

# **IMPACT OF SHALE TECHNOLOGY ON HOUSTON REAL ESTATE**

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- Houston for decades has been the energy capital of the world.
- 50% of its trade in business is related to the search for, development, transportation and marketing of fossil fuels.
- Improved technology for the production of oil and gas from shale formations has caused a boom-like economy for Houston, especially in the real estate sector.

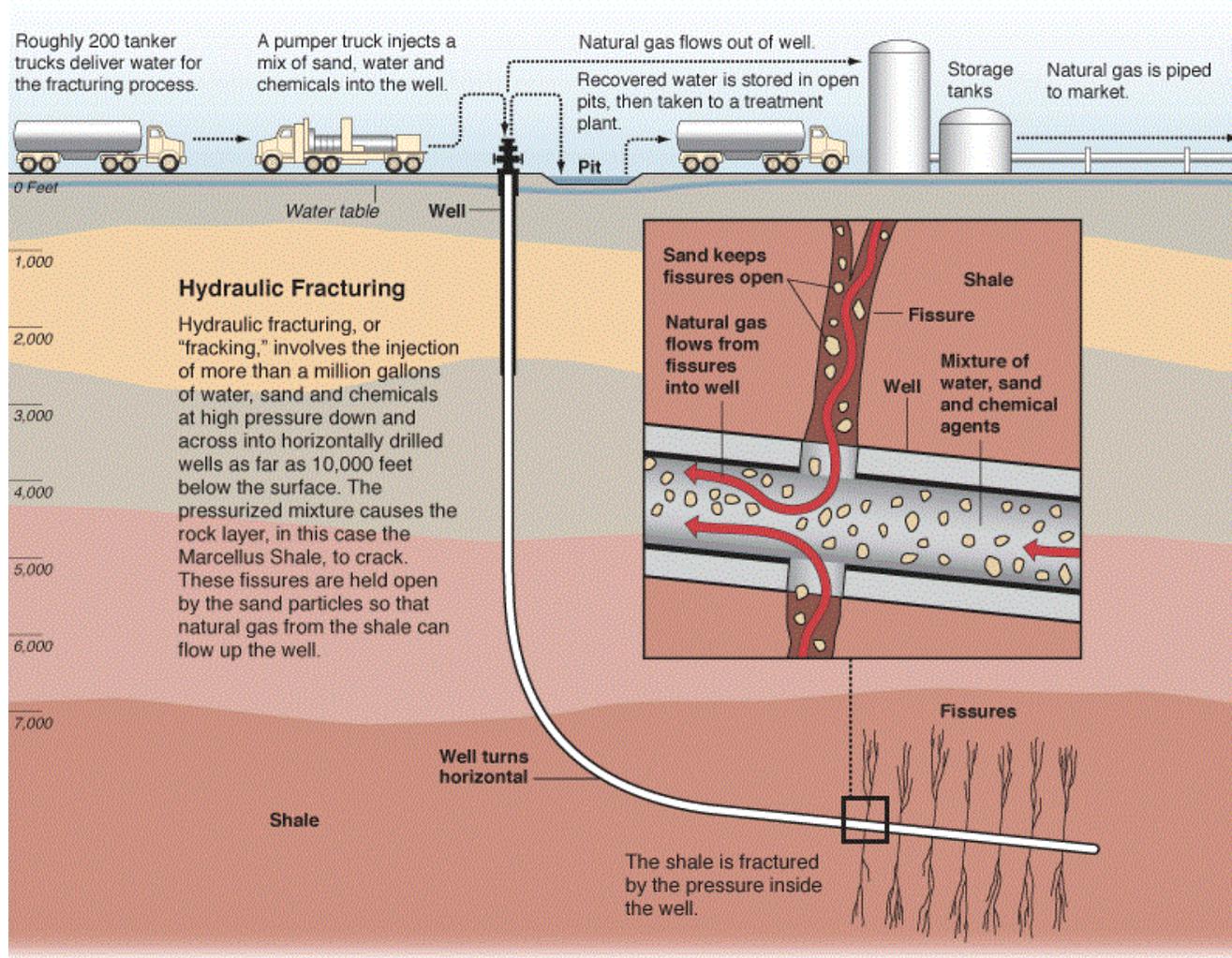
- Jobs drive real estate.
- Houston has recovered 2.3 times as many jobs as it lost in the recession. In comparison, the 10 largest cities in the United States have recovered an average of only 98% of jobs lost.
- Key word here is “average.”
- By way of example, Los Angeles has recovered only 43% of the jobs it lost, as opposed to Houston recovering 230%.
- The energy industry has been the major reason for job increase in Houston.
- Improved technology in production of shale formations is the primary driver for energy industry job increase.

- What is the new shale technology?
- The energy industry has known for years that the shale formations contained vast amounts of oil and gas.
- Shale gas and oil are extracted by hydraulic fracturing (“fracking”).
- The new technology is a combination of fracking and horizontal drilling.
- Fracking allows for the access to deep shale natural gas and oil formations that exist approximately 8,000 feet below the surface.
- The process involves vertical drilling of approximately 8,000 feet to the shale formation and then a 90° turn for horizontal drilling through the shale formation for a mile or more.
- Fracking fluids, comprised of approximately 98% water, are then injected at high pressure into shale formations causing fractures in the rock and allowing natural gas and oil to flow into the wellbore and then to the surface.

➤ How deep is 8,000 feet?

- About 3 of the Burj Khalifa “The Tallest Building in the World” skyscrapers stacked end to end
- More than 5 Petronas Twin Towers in Malaysia stacked end to end
- More than 5½ Empire State Buildings stacked end to end
- Almost 2,000 feet deeper than the deepest part of the Grand Canyon
- About 26 football fields laid out goal post to goal post

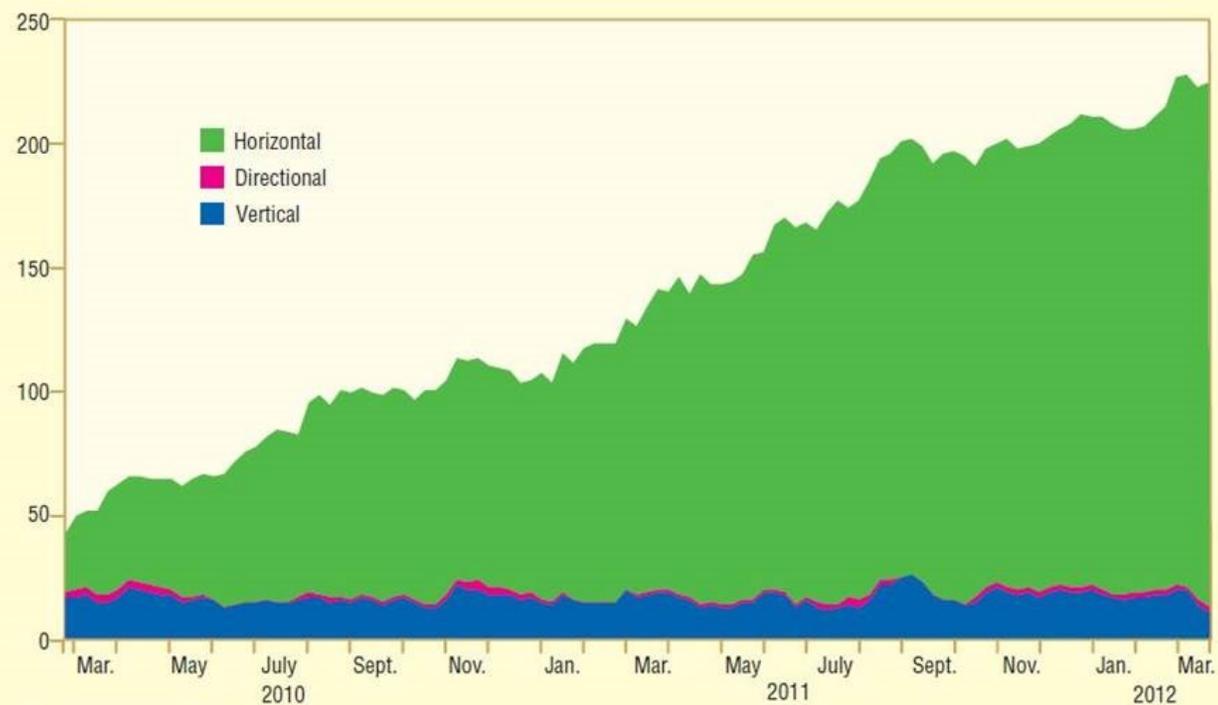




Graphic by Al Granberg

### Horizontal Drilling Dominates in Eagle Ford Counties

Number of rigs



NOTE: Data are weekly.  
SOURCE: Baker Hughes.

- Investment in Eagle Ford Shale in 2013 estimated \$28 billion
  - 27% of United States energy industry capital will be in Eagle Ford.
  - Spending for drilling, hydraulic fracturing, pipelines and coastal refineries.
  - Between 2012 and 2015 the energy industry will sink more than \$116 billion into Eagle Ford.
  - As of May 2013, there are 238 drilling rigs in Eagle Ford.
  - 20.81 trillion cubic feet of gas reserves.
  - 3.351 billion barrels of oil reserves.
  - Eagle Ford is 3,000 square miles of surface area.

- Houston is home to 25 Fortune 500 companies and nearly 50% of the Fortune 1000 companies located in Texas. Almost every major energy company is headquartered in Houston.
- Over the next five years, Houston will grow faster than any other major metropolitan area in Texas and the majority of this growth will be due to the energy industry.
- Approximately 58 percent of downtown's occupied space is used by the energy industry.

➤ Office Space

- All major business corridors
- Overall vacancy rate for office buildings fell from 12.5% to 10.7% last year
- Vacancy rates in downtown office space approximately 6%-7%
- Rents are accelerating
- Three new office towers downtown anticipated featuring high-end amenities for energy companies

➤ Industrial and the Port of Houston

➤ Residential

➤ Retail

- Exxon Mobil Corp.'s new 385-acre campus in north Houston
  - ~10,000 employees are expected at the site by 2015



- Shell Oil Co. renewed its office space lease at One Shell Plaza and Two Shell Plaza in downtown
  - "Largest Lease Transaction in the World"
  - One Shell Plaza has 804,491 square feet of space
  - Two Shell Plaza has 471,934 square feet of space



- Hess tower in downtown is fully leased through June 2026 to Hess Corp.
  - \$523.81-per-square-foot price set a record for the highest per-square-foot price for an office building sale in Houston
  - The 845,000-square-foot tower was designated as LEED Platinum



- BG Group Place is a new 46-story office tower in downtown
  - Pre-certified Platinum LEED



- The **Energy Corridor District** in west Houston includes more than 78,000 employees and more than 300 major energy and engineering companies. The corridor has more than 3,500 acres and more than 20 million square feet of office space.
  
- Largest employers
  - BP America Inc., energy, 6,350 employees
  - Shell Exploration and Production, energy, 3,000 employees
  - ConocoPhillips, energy, 2,600 employees
  - Mustang Engineering/Wood Group, energy engineering, 1,900 employees
  - Foster Wheeler USA, energy engineering, 1,000 employees
  - Citgo Petroleum Corp., refiner, transporter and marketer of fuel, 845 employees
  - ExxonMobil Chemical, chemical manufacturing, 750 employees
  - WorleyParsons, engineering, 700 employees

- The explosion of oil and gas production in the Eagle Ford Shale as a result of horizontal drilling and hydraulic fracturing has resulted in an enormous boost to the Houston economy with a ripple effect throughout all areas of Houston real estate.
- Improved shale technology and the abundance of shale in the United States has become a game changer with respect to United States dependency on foreign oil and gas.
- United States will be an exporter of liquefied natural gas which is a direct result of the abundance of gas production through advanced shale fracking technologies.