types of occupations and activities obtained from the National Association of Industry and Office Parks and other primary sources. These estimates are frequently updated to reflect changing patterns in space utilization.
- With regard to housing, the system links employment growth to new housing requirements based on local patterns, as well as allocations to single and multi-family categories.





Methodology: Industry-Occupation System



Texas Multi-Regional Industry-Occupation System

- The Texas Multi-Regional Industry-Occupation System translates standard data on employment by industry into estimates of occupational categories at a highly detailed level.
- The modeling process begins with the industry-occupation coefficients compiled by the US Department of Labor based on extensive surveys of operating patterns in thousands of firms and other secondary sources. As an example, a typical tire plant of a given size requires machinists, mechanics, plant managers, administrative staff, custodial staff, shipping personnel, and numerous other types of workers. By compiling this information across the entire economy, a matrix is created which allows the data on employment by industry (which is regularly compiled) to be translated into employment by occupation.
- The Perryman Group takes this basic structure and links it specifically to the economy of Texas and its various metropolitan areas, regions, and counties. The Texas system accounts for productivity and production patterns in each area. It is also regularly updated to reflect evolving patterns. The system can be fully integrated with historical employment data and the projections obtained from the Texas Econometric Model. It can also be linked to results from the Texas Multi-Regional Impact Assessment System as in the present study. The system is highly detailed, providing results for approximately 700 occupational categories.





APPENDIX B: Detailed Sectoral Results



Detailed Sectoral Results

Table 1
The Current Annual Impact* of Exploration, Drilling, and Operations in the Barnett Shale on Business Activity in the Barnett Shale Region
Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$119,273,938	\$33,208,840	\$22,617,086	407
Forestry & Fishery Products	\$1,437,979	\$1,770,472	\$656,689	8
Coal Mining	\$6,246,666	\$1,817,266	\$1,914,906	13
Crude Petroleum & Natural Gas	\$10,003,192,282	\$2,192,345,421	\$1,011,107,048	5,625
Miscellaneous Mining	\$6,426,635	\$2,736,034	\$1,608,348	20
New Construction	\$0	\$0	\$0	0
Maintenance & Repair Construction	\$704,284,041	\$380,515,449	\$313,568,447	5,014
Food Products & Tobacco	\$144,503,513	\$37,179,383	\$18,992,964	357
Textile Mill Products	\$418,615	\$142,805	\$120,819	3
Apparel	\$40,795,990	\$22,415,973	\$11,358,533	345
Paper & Allied Products	\$23,173,338	\$10,658,934	\$4,818,787	82
Printing & Publishing	\$55,408,467	\$27,865,014	\$18,188,051	345
Chemicals & Petroleum Refining	\$172,278,558	\$30,357,541	\$14,254,616	115
Rubber and Leather Products	\$33,395,328	\$14,016,454	\$8,193,959	178
Lumber Products & Furniture	\$18,220,081	\$5,841,895	\$4,164,989	89
Stone, Clay, & Glass Products	\$41,965,696	\$21,331,740	\$11,156,572	194
Primary Metal	\$30,334,374	\$9,125,078	\$6,792,264	112
Fabricated Metal Products	\$124,112,324	\$46,261,520	\$29,866,499	573
Machinery, Except Electrical	\$80,809,691	\$34,257,404	\$24,473,632	286
Electric & Electronic Equipment	\$36,025,943	\$19,899,823	\$11,896,708	104
Motor Vehicles & Equipment	\$20,585,839	\$4,905,737	\$3,187,041	45
Transp Equip, Except Motor Vehicles	\$8,635,556	\$3,623,823	\$2,368,000	25
Instruments & Related Products	\$3,858,026	\$1,668,271	\$1,268,032	14
Miscellaneous Manufacturing	\$13,233,124	\$4,905,899	\$3,383,692	54
Transportation	\$260,096,154	\$169,881,090	\$112,353,254	1,762
Communication	\$116,033,761	\$71,771,802	\$30,641,659	302
Electric, Gas, Water, Sanitary Serv	\$394,749,108	\$88,340,931	\$38,549,649	178
Wholesale Trade	\$256,598,730	\$173,395,415	\$99,981,343	1,275
Retail Trade	\$823,549,954	\$683,151,285	\$408,502,651	12,148
Finance	\$161,424,320	\$89,898,141	\$52,347,942	520
Insurance	\$96,030,537	\$57,766,495	\$34,536,151	462
Real Estate	\$1,361,231,735	\$353,367,045	\$56,935,141	566
Hotels, Lodging Places, Amusements	\$76,835,809	\$40,214,084	\$26,381,841	727
Personal Services	\$171,234,035	\$105,690,974	\$82,229,200	1,570
Business Services	\$280,516,516	\$162,778,197	\$132,785,315	1,831
Eating & Drinking Places	\$449,638,849	\$263,814,914	\$140,363,658	7,198
Health Services	\$248,493,608	\$173,804,432	\$146,953,288	2,749
Miscellaneous Services	\$275,034,411	\$113,713,297	\$98,579,862	2,677
Households	\$10,948,278	\$10,948,278	\$10,716,591	841
Total	\$16,671,031,808	\$5,465,387,156	\$2,997,814,226	48,811

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

*Impact based on activity levels as of year-end 2007.

Table 2
The Current Annual Impact* of Exploration, Drilling, and Operations in the Barnett Shale on Business Activity in Texas
Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$156,156,236	\$43,419,978	\$29,571,435	536
Forestry & Fishery Products	\$3,275,144	\$3,991,972	\$1,480,557	21
Coal Mining	\$21,604,252	\$6,282,209	\$6,619,937	42
Crude Petroleum & Natural Gas	\$10,684,821,251	\$2,341,734,347	\$1,080,005,039	6,009
Miscellaneous Mining	\$8,930,299	\$3,802,595	\$2,235,278	27
New Construction	\$0	\$0	\$0	0
Maintenance & Repair Construction	\$752,863,061	\$406,476,442	\$334,961,778	5,356
Food Products & Tobacco	\$377,906,678	\$97,230,497	\$49,670,058	934
Textile Mill Products	\$4,381,046	\$1,471,480	\$1,244,878	27
Apparel	\$76,027,805	\$41,783,977	\$21,172,464	648
Paper & Allied Products	\$50,281,737	\$23,095,874	\$10,441,469	175
Printing & Publishing	\$80,262,105	\$40,375,132	\$26,353,723	510
Chemicals & Petroleum Refining	\$469,869,147	\$82,518,287	\$38,747,068	324
Rubber and Leather Products	\$50,098,774	\$21,045,175	\$12,302,862	265
Lumber Products & Furniture	\$22,794,235	\$7,330,718	\$5,226,376	111
Stone, Clay, & Glass Products	\$48,246,021	\$24,570,742	\$12,850,565	223
Primary Metal	\$73,468,923	\$22,084,076	\$16,438,379	276
Fabricated Metal Products	\$129,537,817	\$48,254,749	\$31,153,257	610
Machinery, Except Electrical	\$134,770,829	\$57,102,051	\$40,794,023	483
Electric & Electronic Equipment	\$55,234,721	\$30,475,481	\$18,219,340	159
Motor Vehicles & Equipment	\$26,405,621	\$6,279,929	\$4,079,837	58
Transp Equip, Except Motor Vehicles	\$14,023,268	\$5,888,403	\$3,847,601	37
Instruments & Related Products	\$11,674,686	\$5,042,480	\$3,832,865	42
Miscellaneous Manufacturing	\$22,538,750	\$8,372,801	\$5,774,924	96
Transportation	\$288,630,627	\$188,820,263	\$124,878,962	1,964
Communication	\$203,458,849	\$125,672,812	\$53,653,764	536
Electric, Gas, Water, Sanitary Serv	\$635,414,386	\$142,169,896	\$62,039,303	297
Wholesale Trade	\$392,417,652	\$265,186,488	\$152,908,830	1,927
Retail Trade	\$880,844,455	\$730,610,498	\$436,881,700	13,000
Finance	\$195,737,934	\$108,828,095	\$63,370,763	642
Insurance	\$192,265,498	\$115,635,695	\$69,131,597	934
Real Estate	\$1,914,172,077	\$519,399,943	\$83,686,523	823
Hotels, Lodging Places, Amusements	\$93,926,518	\$49,111,591	\$32,218,791	886
Personal Services	\$186,362,863	\$115,093,520	\$89,544,712	1,709
Business Services	\$439,445,618	\$257,677,397	\$210,198,731	2,904
Eating & Drinking Places	\$472,841,437	\$277,389,578	\$147,585,979	7,564
Health Services	\$307,461,067	\$214,836,725	\$181,646,333	3,408
Miscellaneous Services	\$287,535,291	\$118,582,228	\$102,800,767	2,792
Households	\$14,372,223	\$14,372,223	\$14,068,046	1,099
Total	\$19,780,058,901	\$6,572,016,167	\$3,581,638,515	57,456

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

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Detailed Sectoral Results (continued)

Table 3
The Current Annual Impact* of Royalty and Lease Payments Associated with the Barnett Shale on Business Activity in the Barnett Shale Region Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$31,650,139	\$8,606,138	\$5,861,206	42
Forestry & Fishery Products	\$373,133	\$391,155	\$145,178	0
Coal Mining	\$1,366,688	\$394,205	\$414,800	0
Crude Petroleum & Natural Gas	\$14,307,869	\$3,125,429	\$1,440,869	0
Miscellaneous Mining	\$443,106	\$189,635	\$111,962	0
New Construction	\$0	\$0	\$0	0
Maintenance & Repair Construction	\$49,000,400	\$25,110,591	\$20,692,359	156
Food Products & Tobacco	\$31,702,346	\$8,154,617	\$4,165,434	25
Textile Mill Products	\$104,428	\$22,626	\$18,927	0
Apparel	\$9,518,005	\$5,264,635	\$2,666,360	0
Paper & Allied Products	\$7,501,603	\$3,319,579	\$1,500,791	0
Printing & Publishing	\$13,334,120	\$6,751,601	\$4,406,695	0
Chemicals & Petroleum Refining	\$29,657,164	\$4,491,635	\$2,108,392	0
Rubber and Leather Products	\$6,966,661	\$2,996,498	\$1,751,592	0
Lumber Products & Furniture	\$3,363,507	\$1,178,608	\$840,547	0
Stone, Clay, & Glass Products	\$4,788,732	\$2,654,958	\$1,387,402	0
Primary Metal	\$1,441,720	\$398,657	\$296,379	0
Fabricated Metal Products	\$10,005,513	\$3,593,059	\$2,320,318	0
Machinery, Except Electrical	\$4,021,666	\$1,612,325	\$1,151,499	0
Electric & Electronic Equipment	\$4,319,197	\$2,274,656	\$1,360,138	0
Motor Vehicles & Equipment	\$4,399,317	\$989,934	\$643,035	0
Transp Equip, Except Motor Vehicles	\$1,484,176	\$635,444	\$413,697	0
Instruments & Related Products	\$761,709	\$312,316	\$237,773	0
Miscellaneous Manufacturing	\$2,777,753	\$1,095,372	\$756,097	0
Transportation	\$54,453,607	\$37,486,710	\$24,792,446	164
Communication	\$47,321,783	\$29,304,382	\$12,511,634	61
Electric, Gas, Water, Sanitary Serv	\$119,142,506	\$26,739,572	\$11,668,413	0
Wholesale Trade	\$46,787,920	\$31,661,688	\$18,255,803	84
Retail Trade	\$397,435,420	\$329,328,572	\$196,929,486	5,671
Finance	\$22,090,146	\$11,666,114	\$6,793,421	0
Insurance	\$19,848,699	\$11,879,797	\$7,101,850	0
Real Estate	\$326,352,604	\$26,570,207	\$4,281,173	0
Hotels, Lodging Places, Amusements	\$29,292,222	\$15,455,699	\$10,139,150	184
Personal Services	\$87,721,948	\$54,567,820	\$42,455,104	633
Business Services	\$58,083,423	\$32,870,817	\$26,814,625	155
Eating & Drinking Places	\$172,501,848	\$101,022,803	\$53,750,495	2,680
Health Services	\$103,682,308	\$73,559,222	\$62,195,866	1,031
Miscellaneous Services	\$77,986,138	\$30,481,161	\$26,423,908	488
Households	\$1,822,474	\$1,822,474	\$1,784,025	9
Total	\$1,797,811,997	\$897,980,713	\$560,588,848	11,383

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

*Impact based on activity levels as of year-end 2007.

Table 4
The Current Annual Impact* of Royalty and Lease Payments Associated with the Barnett Shale on Business Activity in Texas Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$47,297,784	\$12,861,254	\$8,757,802	72
Forestry & Fishery Products	\$1,193,914	\$1,252,287	\$463,337	0
Coal Mining	\$6,393,688	\$1,849,700	\$1,945,469	0
Crude Petroleum & Natural Gas	\$34,220,366	\$7,472,679	\$3,447,666	0
Miscellaneous Mining	\$824,521	\$352,063	\$207,954	0
New Construction	\$0	\$0	\$0	0
Maintenance & Repair Construction	\$61,840,915	\$31,691,166	\$26,114,703	221
Food Products & Tobacco	\$96,711,595	\$24,876,097	\$12,708,024	63
Textile Mill Products	\$1,273,265	\$288,218	\$246,262	0
Apparel	\$17,631,437	\$9,750,146	\$4,938,919	0
Paper & Allied Products	\$15,252,730	\$6,749,399	\$3,050,911	0
Printing & Publishing	\$21,469,474	\$10,872,005	\$7,094,166	0
Chemicals & Petroleum Refining	\$80,223,907	\$12,147,095	\$5,705,067	0
Rubber and Leather Products	\$11,652,747	\$5,013,709	\$2,929,604	0
Lumber Products & Furniture	\$4,817,612	\$1,687,350	\$1,205,771	0
Stone, Clay, & Glass Products	\$6,256,876	\$3,471,380	\$1,813,217	0
Primary Metal	\$5,040,160	\$1,394,572	\$1,037,036	0
Fabricated Metal Products	\$12,743,595	\$4,576,822	\$2,954,230	0
Machinery, Except Electrical	\$7,877,643	\$3,154,888	\$2,254,664	0
Electric & Electronic Equipment	\$7,635,942	\$4,022,277	\$2,402,421	0
Motor Vehicles & Equipment	\$6,147,426	\$1,383,627	\$898,400	0
Transp Equip, Except Motor Vehicles	\$2,672,397	\$1,140,101	\$745,170	0
Instruments & Related Products	\$2,149,775	\$881,070	\$669,467	0
Miscellaneous Manufacturing	\$4,928,886	\$1,945,469	\$1,342,583	0
Transportation	\$72,352,648	\$49,736,688	\$32,894,201	226
Communication	\$75,451,899	\$46,621,932	\$19,904,343	72
Electric, Gas, Water, Sanitary Serv	\$183,766,076	\$41,250,687	\$17,999,918	0
Wholesale Trade	\$77,665,520	\$52,556,842	\$30,304,803	138
Retail Trade	\$481,100,829	\$398,655,092	\$238,383,310	6,821
Finance	\$32,726,378	\$17,283,023	\$10,063,902	0
Insurance	\$44,955,560	\$26,908,213	\$16,084,548	0
Real Estate	\$448,738,371	\$44,076,314	\$7,101,463	0
Hotels, Lodging Places, Amusements	\$38,180,622	\$20,108,649	\$13,191,427	216
Personal Services	\$106,436,202	\$66,202,486	\$51,506,125	858
Business Services	\$100,382,721	\$59,009,079	\$48,203,480	283
Eating & Drinking Places	\$208,739,766	\$122,246,214	\$65,041,407	3,206
Health Services	\$133,282,394	\$94,465,139	\$79,873,668	1,314
Miscellaneous Services	\$95,313,375	\$37,294,079	\$32,331,447	645
Households	\$3,036,318	\$3,036,318	\$2,971,560	69
Total	\$2,558,385,333	\$1,228,365,130	\$758,788,444	14,203

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

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Detailed Sectoral Results (continued)

Table 5
The Current Annual Impact* of Pipeline Development and Operations and Other Direct Support Industries Associated with the Barnett Shale on Business Activity in the Barnett Shale Region—Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$54,723,199	\$15,073,620	\$10,265,498	93
Forestry & Fishery Products	\$575,938	\$552,478	\$205,058	0
Coal Mining	\$1,478,817	\$425,040	\$448,107	0
Crude Petroleum & Natural Gas	\$26,072,177	\$5,637,141	\$2,599,536	0
Miscellaneous Mining	\$2,692,476	\$1,185,380	\$695,860	0
New Construction	\$1,322,154,114	\$601,020,851	\$495,278,931	7,886
Maintenance & Repair Construction	\$61,424,300	\$32,475,419	\$26,762,398	364
Food Products & Tobacco	\$53,138,292	\$13,792,567	\$7,045,417	91
Textile Mill Products	\$232,564	\$54,046	\$45,906	0
Apparel	\$19,576,149	\$10,913,794	\$5,529,626	131
Paper & Allied Products	\$6,888,654	\$2,941,260	\$1,329,642	0
Printing & Publishing	\$20,501,781	\$10,166,755	\$6,635,966	74
Chemicals & Petroleum Refining	\$47,025,904	\$7,310,069	\$3,432,322	7
Rubber and Leather Products	\$13,989,007	\$6,104,466	\$3,568,643	69
Lumber Products & Furniture	\$7,978,551	\$2,760,067	\$1,968,856	0
Stone, Clay, & Glass Products	\$28,019,663	\$14,123,440	\$7,386,945	92
Primary Metal	\$32,260,830	\$9,985,715	\$7,433,380	132
Fabricated Metal Products	\$164,278,028	\$64,102,751	\$41,384,803	773
Machinery, Except Electrical	\$12,943,924	\$5,337,288	\$3,813,865	41
Electric & Electronic Equipment	\$7,257,435	\$3,914,755	\$2,339,450	0
Motor Vehicles & Equipment	\$6,343,484	\$1,304,934	\$848,594	0
Transp Equip, Except Motor Vehicles	\$2,126,831	\$872,888	\$570,419	0
Instruments & Related Products	\$1,137,009	\$492,135	\$373,967	0
Miscellaneous Manufacturing	\$5,378,558	\$2,083,468	\$1,436,549	0
Transportation	\$118,984,895	\$78,321,917	\$51,800,217	572
Communication	\$40,017,039	\$24,787,918	\$10,582,305	37
Electric, Gas, Water, Sanitary Serv	\$117,705,824	\$26,508,098	\$11,567,284	0
Wholesale Trade	\$99,448,364	\$67,319,310	\$38,817,122	396
Retail Trade	\$367,559,981	\$304,529,770	\$182,098,193	5,211
Finance	\$48,759,585	\$26,419,637	\$15,384,366	95
Insurance	\$32,931,544	\$19,663,791	\$11,755,504	115
Real Estate	\$327,813,839	\$42,504,394	\$6,847,691	41
Hotels, Lodging Places, Amusements	\$31,549,154	\$16,495,893	\$10,821,665	266
Personal Services	\$73,802,007	\$45,316,896	\$35,257,305	633
Business Services	\$240,030,127	\$153,964,804	\$125,595,995	1,649
Eating & Drinking Places	\$162,771,937	\$95,377,550	\$50,745,870	2,441
Health Services	\$110,769,588	\$77,534,344	\$65,556,514	1,110
Miscellaneous Services	\$118,155,460	\$48,796,887	\$42,302,934	983
Households	\$5,250,104	\$5,250,104	\$5,138,341	329
Total	\$3,793,547,134	\$1,845,421,640	\$1,295,671,044	23,629

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

*Impact based on activity levels as of year-end 2007.

Table 6
The Current Annual Impact* of Pipeline Development and Operations and Other Direct Support Industries Associated with the Barnett Shale on Business Activity in Texas—Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$67,223,604	\$18,502,225	\$12,600,129	104
Forestry & Fishery Products	\$1,464,947	\$1,419,994	\$523,573	0
Coal Mining	\$7,964,656	\$2,292,615	\$2,415,576	0
Crude Petroleum & Natural Gas	\$53,909,512	\$11,661,399	\$5,379,845	0
Miscellaneous Mining	\$4,031,248	\$1,773,009	\$1,040,535	0
New Construction	\$1,322,154,114	\$601,020,851	\$495,278,931	7,886
Maintenance & Repair Construction	\$72,768,718	\$38,380,812	\$31,631,215	426
Food Products & Tobacco	\$142,780,745	\$37,042,792	\$18,926,636	273
Textile Mill Products	\$2,037,439	\$474,653	\$400,613	0
Apparel	\$33,726,829	\$18,795,743	\$9,526,120	206
Paper & Allied Products	\$22,604,869	\$9,941,277	\$4,494,002	0
Printing & Publishing	\$32,316,091	\$16,048,307	\$10,475,427	105
Chemicals & Petroleum Refining	\$154,651,045	\$24,015,607	\$11,276,652	104
Rubber and Leather Products	\$22,032,376	\$9,610,738	\$5,615,189	106
Lumber Products & Furniture	\$10,248,017	\$3,547,339	\$2,527,959	0
Stone, Clay, & Glass Products	\$35,916,317	\$18,130,699	\$9,483,811	106
Primary Metal	\$80,051,143	\$24,762,624	\$18,432,151	324
Fabricated Metal Products	\$184,605,768	\$72,003,191	\$46,482,972	862
Machinery, Except Electrical	\$20,034,601	\$8,252,886	\$5,894,163	103
Electric & Electronic Equipment	\$18,976,878	\$10,228,184	\$6,108,352	0
Motor Vehicles & Equipment	\$11,658,755	\$2,407,643	\$1,561,464	0
Transp Equip, Except Motor Vehicles	\$6,001,258	\$2,464,495	\$1,609,062	0
Instruments & Related Products	\$5,177,556	\$2,234,440	\$1,701,612	0
Miscellaneous Manufacturing	\$9,255,079	\$3,588,326	\$2,475,073	0
Transportation	\$142,283,615	\$93,779,069	\$62,023,572	763
Communication	\$87,044,016	\$53,815,639	\$22,975,072	208
Electric, Gas, Water, Sanitary Serv	\$179,768,006	\$40,497,581	\$17,670,590	0
Wholesale Trade	\$178,198,609	\$120,629,375	\$69,657,206	802
Retail Trade	\$411,852,329	\$341,232,111	\$204,049,367	5,868
Finance	\$62,458,560	\$33,803,514	\$19,682,908	95
Insurance	\$80,186,003	\$47,884,456	\$28,625,959	309
Real Estate	\$448,241,976	\$62,570,943	\$10,081,425	108
Hotels, Lodging Places, Amusements	\$43,315,091	\$22,607,513	\$14,833,247	313
Personal Services	\$84,131,311	\$51,723,991	\$40,242,405	725
Business Services	\$395,264,583	\$254,675,970	\$207,748,754	2,666
Eating & Drinking Places	\$185,769,264	\$108,848,982	\$57,914,317	2,789
Health Services	\$140,633,567	\$98,388,098	\$83,185,970	1,376
Miscellaneous Services	\$127,712,154	\$52,571,492	\$45,574,652	1,038
Households	\$6,302,709	\$6,302,709	\$6,170,493	402
Total	\$4,894,753,356	\$2,327,931,292	\$1,596,196,997	28,067

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

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Detailed Sectoral Results (continued)

Table 7
The Current Annual Impact* of All Major Sources of Stimulus Associated with the Barnett Shale on Business Activity in the Barnett Shale Region Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$205,647,276	\$56,888,599	\$38,743,790	541
Forestry & Fishery Products	\$2,387,049	\$2,714,104	\$1,006,924	8
Coal Mining	\$9,092,171	\$2,636,511	\$2,777,813	13
Crude Petroleum & Natural Gas	\$10,043,572,328	\$2,201,107,991	\$1,015,147,454	5,625
Miscellaneous Mining	\$9,562,218	\$4,111,049	\$2,416,169	20
New Construction	\$1,322,154,114	\$601,020,851	\$495,278,931	7,886
Maintenance & Repair Construction	\$814,708,742	\$438,101,459	\$361,023,204	5,535
Food Products & Tobacco	\$229,344,151	\$59,126,567	\$30,203,815	474
Textile Mill Products	\$755,607	\$219,477	\$185,652	3
Apparel	\$69,890,144	\$38,594,402	\$19,554,519	477
Paper & Allied Products	\$37,363,594	\$16,919,774	\$7,649,219	82
Printing & Publishing	\$89,244,368	\$44,783,369	\$29,230,712	419
Chemicals & Petroleum Refining	\$248,961,626	\$42,159,245	\$19,795,329	122
Rubber and Leather Products	\$54,350,995	\$23,117,419	\$13,514,195	247
Lumber Products & Furniture	\$29,562,140	\$9,780,570	\$6,974,392	89
Stone, Clay, & Glass Products	\$74,774,091	\$38,110,138	\$19,930,918	287
Primary Metal	\$64,036,924	\$19,509,451	\$14,522,023	243
Fabricated Metal Products	\$298,395,865	\$113,957,330	\$73,571,619	1,345
Machinery, Except Electrical	\$97,775,280	\$41,207,018	\$29,438,996	327
Electric & Electronic Equipment	\$47,602,575	\$26,089,233	\$15,596,295	104
Motor Vehicles & Equipment	\$31,328,639	\$7,200,605	\$4,678,671	45
Transp Equip, Except Motor Vehicles	\$12,246,564	\$5,132,154	\$3,352,116	25
Instruments & Related Products	\$5,756,744	\$2,472,722	\$1,879,772	14
Miscellaneous Manufacturing	\$21,389,435	\$8,084,740	\$5,576,339	54
Transportation	\$433,534,656	\$285,689,717	\$188,945,917	2,497
Communication	\$203,372,583	\$125,864,102	\$53,735,597	400
Electric, Gas, Water, Sanitary Serv	\$631,597,439	\$141,588,601	\$61,785,346	178
Wholesale Trade	\$402,835,014	\$272,376,413	\$157,054,268	1,755
Retail Trade	\$1,588,545,356	\$1,317,009,628	\$787,530,330	23,030
Finance	\$232,274,051	\$127,983,892	\$74,525,729	615
Insurance	\$148,810,780	\$89,310,082	\$53,392,505	576
Real Estate	\$2,015,398,178	\$422,441,645	\$68,064,005	606
Hotels, Lodging Places, Amusements	\$137,677,185	\$72,165,676	\$47,342,655	1,177
Personal Services	\$332,757,991	\$205,575,691	\$159,941,609	2,836
Business Services	\$578,630,066	\$349,613,818	\$285,195,936	3,635
Eating & Drinking Places	\$784,912,634	\$460,215,268	\$244,860,022	12,318
Health Services	\$462,945,505	\$324,897,998	\$274,705,668	4,890
Miscellaneous Services	\$471,176,009	\$192,991,345	\$167,306,704	4,148
Households	\$18,020,856	\$18,020,856	\$17,638,957	1,178
Total	\$22,262,390,940	\$8,208,789,508	\$4,854,074,117	83,823

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

*Impact based on activity levels as of year-end 2007.

Table 8
The Current Annual Impact* of All Major Sources of Stimulus Associated with the Barnett Shale on Business Activity in Texas Detailed Industrial Category

Category	Total Expenditures	Gross Product	Personal Income	Employment (Permanent Jobs)
Agricultural Products & Services	\$270,677,623	\$74,783,457	\$50,929,365	713
Forestry & Fishery Products	\$5,934,005	\$6,664,253	\$2,467,467	21
Coal Mining	\$35,962,596	\$10,424,525	\$10,980,982	42
Crude Petroleum & Natural Gas	\$10,772,951,129	\$2,360,868,425	\$1,088,832,550	6,009
Miscellaneous Mining	\$13,786,068	\$5,927,667	\$3,483,768	27
New Construction	\$1,322,154,114	\$601,020,851	\$495,278,931	7,886
Maintenance & Repair Construction	\$887,472,693	\$476,548,419	\$392,707,695	6,003
Food Products & Tobacco	\$617,399,018	\$159,149,386	\$81,304,718	1,271
Textile Mill Products	\$7,691,751	\$2,234,351	\$1,891,753	27
Apparel	\$127,386,072	\$70,329,685	\$35,637,503	854
Paper & Allied Products	\$88,139,337	\$39,786,550	\$17,986,382	175
Printing & Publishing	\$134,047,670	\$67,295,444	\$43,923,316	615
Chemicals & Petroleum Refining	\$704,744,098	\$118,680,989	\$55,728,787	428
Rubber and Leather Products	\$83,783,897	\$35,669,622	\$20,847,655	371
Lumber Products & Furniture	\$37,859,864	\$12,565,407	\$8,960,105	111
Stone, Clay, & Glass Products	\$90,419,213	\$46,172,822	\$24,147,594	329
Primary Metal	\$158,560,225	\$48,241,272	\$35,907,565	600
Fabricated Metal Products	\$326,887,181	\$124,834,762	\$80,590,460	1,473
Machinery, Except Electrical	\$162,683,073	\$68,509,825	\$48,942,850	586
Electric & Electronic Equipment	\$81,847,541	\$44,725,942	\$26,730,114	159
Motor Vehicles & Equipment	\$44,211,802	\$10,071,199	\$6,539,701	58
Transp Equip, Except Motor Vehicles	\$22,696,923	\$9,493,000	\$6,201,833	37
Instruments & Related Products	\$19,002,017	\$8,157,990	\$6,203,945	42
Miscellaneous Manufacturing	\$36,722,714	\$13,906,596	\$9,592,579	96
Transportation	\$503,266,890	\$332,336,020	\$219,796,734	2,953
Communication	\$365,954,764	\$226,110,382	\$96,533,180	815
Electric, Gas, Water, Sanitary Serv	\$998,948,468	\$223,918,163	\$97,709,811	297
Wholesale Trade	\$648,281,782	\$438,372,706	\$252,770,839	2,867
Retail Trade	\$1,773,797,612	\$1,470,497,702	\$879,314,377	25,689
Finance	\$290,922,872	\$159,914,632	\$93,117,573	737
Insurance	\$317,407,060	\$190,428,364	\$113,842,104	1,243
Real Estate	\$2,811,152,424	\$626,047,199	\$100,869,411	931
Hotels, Lodging Places, Amusements	\$175,422,231	\$91,827,754	\$60,243,465	1,415
Personal Services	\$376,930,376	\$233,019,997	\$181,293,242	3,292
Business Services	\$935,092,922	\$571,443,446	\$466,150,984	5,853
Eating & Drinking Places	\$867,350,466	\$508,484,774	\$270,541,703	13,559
Health Services	\$581,377,028	\$407,689,963	\$344,705,972	6,098
Miscellaneous Services	\$510,560,820	\$208,447,800	\$180,706,866	4,475
Households	\$23,711,249	\$23,711,249	\$23,210,099	1,570
Total	\$27,233,197,590	\$10,128,312,589	\$5,936,623,957	99,726

NOTE: All monetary values are given in constant 2007 dollars.

SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

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