Harris County

Appraisal District

Texas

2020

Market Trends Report

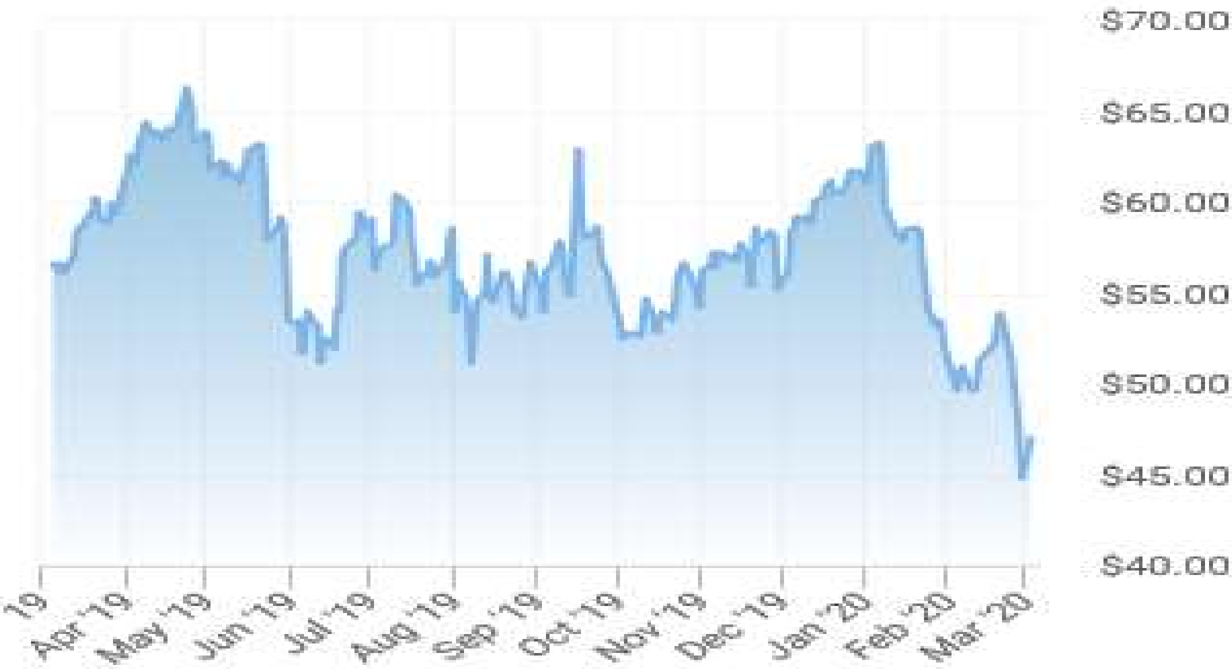
Table of Contents

2019 Residential Real Estate Market Overview

Despite the numerous issues and challenges the greater Houston Metro area has faced, Houston's economy and residential markets are doing well. The stability in Houston's economy and housing market can be best identified by several key metrics that are indicative of a healthy Houston: Oil prices, Job Growth, Home Inventory

OIL PRICES

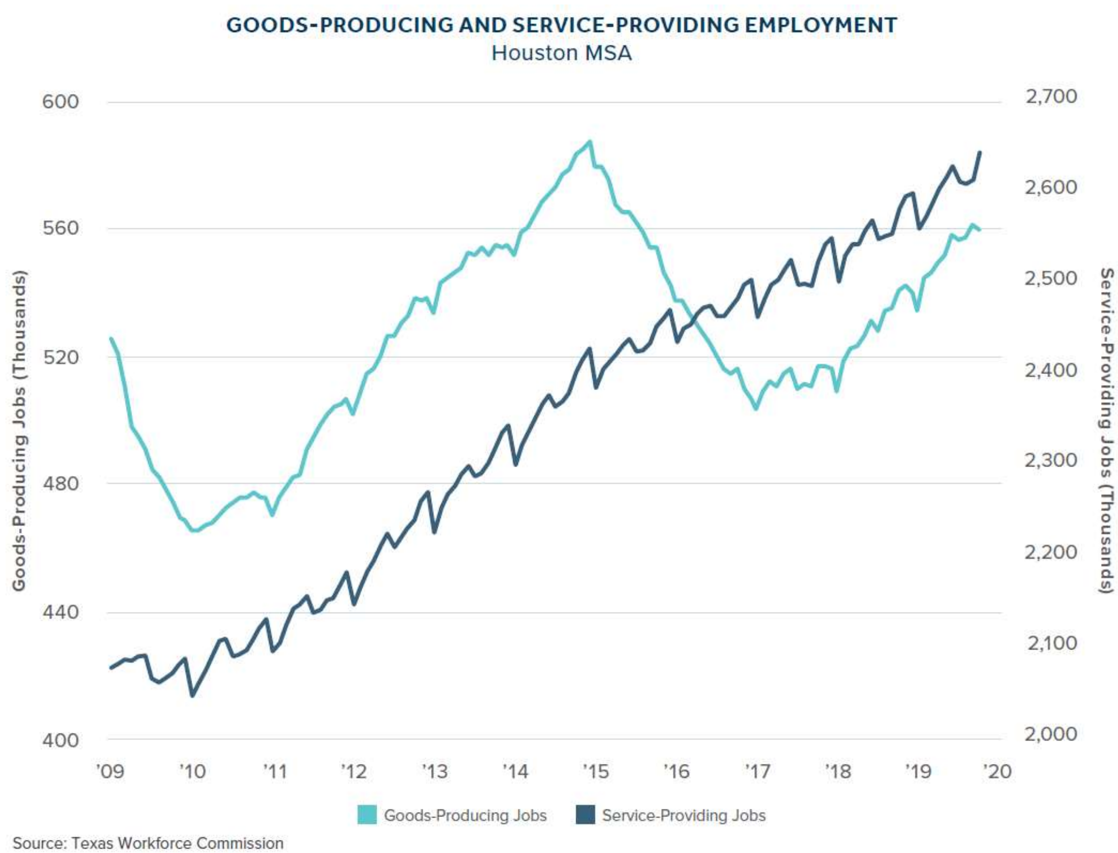
The spot price for West Texas Intermediate oil (WTI) although displaying some volatility for a larger part of 2019 was mostly rangebound between $55-60 a barrel.



JOB GROWTH

According to the Texas Workforce Commission, Metro Houston added 80,400 jobs in 2019. Unemployment in the metro area fell to 3.5 percent in 2019 compared to 3.8 percent in 2018. The Greater Houston Partnership is forecasting that the Greater Houston Metropolitan area will create more than 42,300 jobs in 2020 with the biggest gains in construction, government, accommodation & food services, and healthcare.

In 2015 thru 2016 there were concerns over the types of jobs that are being lost versus those being gained. Specifically, goods-producing jobs (light blue) like; mining, construction, manufacturing, and professional services, which are typically higher paying jobs were falling while service jobs (dark blue) were being added. However this trend has changed as the Metro Houston area is now adding jobs in both sectors as depicted in the chart below.



HOME INVENTORY

According to the Houston Association of Realtors (HAR), the inventory of available homes which was at 3.6 months in January 2019 fell to 3.5 as of January 2020. The 3.5 months inventory is above as the national average which, stands at 3.5 months, for the first time since 2009. Typically, 6 months of inventory is considered equilibrium. Accordingly, inventory levels below 6 months indicate a seller's market which is generally accompanied by an increase in sales prices and in turn appraisal values. Until the supply of homes moves closer to equilibrium we are likely to continue experiencing a seller's market and the corresponding increases in sales prices. The number of days it took a home to sell (a.k.a. Days on Market) narrowed from 64 to 63 days.

Houston's housing market has been a sellers' market since 2012-2013 which is depicted in the Houston association of Realtor's chart below:

Sales Volume Update

According to HAR, sales volume for single family residential properties in 2019 totaled 86,205 units which is a 4.8 percent increase versus the 82,229 units sold in 2018.

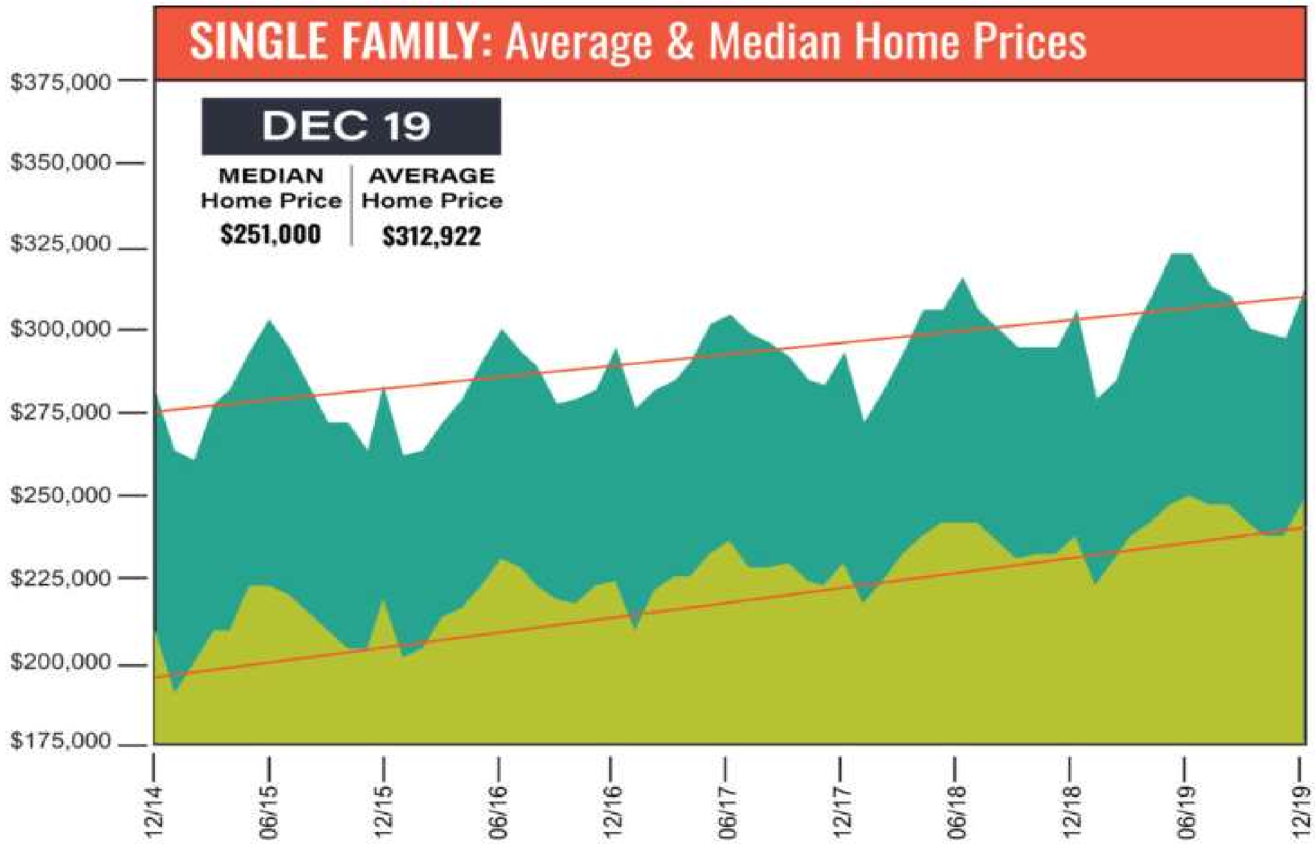
CATEGORIES	FULL-YEAR 2018	FULL-YEAR 2019	CHANGE
SINGLE-FAMILY HOME SALES	82,229	86,205	4.8%
TOTAL PROPERTY SALES	98,395	102,593	4.3%
TOTAL DOLLAR VOLUME	$28,016,207,841	$29,901,458,214	6.7%
SINGLE-FAMILY AVERAGE SALES PRICE	$298,982	$305,959	2.3%
SINGLE-FAMILY MEDIAN SALES PRICE	$237,500	$245,000	3.2%

Courtesy HAR January 8, 2020

Sales Price Update

In a full year's comparison, the median price for a home increased to its highest level ever rising 3.2 percent from $237,500 to $245,000. In a full year's comparison, the average price increased 2.3% from $298,982 to $305,959.

The chart below shows a five-year trend line for both the average home sale price and the median home sale price of single-family homes. Over the last five years the average price of homes increases from $275,000 in December 2014 to $312,922 in December of 2019. This represents a 13.78 percent increase over the 5-year period. Over the last five years the median price of homes increased from $198,000 in December 2014 to $251,000 in December of 2019. This represents a 26.76 percent increase over the 5-year period.



Courtesy HAR January 13, 2016

Townhomes and Condominiums

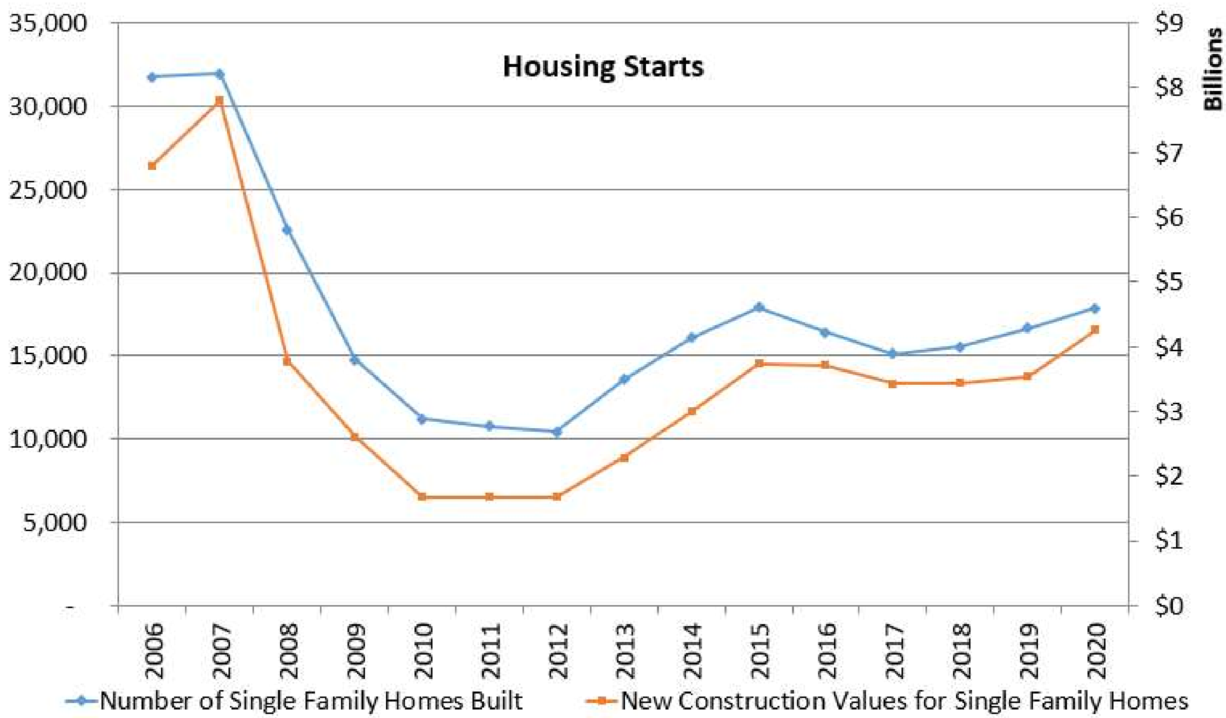
According to the Houston Association of Realtors sales volume of townhouses and condominiums showed considerably volatility month to month in 2019 but ended the year on a strong note. In a December-to-December sales comparison the volume jumped 14.1 percent with the average price increasing 10.3 percent to $227,239 and the median sales price up 9.1 percent to $185,000. During the last year inventory increased from 3.7 months' supply in December of 2018 to 4.0 months of supply in December 2019.

Lease Property Update

Generally as the supply of properties for sale remains below equilibrium the demand for lease property naturally increases. The number of single-family home leases increased 5 percent while leases for townhome and condo decreased by 5.5 percent compared to December 2018. The average rent for single-family homes was mostly flat at $1,764, while the average rental rate for townhomes and condos increased 2.7 percent to $1,569.

New Construction

The number of new starts for 2019 will likely surpass 18,000 homes which will be the most in eleven years. The new construction value associated with the new starts should exceed $4 billion which will also be the most in eleven years.



2020 Outlook and Insights

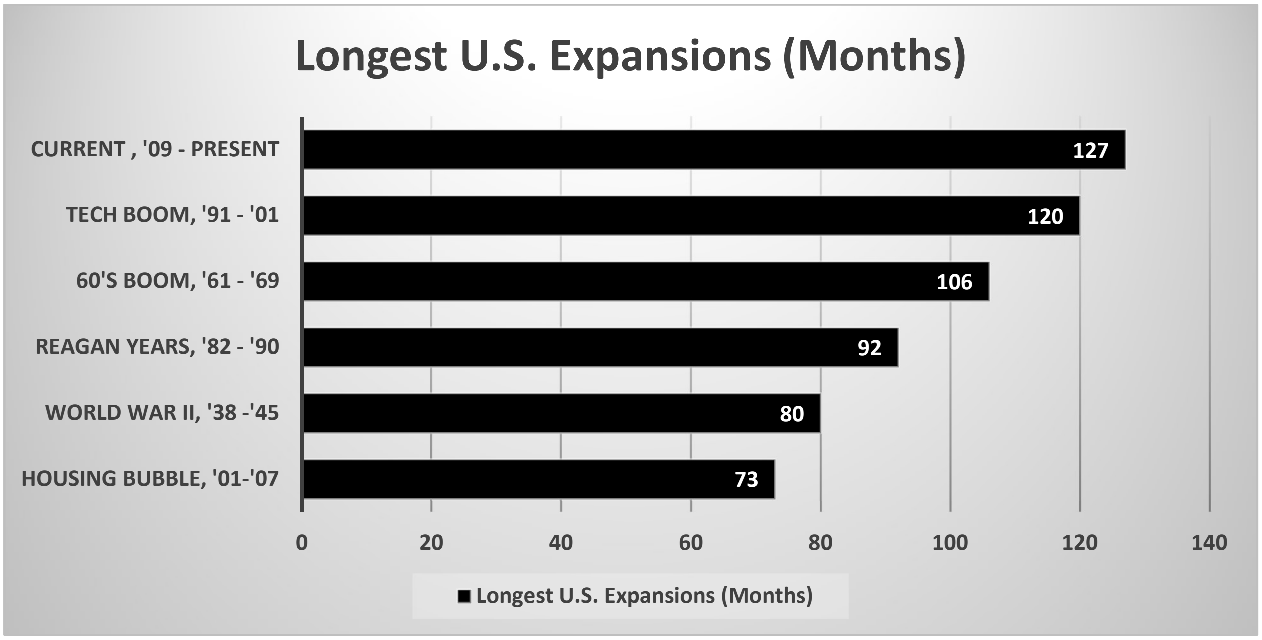
It is difficult to say what will happen with the housing market in 2020 especially in light of the global coronavirus pandemic. Below is a list of factors that will be important indicators as to how the economy and housing market fair in 2020.

- Coronavirus – How long will the coronavirus impact our daily lives?
- Oil price - Between the coronavirus and the "oil war" between Saudi Arabia and Russia oil is now below $25.00 a barrel and not likely to rise anytime soon.
- Interest rates – After two years of slowly increasing the federal funds rate we are now back to a near zero "Feds Fund Rate", currently .25. This was done in mid-March to bolster the faltering economy in the face of the coronavirus.
- Job Growth – The Greater Houston Partnership had projected growth of 40,000+ jobs in 2020, but Houston is now potentially going to lose 100,000s of jobs.
- Natural Disasters – The effects of Hurricane Harvey and Tropical Storm Imelda are now mostly gone and somewhat insignificant to the ongoing world-wide pandemic.
- It is likely that the volume of sales will fall dramatically as the market will want to "wait and see" what happens with the economy and jobs.
- It is likely that the sales prices will flatten out, but do not expect the price of housing to fall sharply.
- The construction of new homes will likely come to a stop.
- Foreclosures will rise especially among the low value strata as many service-related businesses are closing or going out of business.

2019 Houston Commercial Real Estate Market Overview

United States: Long Expansion Leads to Economic Uncertainty

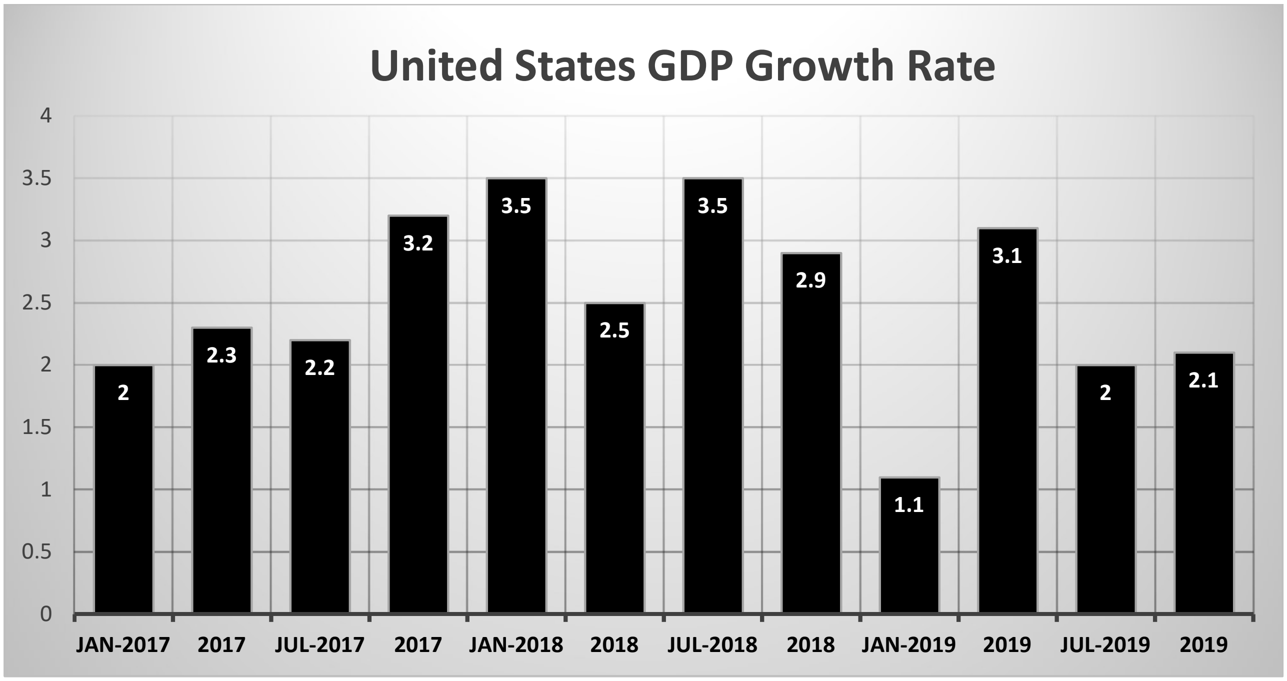
The United States economy is currently in one of the longest expansion periods in history. The current period has lasted 127 months, surpassing the "Tech Boom" of the 1990's.



Source: Statista.com

The effects of the Great Recession of 2007-2009 continued to be felt for years, with the economy described as a "malaise" as late as 2011. Employment growth remained historically low, and unemployment would not return to pre-recession levels until 2016. Long-term unemployment rose to a record high while labor force participation fell off sharply as many of the unemployed gave up looking for work. To spur economic growth, the Federal Reserve engaged in three rounds of quantitative easing, while the federal funds rate was kept near zero for an unprecedented seven years. However, credit remained difficult to obtain for some time, as lending institutions used the newly created cash to shore up their balance sheets. What growth occurred was unevenly distributed; roughly half of Gross Domestic Product (GDP) growth from 2009-2015 went to the top 1% of households. Unlike every previous post-war expansion, GDP growth has not surpassed 3% for any calendar year as of 2019.

The US economy grew by an annualized 2.1% in the third quarter of 2019, compared to an advance estimate of 1.9% and following a 2.0% expansion in the previous three-month period. Upward revisions to private inventory investment, non-residential fixed investment, and personal consumption expenditures (PCE) were partially offset by a downward revision to state and local government spending. GDP Growth Rate in the United States averaged 3.21% from 1947 until 2019, reaching an all-time high of 16.7% in the first quarter of 1950 and a record low of -10% in the first quarter of 1958. The U.S. economy is within the ideal growth rate of between 2% and 3%.



Source: United States Bureau of Economic Analysis

Forecasts were showing the U.S Gross Domestic Product (GDP) would steadily increase in 2020 at a rate of 2.2% to a rate of 3.1 % by 2029. Recent reports, however, show economic growth was close to zero for the fourth quarter of 2019. According to two Federal Reserve measures, the Atlanta Fed's tracker is at 0.3%, while the New York Fed's is showing 0.4%. Both projections came on the heels of recent news that took down previously meager expectations to just above negative territory.

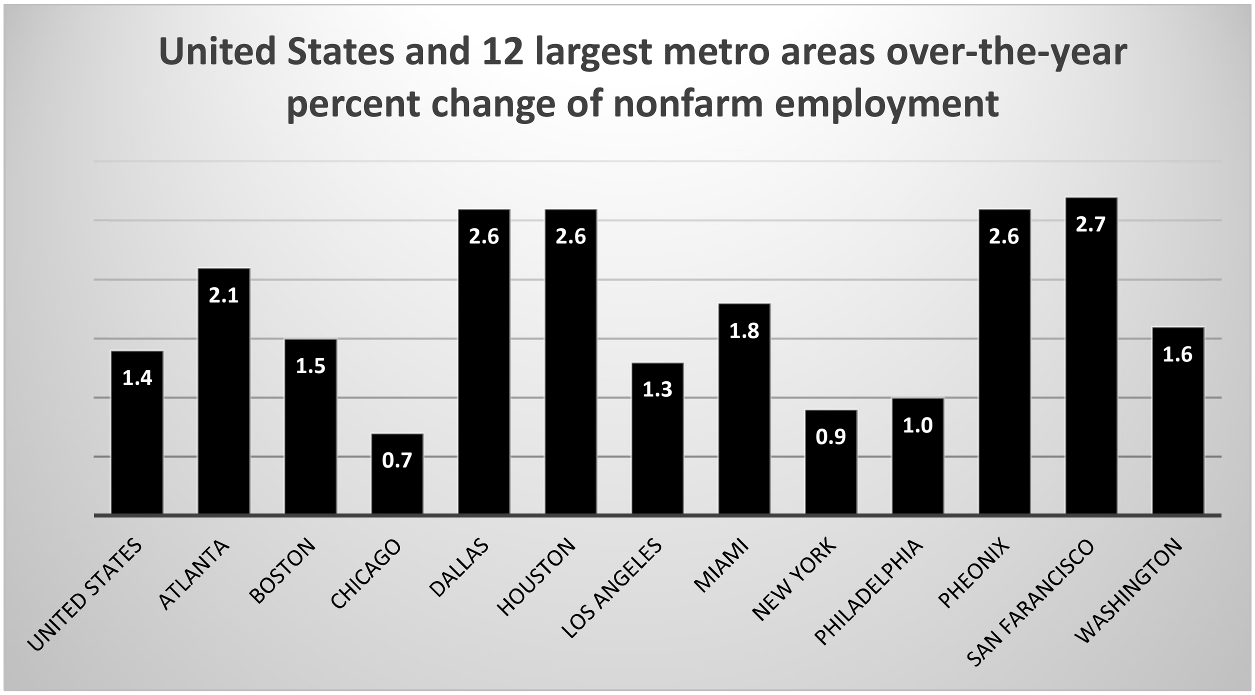
Although we have seen the longest expansion period ever in U.S. History, fears of a recession loom in the background. Economists, investors, and market observers have started to sound a little extra-gloomy when it comes to their economic predictions in recent days. Bank of America and Goldman Sachs have warned of a rising risk of recession, and the infamous yield curve is signaling things might soon get dark. The Dow Jones Industrial Average fell by 800 points on August 14, 2019, marking its worst day of 2019 and prompting CNBC to declare, in an ominously red graphic, "MARKETS IN TURMOIL."

The good news is that just because it's been a while since we've had a recession doesn't mean the US economy is about to take an enormous dive. An old adage among economists is that expansions don't die of old age; something must happen to cause them. Maybe recession risks are not domestic but global, as slower growth spreads out of China and through Asia, and as Europe sees setbacks in Italy, Germany, and Britain. An approaching hard Brexit adds to these concerns.

Houston: Give 'em the Works

In years past, Houston, Harris County, has been bulletproof, protected by a bubble, shielded from economic woes the rest of the nation has faced. The bubble still exists for most, but not all is as great as it used to be. According to data from the Bureau of Labor Statistics, the unemployment rate has dropped slightly since January 2019. The rate went from 4.5% in January to a low of 3.2% in April and May of 2019, and slightly increased back to 3.9% in August of 2019. In comparison, the overall U.S. unemployment rate was 4.0% in January and the lowest mark was September of 2019 at 3.5%. Of the 50 largest U.S. cities, Houston ranks 30th for the lowest unemployment rate in the United States. Honolulu ranks number 1 and Detroit comes in at 50.

Total nonfarm employment in the Houston-The Woodlands-Sugar Land Metropolitan Statistical Area stood at 3,202,100 jobs in October 2019, up 80,400 jobs or 2.6%, from one year earlier according to the U.S. Bureau of Labor Statistics. During the same period, the national job counts increased 1.4%. Assistant Commissioner for Regional Operations Stanley W. Suchman noted that among the 12 largest metropolitan areas in the country, Houston tied with Dallas and Phoenix for the second highest annual rate of job growth. October 2019 marked the 24th consecutive month that Houston's annual rate of job growth has exceeded the national rate.



Source: United States Bureau of Labor Statistics

In the Houston metropolitan area, professional and business services added the largest number of jobs from October 2018 to October 2019, up 31,000. Job gains were widespread within the sector, including the architectural, engineering, and related services industry, which added 6,500 jobs, a 9.1 % increase over the year. Houston's professional and business services sector employment rose 6.2 % since October 2018, compared to the national increase of 1.9 %.

Houston's education and health services sector added 10,100 jobs from October a year ago, the second-largest job gain among the local sectors. The health care and social assistance subsector added 8,400 jobs and educational services added 1,700 jobs. The education and health services sector had a 2.5 % rate of job growth in Houston, compared to 2.7 % nationwide.

Houston manufacturing added 9,100 jobs from October 2018 to October 2019. Local job growth was concentrated in durable goods manufacturing (+7,500), although petroleum and coal products manufacturing recorded a 17 % annual rate of job growth, adding 1,700 jobs over the year. The 3.9 % increase in Houston's manufacturing employment compared to a gain of 0.4 % nationally. October 2019 marked the 27th consecutive month of annual job growth for the local manufacturing sector following 28 consecutive months of annual declines.

Employment in the other services sector (which includes repair and maintenance, personal and laundry services, membership associations, and private households) added 7,200 jobs since October 2018. The 6.3 % local rate of job growth compared to the national rate of 1.3 %.

The mining and logging sector in Houston added 6,000 jobs from October a year ago. The latest 7.4 % annual rate of job growth was the highest among all the local sectors, but still marked a slowdown from the double-digit annual pace recorded during the summer. Nationally, the mining and logging sector had a 0.5 % rate of job loss from October 2018 to October 2019.

Four local sectors added between 4,200 and 3,600 jobs over the year. Houston construction added 4,200 jobs since October 2018. Strong growth in specialty trade contractors and heavy and civil engineering construction was partially offset by a sharp loss in the construction of buildings sector. Area employment in the construction sector rose 1.8 %, compared to the 1.9 % gain for the nation. Employment in Houston's largest sector–trade, transportation, and utilities–rose by 4,000 jobs over the year. The local rate of gain, 0.6 %, compared to the national increase of 0.5 %. The leisure and hospitality sector gained 3,900 jobs since October 2018. The local annual growth rate was 1.2 % while the U.S. rate was 2.3 %. Financial activities added 3,600 jobs over the year in Houston. The local rate of job growth was 2.2 %, while the national rate was 1.3 %.

The only local sector to record an employment loss from October 2018 to October 2019 was information (-1,300). Employment fell 4.2 % over the year in the Houston area, while nationally it declined 0.3 %.

Two things that help the economy in Houston are (1) living in Houston is more affordable than other large metropolitans, and (2) the population in Houston is booming thanks to the job market.

Houston's cost of living is reasonable, but it fluctuates based on several factors, including where you live, where you shop and what you enjoy doing for entertainment.

In comparison to other cities with similar offerings, Houston is actually a bit cheaper, which is a huge plus. If you were to compare the cost of living in Houston to Chicago, you would find living in Houston is more affordable on all accounts, but not by much. Overall, Houston is 8% cheaper than living in Chicago. More appropriately, consider that the cost of living in Houston is 13% cheaper than Austin TX, which could play into why some residents ultimately choose Houston as their Texas city of choice.

Houston has a rapidly expanding job market that has turned many heads in Houston's direction over the last decade. And because there are loose zoning laws, businesses have opportunities to open shop all over the city. This means you might find a skyscraper next to a mom and pop bakery. Business is welcomed, which is apparent with so many leading companies placing their headquarters in Houston.

Houston is also home to the largest medical center in the world. Graduates from the world's most prestigious universities come to the Med Center for positions at the many hospitals including the renowned MD Anderson Cancer Center or to further their education at Baylor College of Medicine.

The influx of young talent has also created an entrepreneurial environment in the Greater Houston area. A new and thriving startup scene has emerged with co-working spaces like WeWork and Impact Hub ready to provide flexible office space for these entrepreneurs.

The growing economy feeds into an overall positive atmosphere throughout the area, which plays into a more positive quality of life. The better the economy, the less people have to worry about job security and being able to keep the lights on. No city has a perfect economy, but Houston could be a fine respite if you have struggled to find a decent paying job elsewhere.

Houston's exports have been growing rapidly as trade through the Gulf of Mexico increases, driving industrial growth around the Port of Houston. However, new tariffs and a trade war with China have put $3.3 billion of that growth in jeopardy, according to a new report from the Greater Houston Partnership.

Houston's booming petrochemical industry will take the biggest blow, with $2.5 billion in petrochemical exports to China now facing a 25% tariff. Agricultural products, vehicles and other exports moving through Houston could also face tariffs.

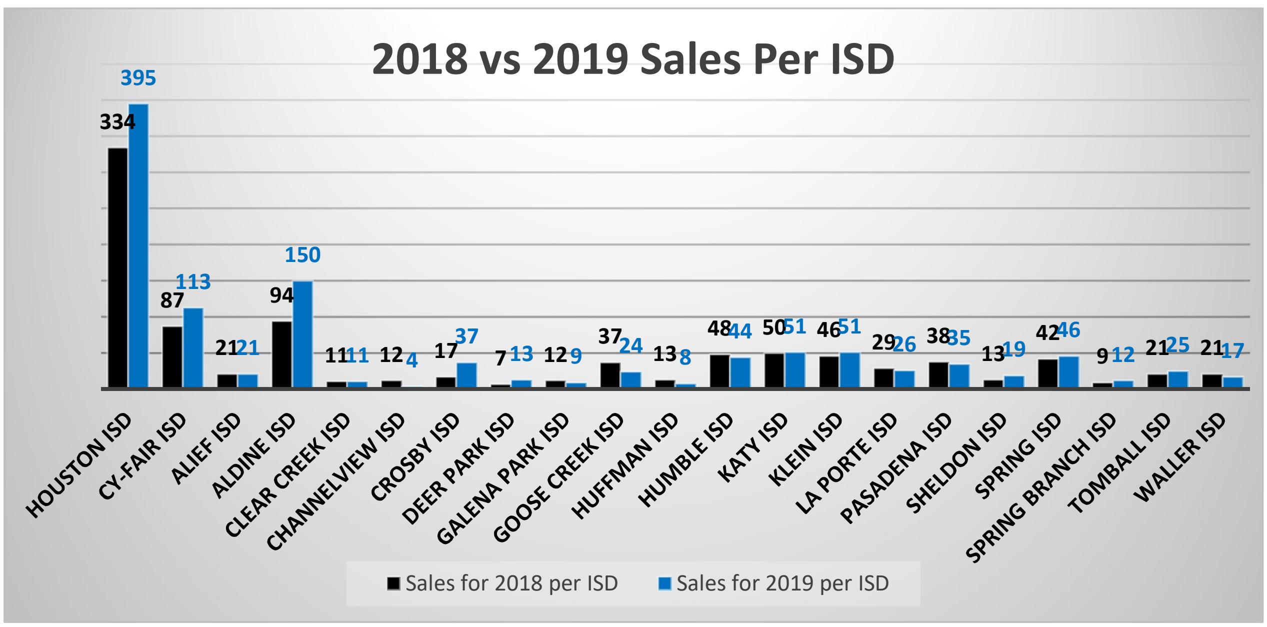
The Greater Houston Partnership and the city have been forging new connections with Chinese companies and municipalities. Mayor Sylvester Turner led a trade delegation to China in late 2017 looking to increase cooperation between Houston and the Asian country in sectors such as energy, medicine and banking. A major goal of the delegation was securing a petrochemical plant, warehouse or factory from a Chinese company in the Houston area. The new tariffs could complicate such a deal.

The Greater Houston Partnership forecast Houston will create 42,000 jobs in 2020. The health care, government, accommodation & food services and construction sectors are expected to lead employment growth, though losses are anticipated in energy and retail trade.

Commercial Land: Par for the Course

Harris County is home to over 4.7 million residents. According to the U.S. Census Bureau, the county has a total area of 1,777 square miles, of which 1,703 square miles is land and 74 square miles is covered by water. The total area is larger than the state of Rhode Island.

After four quarters in 2019, the volume of land sales in Harris County are on par with previous years. The land market has consistently shown the same amount of activity year after year after year. This shows real estate investors are on a constant search for quality tracts for future development or investment. The chart below shows the volume of land sales from 2019 in comparison to the volume of land sales in 2018 per ISD.



Source: Harris County Appraisal District

The land sales in Cy-Fair ISD are slightly down in comparison to HISD and Aldine ISD but has surpassed the previous year's sales totals for Cy-Fair. Cy–Fair ISD is the second largest school district in Harris County and usually has one of the highest volumes of land sales, as well as having the most space for development. Houston and Aldine ISD have outperformed themselves in comparison to previous years land sales and so far, outperformed Cy-Fair ISD. The other school districts in the county have seen the typical amount of activity when it comes to volume of land sales. Those districts remain on par or close to par with previous years.

As mentioned in previous reports, the need or desire for premium tracts of land is top priority for real estate investors and developers. However, there is and has been a scarcity of premium tracts in HISD. The best tracts for development are either developed, under development or scheduled for redevelopment.

The development has started trending east of downtown and east of Highway 69. The area has been mostly industrial and lower income residential. The face of the east side is rapidly changing with new residential developments in the form of townhomes. The townhome development was mostly in the EADO neighborhood but it has started stretching even further east and northeast. The residential development has sparked the need for retail to compliment the residential development. Specifics on the different commercial development will be mentioned throughout this report in their respective categories.

Land activity in Aldine ISD is geared toward warehouse development mostly. The proximity to the airport has long been a driver in the development of warehouses in the area. There has also been a glut of hotels/motels built in this area. This also is due to the proximity of the airport.

The Cypress Fairbanks area is the fastest growing area of Harris County despite the commercial land sales dropping off a bit. The area is attracting many families because of the newer schools built in the area and chances of a better quality of education in comparison to HISD and other smaller districts throughout the county.

The Grand Parkway is also a driver for commercial and residential development throughout the area. The Parkway has opened up acres and acres of land for development in Katy ISD, Cy-Fair ISD, Tomball ISD, Klein ISD, Spring ISD, Humble ISD and Goose Creek ISD.

The Office Market: Flight to Quality

Houston has one of the highest office vacancy rates in the nation. The city's office vacancy problem was amassed following an energy industry downturn and layoffs in the energy workforce. Older Class A office properties must make extensive renovations that result in major upgrades to compete with newer office properties recently delivered or office projects soon coming online in the Houston office market. Sixteen buildings with a total of 3.1 million square feet are under construction. New properties report strong leasing as the "flight to quality" trend plays out. Reaching a high of 26.1% of Houston's Central Business District (CBD) Class A office space available for lease, properties with modern facilities and high-end amenities offering competitive rates are at an advantage.

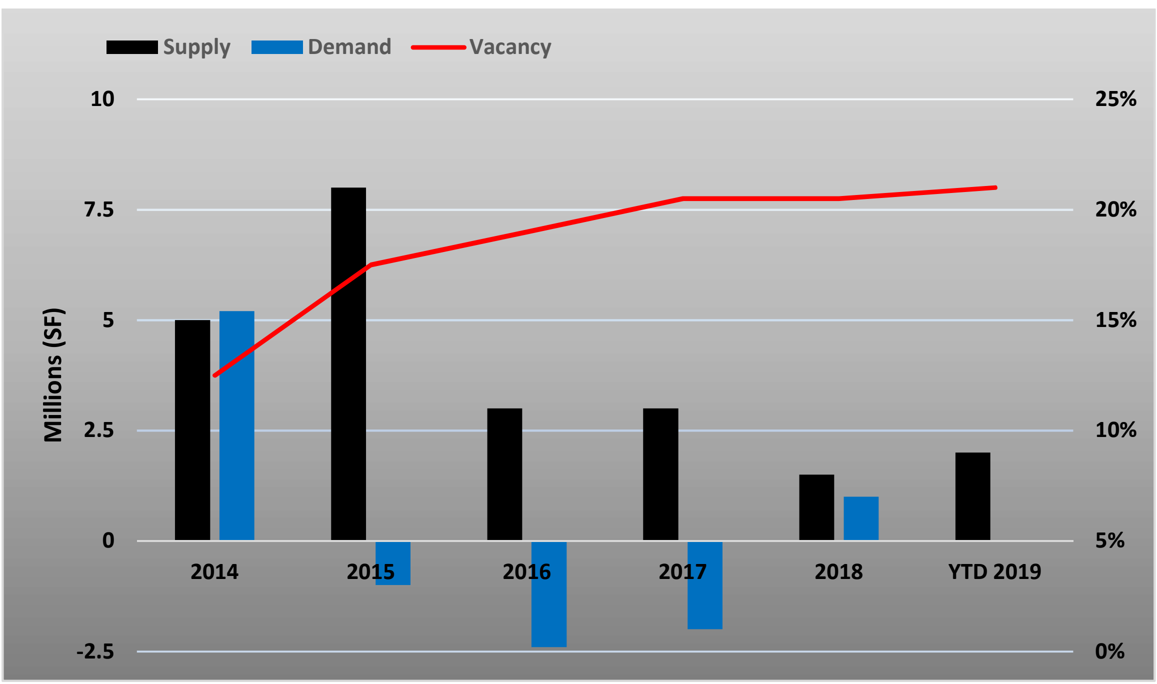
At the end of the fourth quarter of 2019, overall vacancy is at 21.5% and availability is at 26.0%, both up slightly from this time last year. Net absorption was back in negative territory at -109,780 square feet. Leasing activity is outpacing this time last year totaling 14.5 million square feet year-to-date. Developments under construction and delivered projects have also outpaced November 2018 year-to-date numbers. The Houston average asking full-service rent has increased to $29.54 per square foot, while the Central Business District is averaging $45.52 per square foot for Class A office space.

Market Activity

	2019		2018
Vacancy	21.5%	↑	21.1%
Availability	26.0%	↑	25.8%
Net Absorption (SF)	(109,780)	↓	629,197
Leasing Activity (SF)	14,488,963	↑	14,371,381
Deliveries (SF)	1,741,601	↑	866,361
Under Construction (SF)	3,062,691	↑	2,667,002
Gross Avg Asking Rent (PSF)	$29.54	↑	$29.05

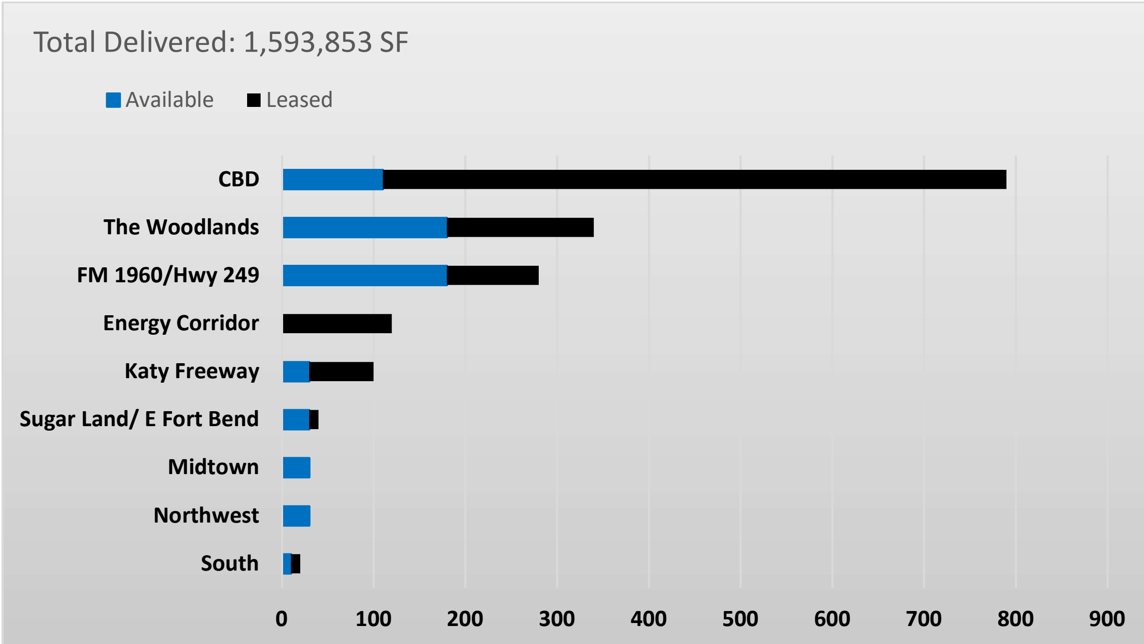
Source: NAI Partners

Supply & Demand



Source: NAI Partners

Delivered



Source: NAI Partners

Office Activity

The Houston office market is lacking in development in the central business district. This is only due to leases in place prior to construction. Unlike Hines, Skanska has a "*Build it and they will come*" mentality that has proved very successful for them. Hines is still taking chances with the development of Texas Tower. The Central Business District currently has two projects delivered, three construction projects taking place, and three projects planned.

Skanska recently completed the new Bank of America Tower. The tower consist of thirty-five stories and offers 780,341 square feet of office space. The tower is located on the block bounded by Capitol, Rusk, Milam and Travis Streets, formerly the Houston Club location. The state-of-art building will bring more than 600 employees in Bank of America's Merrill Lynch, U.S. Trust, Global Banking & Markets, Retail and Home Loans teams under one roof.

The office portion of the building sits atop an 11-story garage, and Bank of America will occupy floors 14 through 20 in offices designed to reflect Houston. The walls near the elevators on each floor feature a different Houston bayou, and the conference rooms have Texas names. The project was completed in June of 2019.

Skanska sold a 90% interest in this new Bank of America Tower in December 2019. The sales price was $373 million or $531.11 per square foot, the deal would mark a record per-foot price for Houston, easily beating the previous record of $528 per square foot. The purchaser was an affiliate of Boston-based Beacon Capital Partners. The news shows that there is a market for new, high-end office space even as Houston's office market overall suffers from high vacancy rates.

Skanska recently purchased three tracts, totaling around 3.5 acres, and plan to develop the current surface parking lots into a mix of office, multifamily and retail. Skanska plans to begin the master-planning process for the sites by the end of the year, which will help determine a development timeline and more details about the project. The developers at Skanska stated they will tap their global expertise in multifamily, office and retail development as they consider the best uses for these sites advantageously located in the city's front yard at Discovery Green.

The Jones on Main, located at 708 Main St., underwent a rebranding and renovation. Built in 1929, the Gulf Oil Building, at 712 Main St. was once the tallest building in Houston. Now known as the JPMorgan Chase Building, the historic Art Deco structure has been connected with its neighbor at 708 Main St. The developers added a range of retail options on the ground floor, with both white-table cloth and casual dining spaces. Midway Co. and Lionstone completed the project in December of 2018.

The Texas Tower is under construction on the block that was once home to the Houston Chronicle. Hines is developing the forty-seven story, one million square foot office tower. The tower will have an eleven- level garage with 1500 parking spaces. With sophisticated concierge services, greenscaped terrace roof decks, and several tenant-only amenities, this building is poised to bridge Houston's most exciting areas, including its bustling Central Business District, stately historic district, and culture-rich theater district.

Houston's largest office landlord downtown, Brookfield Properties, is undergoing or planning major renovations at Allen Center, Houston Center, Heritage Plaza and Total Plaza. In addition, Hines is renovating 717 Texas and M-M Properties is currently renovating 700 Louisiana.

Projects still planned for the Central Business District are the redevlopment of 800 Bell Street, 6 Houston Center and the Chevron Office Tower. The former Exxon Building, now owned by Shorenstein at 800 Bell, boasts forty-five stories and 1.4 million square feet. Now that Exxon has moved to its campus near The Woodlands, Shorenstein can start the renovation.

Chevron's Office tower was announced years ago, The plans for a fifty-story 1.7 million square foot tower remain on hold. This hold is due to downturns in the oil and energy sectors. 6 Houston Center seems to have the same issues as Chevron.

In the Galleria area, one quality tract that remained vacant for a long time was located at Post Oak Blvd and Richmond Avenue. After changing hands multiple times in 2007, the five-acre tract still sat vacant due to fluctuations in the real estate market and financial issues. The tract finally sold again in 2017. The tract was purchased by McNair Interest. McNair Interest was founded by the late Houston Texans owner Robert McNair. McNair Interest focuses on transformative projects in areas such as energy, life sciences, hospitality, technology and real estate.

Bulldozers have started moving dirt at the Richmond/Post Oak location. The project will feature a Rosewood Hotel with luxury residences, a multifamily tower, Class A office tower, chef-driven dining concepts, upscale retail, a lively green space and ample parking.

The project is slated for completion by 2023. The project is being designed by internationally renowned architecture firm Skidmore, Owings & Merrill LLP.

Stonelake Capital Partners is constructing a 15-story, Class-A office building at the corner of Westheimer Road and Mid Lane. The 2,000 square foot office building is the third phase of Park Place/River Oaks, an 11.5-acre mixed-use development at 4200 Westheimer Road in the River Oaks/Highland Village submarket.

The floor plates will average 26,000 square feet, and the building design includes a landscaped terrace on the ninth floor available to all tenants and multiple signage opportunities.

Marathon Oil is relocating to a new office building in West Houston when its lease in Uptown expires in late 2021. The new building will be built on the corner of Interstate 10 and Beltway 8 near CityCentre, a mixed-use development by Midway.

The company is moving out the 41-story Marathon Oil Tower at 5555 San Felipe St. in the Galleria submarket. Built in 1983, the 1.2 million square foot asset was sold in 2018 for $175 million. At the time the tower was 90% occupied and 60% belonged to the namesake tenant. Before that, CBRE purchased the building in 2013 for $245.5 million.

Houston has 51.1 million square feet of vacant office space. The 51.1 million square feet of vacant space consist of 47.6 million square feet of direct space and 3.5 million square feet of sublease space. More vacancy could arise as a result of Occidental Petroleum’s acquisition of Anadarko, or restucturings or anticipated layoffs at HP, McDermott and Weatherford.

According to Midway’s development plan, rising along Buffalo Bayou, Houston’s East River channels the city’s energy and spirit into a dynamic 150-acre mixed-use development just minutes from downtown. East River compliments its unique setting amid historic neighborhoods and walkable districts, where it connects communities to parks, greenspaces and over 6,000 feet of waterfront. The urban core’s largest redevelopment site, East River carefully mixes residential, restaurant, office, retail, entertainment and recreational development, all working in harmony to celebrate local cultures, cuisines, arts and history.

Source: Midway Companies

The abandoned office and industrial complex, formerly known as KBR, offers an opportunity most developers only dream of — a huge plot of mostly vacant land, a blank canvas on which to design and build a community for thousands. Over time, the investment could reach the billions.

While the office market has seen much turmoil throughout 2019. The market is slowly turning around for the better. The global economy effects this market directly. Depending on the outcome of imposed tarifs to China and fluxuations in the energy sector the market may see the same see saw effect it has seen in previous years.

Medical

The Houston medical office market has strengthened and continued to expand throughout the year. The growth is due to the rapidly increasing population and need for healthcare not just in the Houston Medical Center, but also in newly developed suburban communities via satellite campuses and outpatient centers throughout the county.

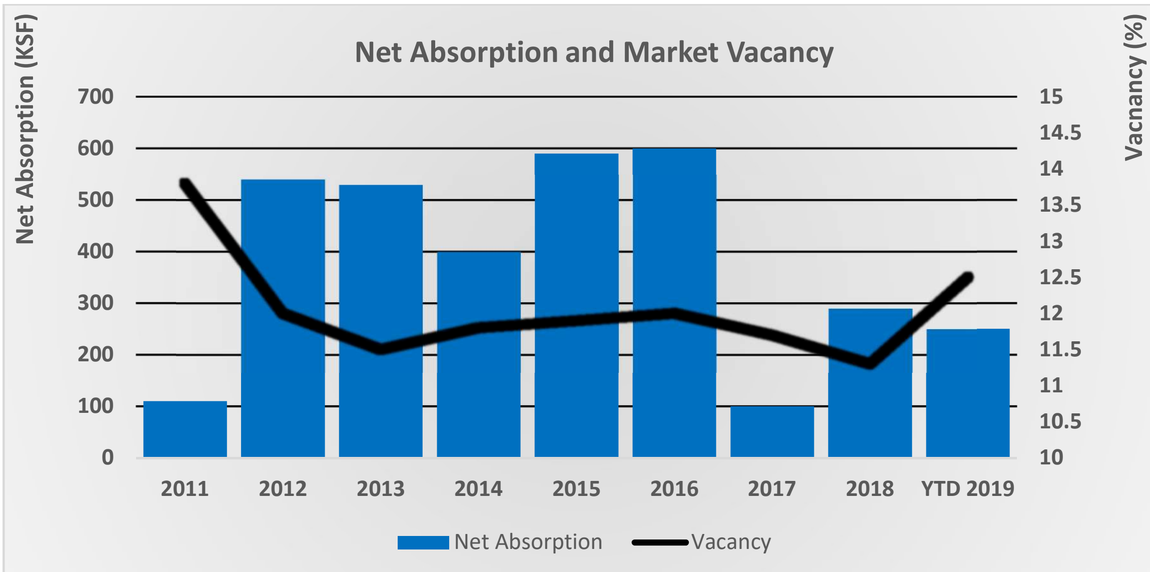
In the first half of 2019, the total net absorption was 244,745 square feet. The vacancy rate increased over last years vacancy rate from 11.3% to 12.5% This is due to a substantial increase in deliveries in the first half of 2019. The total amont of medical product delivered in the first half of the year increased more than 300,000 square feet.

Over 1.3 million square feet of medical product is currently under construction. This is doubled the amount that was built in the second half of 2018. The “flight to quality “ trend is the biggest influence for the new construction, however the demand may not keep pace with the large future supply amount.

Overall Asking Rents (OAR) across Houston increased $0.89 per square foot over the previous year. The average asking rent across Houston ranged around $27.89 to $31.88 per square foot for Class A and Class B medical office buildings. In the stronger submarkets like Katy, there are reports of asking rates in the $40 to $45 per square foot range. The market is very competitive for developers and they are trying to put out the best product they can to attract investors and or tenants.

Notable construction projects that broke ground in 2019 include UTHealth’s 200,000 square foot Continuum of Care Campus for Behavioral Health in the Texas Medical Center, Kelsy-Seybold Clinic’s new 55,000 square foot clinic located in Kingwood and a medical office building on Westheimer Rd to be known as River Oaks Medical.

Illustration: UTHealth Continuum Care Campus for Behavioral Health



Source: CBRE Research, H1 2019

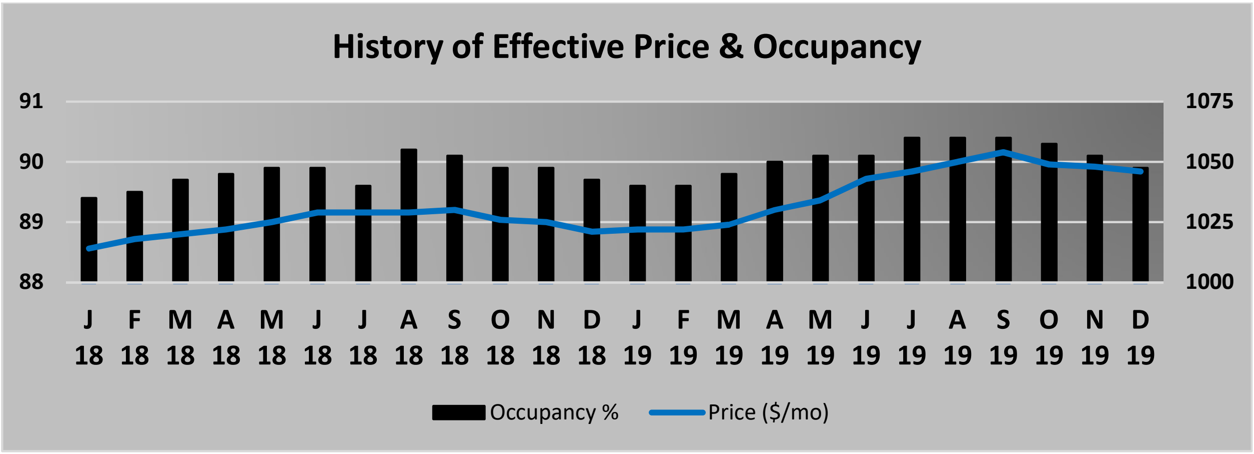
Apartments: Setting Records

The Houston Apartment market is seeing records set for the highest average rental rates and highest occupancy rates since the energy downturn. With net absorption registering at 14,025 units through all four quarters of 2019, the Houston apartment market is on pace to significantly tighten by year end. Strong household formation remains a primary catalyst for absorption, particularly in western and northern suburbs and throughout the urban core, where vacancy rates have generally been pushed well below the market reading. Metrowide, Houston will add more than 47,000 new households in 2019 — the second highest total in the nation. This continues to compress apartment availability across the board as vacancy rates for all asset classes registered decreases of at least 40 basis points during the past year.

Apartment Data Services (ADS) has reported occupancies have been hovering around 89.8% to 90.3%. Rental rates on average have been at $1.18 per square foot. The rent per square foot is based on an average rental rate of $1,047 per month with an average square footage of 884 square feet.

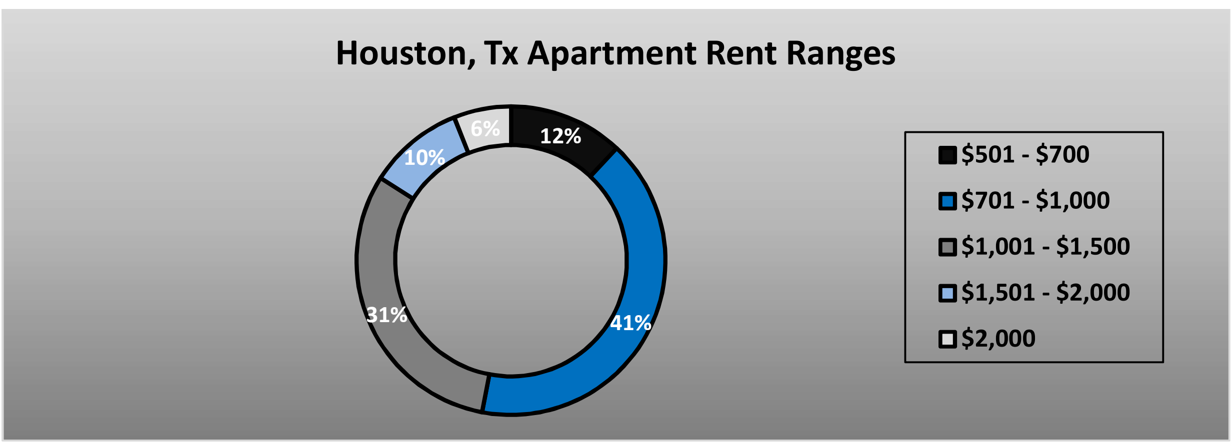
In the past twelve months, the rental rate has grown 2.9% and absorbing 14,025 units. The operating supply consists of 2,830 communities. Those communities total approximately 663,799 units. Of those 2,826 communities, 59 communities were added in the past twelve months consisting of 15,143 units. There are 61 communities under construction that will add 15,987 units. There are also 93 communities proposed that would possibly add 28,316 units in the future.

The graph below displays the overall **occupancy** and effective **rental prices** over the past 24 months. These statistics are derived from a continuous survey of all apartment communities. Effective rental prices are calculated net of concessions and utility adjustments.



Source: Apartment Data Services

The following chart gives a breakdown of the apartment rental ranges in Houston. Based on the overall inventory of apartments, the chart shows each rental range and percentage of the total operating supply within that range.



Source: RENT*Café*.com

The most affordable neighborhoods in Houston are South Park, where the average rent goes for $613 per month, East Little York - Homestead, where renters pay $708 per month on average, and Houston Suburban Heights, where the average rent goes for $708 per month.

The most expensive neighborhoods in Houston are Midtown Houston with an average rent of $1,918, The Museum District with an average rent of $1,925 and Downtown Houston where the average rent is $1,942.

The most popular neighborhood in Houston is Westchase, where there is an average rent of $1,021. Next is Eldridge - West Oaks, where apartments rent for $1,078 per month, followed by Uptown Houston with $1,411. Two other locations considered Houston's most popular neighborhoods are Neartown- Montrose, where renters pay $1,869 on average, and Greenway-Upper Kirby, where the average monthly rent is $1,845.

Highlighted Apartment Activity

The hottest submarkets in Houston have been the Interstate 69 North, Katy/Cinco Ranch/ Waterside, Hwy 288/Pearland West, U of H/Interstate 45 South, and Braeswood/Fondren SW.

Previous reports have focused on the downtown living initiative and the development it has created. That focus of new activity in the Central Business District has not changed course. There are still at the least four multifamily projects planned for construction downtown. This would add to the three projects currently under construction and the one recently finished project.

Camden Downtown is currently erecting a twenty one story, 271–unit multifamily building. This building is the first block of a two phase 550-unit development. The first phase is due for completion in the second quarter of 2020.

DLC Residential is building a six story, 229-unit building at Crawford and Commerce Streets. This project will be known as Regalia at the Park. This project is also slated for delivery in the second quarter of 2020.

The biggest project currently under construction is The Preston. Hines is developing this forty six story high rise. The high rise will have 373-units and the estimated completion date is the fourth quarter of 2022.

Caydon is expanding its first Midtown project, a luxury mid rise known as Drewery Place.

Laneways, a 2.5 million square foot mixed use development, will span three city blocks bordered by Main, Fannin, Tuam and McGowen. Embracing its Austrailian roots, Caydon is centering design throughout the district around Laneways – alleys that have been transformed into enclaves filled with boutique shops, speak-easies, restaurants, and public art.

The Laneways project will include multifamily development, high-rise condominium, a 200-key boutique hotel, ground floor retail, art and outdoor spaces. The site will include about 1,000 multifamily and condo units and fifty-five thousand square feet of retail space, plus the thirteen-thousand square feet of retail at Drewery Place, which opened to residents in July 2019.

The Montrose is seeing additions of multifamily and high rise living as well. Like most locations, investors and developers are acquiring improved tracts, demolishing the improvements, and redeveloping said tracts.

Sunrise Luxury Living submitted a plat application to the City of Houston for Sunrise Montrose, a Class A apartment project slated for the former location of El Tiempo Cantina on Montrose Boulevard.

The Houston-based multifamily developer has started to build an eight-story, 224-unit project on 1.87 acres at 1320 Montrose Blvd., near West Clay Avenue. Sunrise Montrose will consist of five stories of residential units over a three-story podium parking garage. The units will consist of efficiencies, townhome units, and one, two and three-bedroom apartments.

Also, in Montrose, rising 34 stories above Houston's Museum District, The Residences at La Colombe d'Or will offer an unrivaled level of luxury and hospitality. Located minutes from some of the city's most popular cultural, dining and entertainment destinations, residents can enjoy fresh, modern amenities in the heart of some of Houston's oldest and grandest neighborhoods. These well-appointed Residences will connect to the historic La Colombe d'Or Hotel through a series of fabulous amenities including an art gallery and outdoor plaza and greenspace creating a truly one-of-a-kind living experience.

The site formerly home to Chelsea Market has been cleared and new construction is started on a nine-story mid-rise apartment.

The apartment trend stretches past Midtown and Montrose into Upper Kirby, Greenway Plaza, the Weslayan Area, and River Oaks with several new projects underway.

Construction on Alta West Alabama has started. Located at 3623 W Alabama St., the new community will be centrally located between the River Oaks and Greenway/Upper Kirby neighborhoods and adjacent to the bustling Uptown area, placing it within one of Houston's most sought-after submarkets. Alta West Alabama will place residents near some of the most dynamic, economic hubs, not just in the Houston region but in the entire country.

The open-concept units will feature refined finishes that provide residents with a rejuvenating retreat. Once completed, Alta West Alabama will total 304 units in a mix of 1, 2 and 3 bedroom floor plans.The premier apartment homes, with high-end finishes including stainless steel appliances, gas cooktops, quartz countertops, tile backsplashes, and full-size washer and dryer, will provide an A-class living experience that sets Alta West Alabama apart in the market.

Site prep has begun on the southeast corner of Weslayan and West Alabama for the Alexan River Oaks. The mid-rise complex with have 383 units, on five floors including 10,628 square feet of retail space. The site is the former home to AT&T and boast 4.6 acres.

The former apartment complex, The Georgian, has been demolished to make way for Novel River Oaks. The mid-rise complex will consist of a total of 300 units.

In the Uptown/Galleria area, the multifamily arm of homebuilding giant Lennar Corp. has purchased a two-acre site just inside the West Loop off San Felipe. Lennar affiliate LMC Westcreek Holdings acquired the parcel at the corner of Westcreek and San Felipe from Westcreek HTX Real Estate Partners.

Miami-based Lennar launched its rental development business, LMC in 2011. The company develops and operates multifamily rental properties across the United States, ranging from garden-style complexes to high-rise buildings.

LMC recently developed its first apartment project in Houston, 88 West, a four-story complex at 8820 Westheimer and Fondren. Assuming LMC builds a tower on its Westcreek site, this would be its first high-rise in this market.

The site is across from the Arabella condominium tower and near other new high-rise condo and apartment buildings that have been built since the adjacent River Oaks District was developed.

A heavily disputed, long-awaited luxury high-rise project on Post Oak Boulevard appears to have broken ground. The Dinerstein Cos. is constructing a 39-story building called Arise Post Oak at 1650 Post Oak at San Felipe.

Arise Post Oak was announced in 2015, but the project was delayed when the developer sued the homeowners of the Cosmopolitan, a nearby 22-story luxury condominium, who opposed the height and location of the new tower.

Construction is underway in the Brookhollow section of the Galleria/Uptown area of The Reverie at River Hollow. The project will be a luxury midrise apartment community. Slated to open in the summer of 2020, the community will be seven stories tall and will offer 304-units. The complex will offer studio and one, two, and three-bedroom options ranging from 558 square feet to 1,966 square feet. The amenities will mirror amenties seen in other luxury style apartments.

The Katy area is headed for an oversupply of apartments, but the demand remains high. There are about 19,000 apartment units in the Katy area, with another 2,000 or so under construction from five luxury complexes and one senior living community, according to data from Apartment Data Services (ADS). This is about twice as many additional units than the existing apartment market can handle.

The oversupply is driven by the massive exodus of homeowners leaving apartment complexes because home repairs from Hurricane Harvey are completed. A year ago, Katy area apartments were at capacity because Hurricane Harvey displaced so many people. That is not the case anymore.

Currently, the Katy apartment market is saturated. The apartment communities are fighting over potential renters, and the upcoming six complexes and their 2,000 units will make it even more difficult for property managers.

Katy's apartment market is at an 88.6% occupancy rate across all apartment types, according to ADS data. Developers usually build in markets when the occupancy rates are around 95%. The Katy area has only once hit that 95% mark in November 2012 over the past ten years, per the ADS data.

Although these numbers indicate a future oversupply of apartment units, there is demand to live in Katy, and the apartment market is cyclical. Developers continue to build in Katy because it is a highly desirable place to live thanks to its great schools, good neighborhoods and the growth of health care and retail sectors. It also helps that the Katy market, unlike other Houston-area places, has historically had stable occupancy rates and rent prices during economic downturns. Similar to the rest of Houston, the average monthly rent price has skyrocketed in the past decade.

Retail: Solid Absorption

Occupancy, year-to-date through December, is at 94.4% and is unchanged from 2018. Of the 3.6 million square feet currently under construction, about half of that space has been spoken for. The Houston retail market has recorded 6.2 million square feet of leasing activity—which is comprised of both new leases and renewals—slightly outpacing the year-to-date activity from one year ago. In addition, the net amount of square feet absorbed stood at 4.5 million, with new supply delivering 5 million square feet to the market this year, of which 74% is occupied. The escalating average asking rate of renting retail space persists at record highs for Houston at $18.22 per square foot on a triple net basis, up 5.1% from this time last year at $17.34 per square foot.

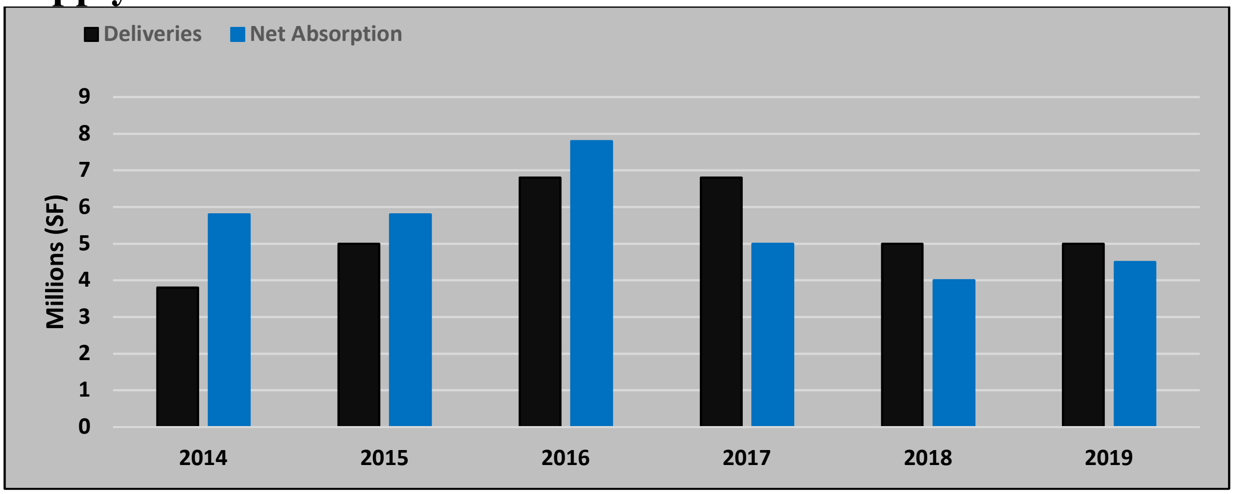
Market Activity

	2019		2018
Occupancy Rate	94.4%	---	94.4%
Net Absorption (SF)	4,535,688	↑	3,172,085
Leasing Activity (SF)	6,166,609	↑	5,584,740
Deliveries (SF)	5,038,377	↑	4,026,401
Under Construction (SF)	3,558,377	↓	4,070,728

Inventory	356,654,397	↑	351,447,808
Avg Asking NNN Rent (PSF)	$18.22	↑	$17.34

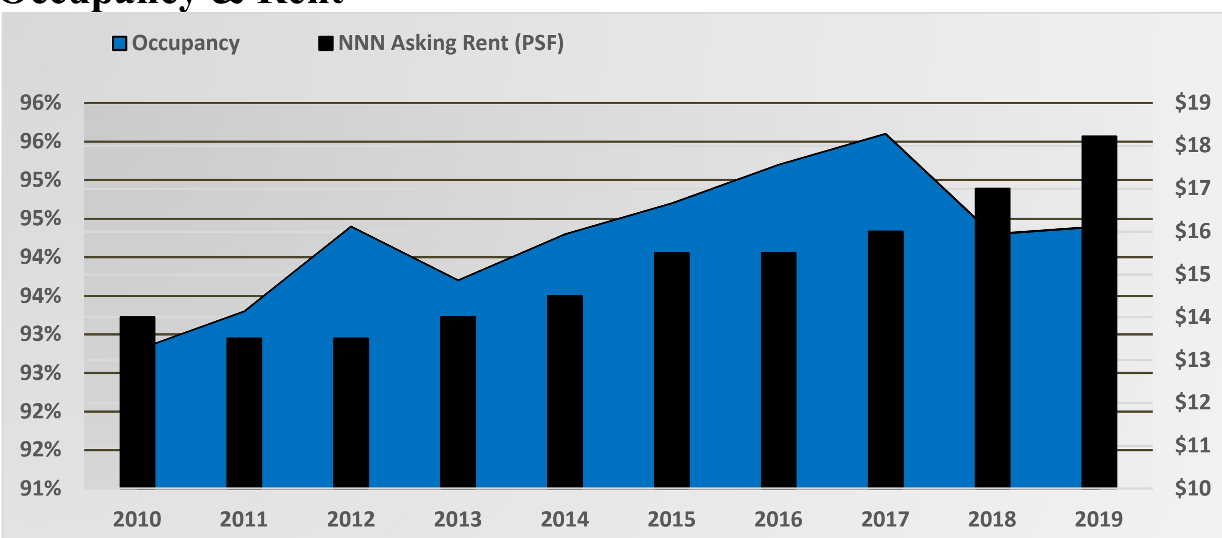
Source: NAI Partners

Supply & Demand



Source: NAI Partners

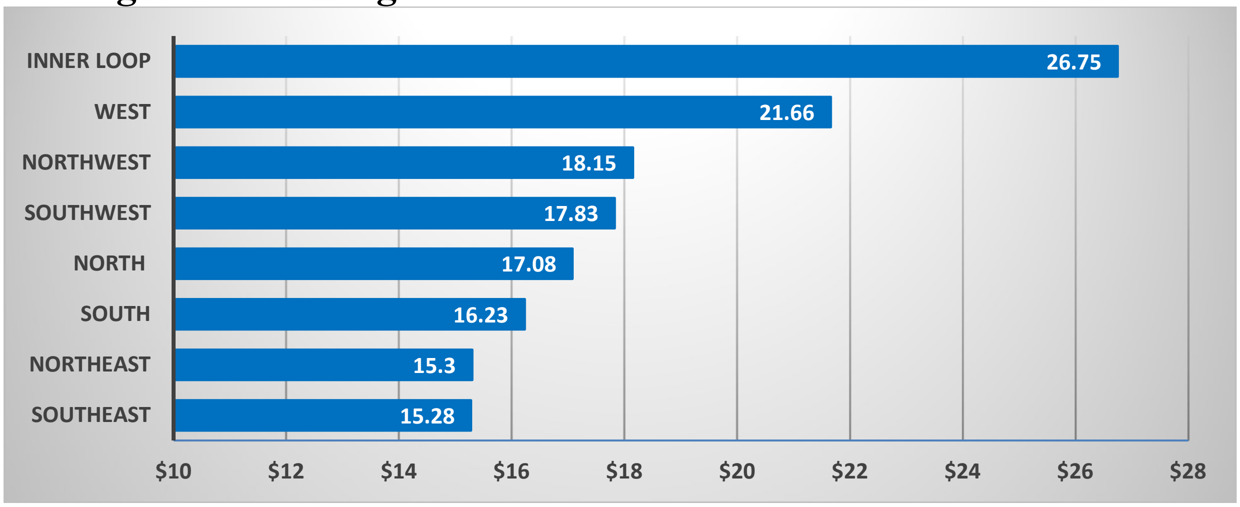
Occupancy & Rent



Source: NAI Partners

The tight retail market continued to push the Houston metro average annual asking rents up, reaching $18.16 per square foot to end the fourth quarter of 2019 at a record high. Prices have climbed 21.5% from the average asking rent of five years ago ($14.95 per square foot). While retail availability is especially limited across the Houston area, it is particularly tight within the Inner Loop area, with a total inventory of approximately 29.3 million square feet, a vacancy rate of 4.4% and the average asking triple net rent at $26.75 per square foot The concentrated Galleria/Uptown area represents 4.5 million square feet of high-end retail space with only 70,000 square feet, or 1.5% of vacant inventory, and an average asking triple-net rent around $40.00 per square foot. Although concessions such as free rent and tenant improvement allowances make posted rents less meaningful as a market indicator, the price of Houston's retail space is rising. The highest-quality space, with the best location, and ease of accessibility will demand the highest rents.

Average NNN Asking Rent



Source: NAI Partners

Houston's retail real estate investment sales volume rose dramatically a year ago and has record levels since. After totaling nearly $1.7 billion in the second quarter of 2018, investment sales volume skyrocketed to more than $2.6 million in Q3 2018 — and that level has risen to roughly $2.8 billion per quarter from Q4 2018 through Q3 2019. Low interest rates and lots of capital coming into the Houston market are among the reasons for the jump.

The year 2019 was certainly a very interesting year for retail. There has been an enormous transformation as the industry has continued to evolve with establishments learning how to balance strategies between online and brick and mortar sales.

In 2020, we can expect the market to be influenced heavily by emerging technologies, such as artificial intelligence (AI) and Internet of Things (IoT).

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

The definition of the Internet of Things (IoT) has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of Things. In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", covering devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart speakers.

There are several serious concerns about dangers in the growth of IoT, especially in the areas of privacy and security; and consequently, industry and governmental moves to begin to address these.

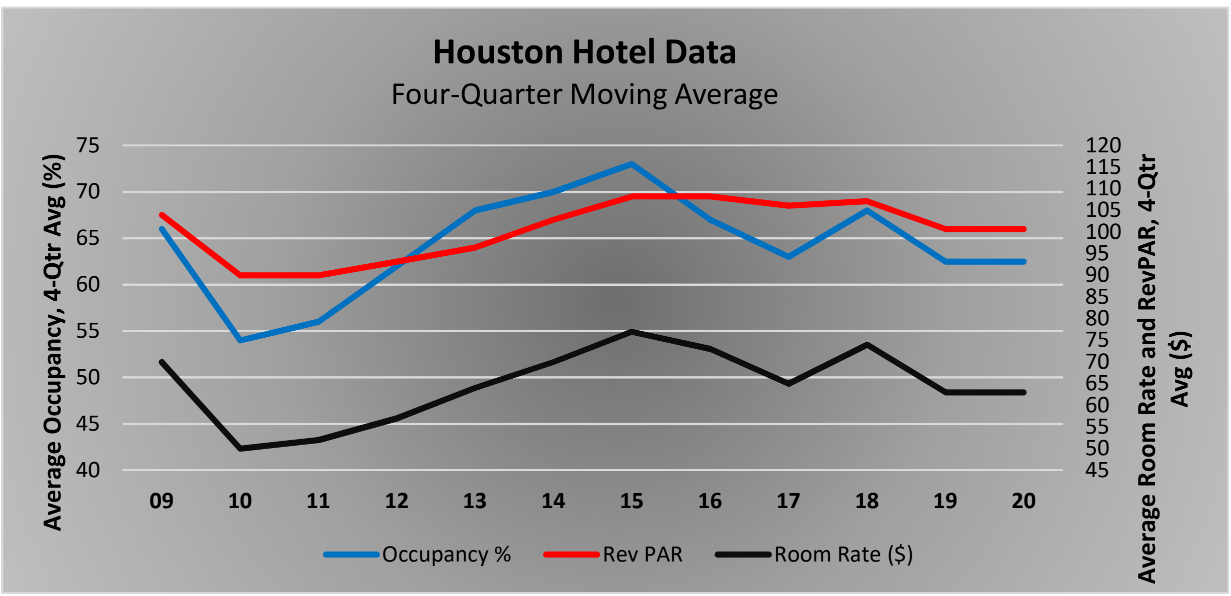
The Houston retail market has seen an influx of hotels and motels coming into the market. The influx could be considered a supply glut. Houston's hotel inventory consists of approximately 92,600 rooms across 944 properties. The average occupancy rate is about 65.6% and the average daily room rate is $104.36. The revenue per available room (RevPAR) is averaged around $68.47 per day.

The construction pipeline is still packed with more than 3,900 units expected to be delivered in 2019. Houston is ranked as the fifth U.S. market for most hotel product under construction.

In the past, the biggest driver for the hotel market was the energy sector. Since the downturn in the energy sector, the market has become overly saturated. This saturation has brought about lower occupancy rates and depressed rental prices.

The silver lining of this problem is investors are focusing their attention on distressed properties. Out-of-state and international investors are stepping in ready to purchase the troubled properties. There is a diversity in the types of distressed properties in Houston, ranging in the submarket, quality level, capital type and brand name.

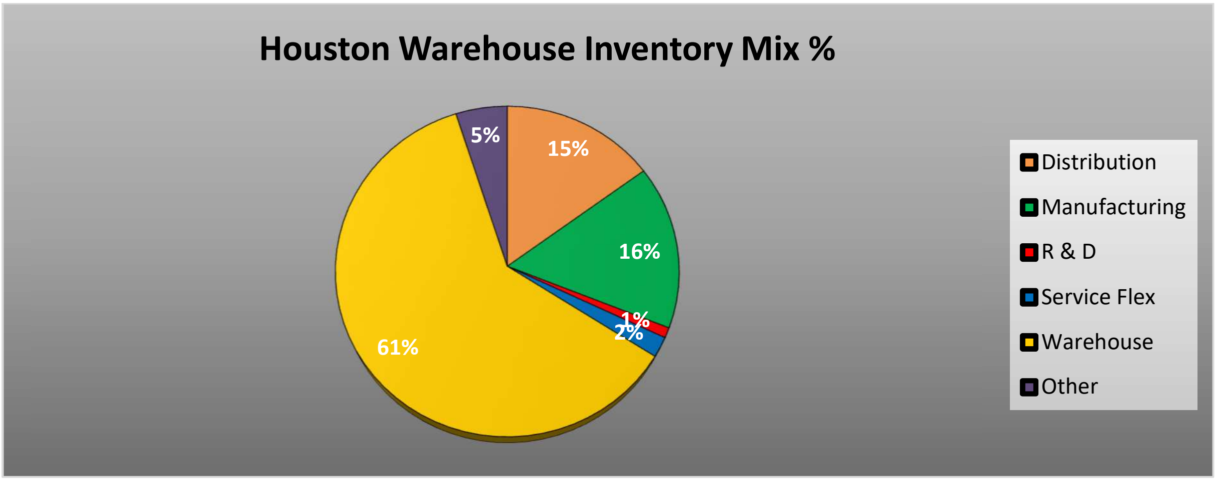
If investors are looking to stay in this market for the long haul, they will likely succeed. Long-term economic fundamentals are positive for the overall Houston market.



Source: CBRE Hotel Horizons Houston

Harris County has 591.1 million square feet of warehouse space inventory. That number is constantly expanding. There is roughly 21.1 million square feet of warehouse space under construction. The current overall vacancy rate is 6.7% and the average annual rental rate is $7.54 per square foot.

The following chart gives a percentage breakdown of the different types of warehouses in the county.



Source: Colliers International

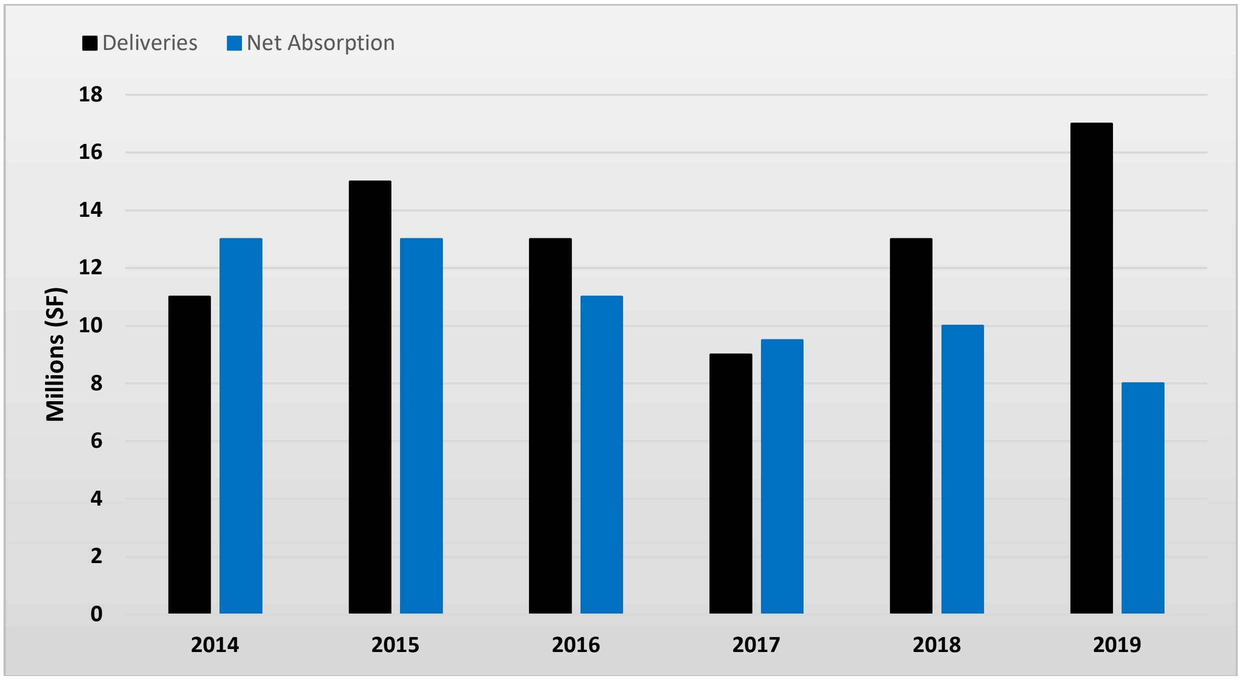
Of the 21.1 million square feet currently under construction, about 68% of that space is available for lease. The vacancy rate for Class A properties is at 12.1%, up from 7.5% this time last year. Year-to-date, overall net absorption is at 8.2 million square feet, just under the 8.6 million square feet registered through December 2018. The asking price for industrial properties is currently at an average monthly rate of $0.61 per square foot, unchanged from this time last year.

Market Activity

	2019		2018
Vacancy	6.7%	↑	5.4%
Availability	11.6%	↑	8.9%
Net Absorption (SF)	8,203,775	↓	8,596,548
Leasing Activity (SF)	23,041,510	↑	22,834,955
Deliveries (SF)	16,789,017	↑	10,827,791
Under Construction (SF)	21,116,249	↑	11,712,694
NNN Avg Asking Rent (PSF)	$0.61	---	$0.61

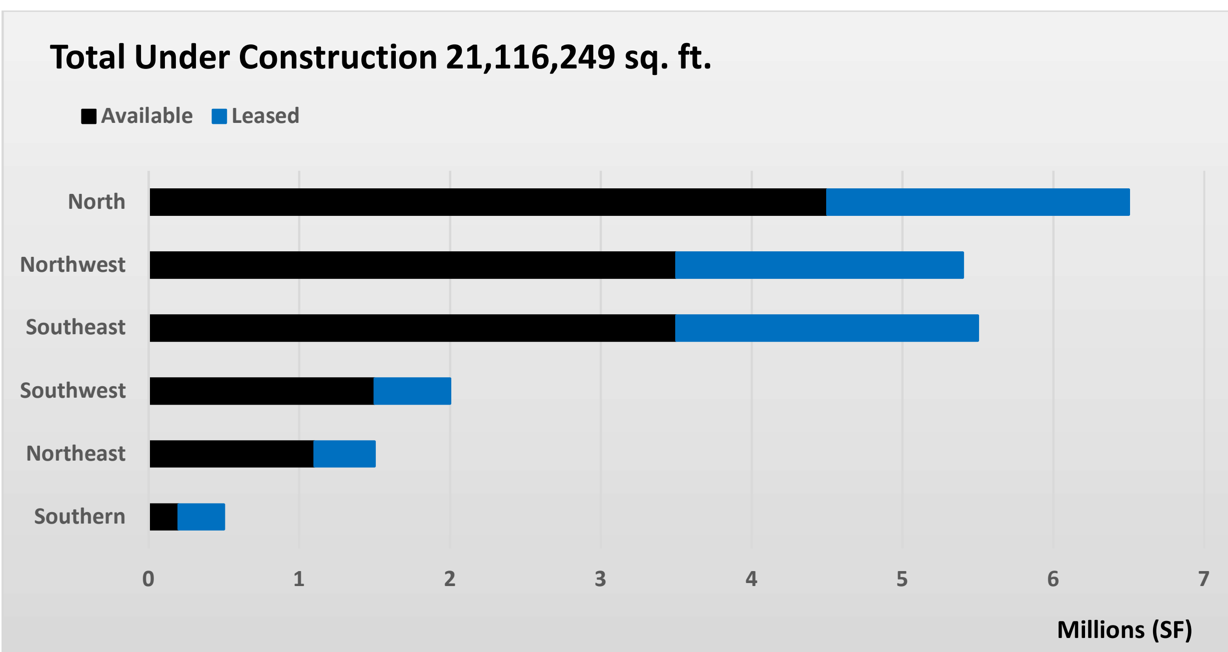
Source: NAI Partners

Supply & Demand



Source: NAI Partners

Construction Activity



Source: NAI Partners

As previously mentioned, Aldine ISD has had the most warehouse development in Harris County in the recent past and that development is still taking place today. The development comes in the form of large business parks, such as Pinto Business Park, Greens Crossing Business Park, and a few others.

Pinto Business Park is a 971-acre industrial park located south of Beltway 8 and west of Interstate 45. When fully developed the business park will accommodate up to 7 million square feet of build-to-suit and user-owned distribution, light manufacturing and corporate campus space.

The Hines developed business park is home to top tier tenants like Amazon, Sysco, HD Supply, Grocers Supply, The Reynolds Company, Red Bull and soon to come Coca-Cola.

Monterrey, Mexico-headquartered Arca Continental announced its intent to build a one-million-square-foot distribution and production plant in Houston, TX, through its subsidiary, Coca-Cola Southwest Beverage. Arca, the first Latin American bottler to operate in the U.S., will invest $250 million in the facility in building the first Coca-Cola production plant in a decade. The factory is scheduled to begin operating in early 2020, and will offer five production lines, in-line blow molding and distribution facilities, warehouse and sales. The facility will allow CCSWB to serve the southeast Texas market.

North of Beltway 8 and west of Interstate 45, directly north of Pinto Park, Dallas-based Crow Holdings Industrial acquired a 45-acre tract in Greens Crossing Business Park. The addition named Layne Crossing will house 530,000 square feet of warehouse space.

The project will feature six industrial warehouse buildings ranging from 56,000 to 174,000 square feet. It will include two front-load buildings, two rear-load buildings, one cross-dock building and one side-load building. Features include large truck courts, trailer storage and clear heights from 24 to 32 feet.

Also located in Aldine ISD, Cypress Preserve is an institutionally owned and managed Class A industrial park with two proposed buildings with suites available from 64,500 to 258,000 square feet on 31.9 acres. The site offers immediate access to I-45N, FM 1960 and the Hardy Toll Road; and is just minutes away from Beltway 8 and the Grand Parkway. The buildings offer state-of-the-art features, convenient trailer/passenger vehicle parking, and excellent traffic flow with multiple points of ingress/egress from Interstate 45N. In addition, the park offers two single-tenant buildings at 16,500 square feet and 25,000 square feet. Davis Commercial Development is the developer and Colliers International will handle marketing and leasing activity.

Not far from the famed Lochinvar Golf Club, Fairway North Logistics Park is under development by Lovett Commercial. The park has quick access to the Hardy Toll Road N and S, Beltway 8 E and W, and Interstate 45 N and S via Rankin Rd. or Beltway 8. The park is expected to have three phases with a total of 771,080 square feet of warehouse space.

A notable development in southwest Houston is Boulevard Oaks Business Park. Hines plans to expand the new industrial park with 1.15 million square feet of new buildings. The expansion will add six additional buildings to Boulevard Oaks Business Park.

The first phase of the development has 450,000 square feet of warehouse space. The park currently has eight tenants and has reached stabilization of at least 85% occupancy. At full build out, the park will cover 120 acres and have 1.6 million square feet spread across ten buildings. Boulevard Oaks Business Park is located on W Fuqua Street and Beltway 8.

The other area with the most construction activity would be East/Southeast Far submarket. This area has long been mostly industrial and is supported by the Houston Ship Channel. The Houston Ship Channel is part of the Port of Houston, one of the busiest seaports in the world. The channel is the conduit for ocean-going vessels between Houston-area terminals and the Gulf of Mexico, and it serves an increasing volume of inland barge traffic. Demand in the southeast industrial submarket is driven by strong net absorption, construction activity and low vacancy.

Stream Realty is developing Bay Area business Park Phase III with the closing of an additional 95 acres adjacent to the park. Phase III will consist of three buildings, totaling 1.33 million square feet, at 250,000, 300,000 and 784,000 square feet, respectively. The largest building is expandable to 1,008,000 square feet should a tenant require it.

The first phase of Bay Area Business Park delivered in 2009 totaling 1.2 million square feet. The second phase of the project delivered in 2016 totaling nearly 850,000 square feet. BABP is home to many household names including Floor & Decor, Calpine, Honeywell and Dunavant. The park will be located at 9501 Bay Area Blvd in Pasadena.

Bayport South Business Park is located 3.5 miles west of the newly expanded Bayport Terminal at the Port of Houston. Sitting on 191 acres, the master plan is for eight buildings at a total of 2.68 million square feet.

Panattoni Development Co. and its equity partner, MetLife Investment Management, launched construction on a 643,000 square foot industrial warehouse. The warehouse at Bayport South will feature a 36-foot clear height, 60-foot loading bay, 150 trailer storage parking spaces and 180 truck courts. The facility will also include four overhead doors with ramps and more than 330 car parking spaces.

Bayport South Business Park is already home to Teadit, Nestle Waters, United Network Information Services (UNIS) Origin Point Brands and Preferred Frozen Services.

Summary

The Houston commercial real estate market is doing what it always does and that is persevere. Earlier in 2019, it may have looked like the sky was falling and the markets were in turmoil due to external forces like the energy downturn, or geopolitical conflict, but the Houston market is fighting a winning fight. The county has experienced growth at record numbers and the economy, for the most part, is above average. Developers are doing what is typical in this record setting expansion period and that is pushing forward as much as possible.

A concern that many will have is the effects of the relations or lack of relations between the United States and Iran. The threat of war is looming, and this could have a major effect on the oil and gas industry. If the United States can avoid a war and deescalate the current situation, the fallout may not be severe. Considering the current trends and a hopefulness for no war, the outlook for Harris County Commercial Markets in 2020 is a positive one.

Refineries

The price of crude oil rose on supply-demand fundamentals throughout most of 2018 on the back of OPEC supply cuts and then tanked in the last two months of the year similar to the stock market on fears of U.S./China trade disputes possibly weakening global economic growth. On the first trading day of 2019, the price of West Texas Intermediate (WTI) was about $46.31 per barrel. It now stands around $61.17 (NYMEX; first trading day 2020). Other benchmark crudes experienced similar price increases and heavy crude discounts contracted. Heavy oil production declines along with Venezuelan/Iran sanctions have tightened the heavy sour crude market. Export restrictions in Western Canada limited flows of tar sands crude to support pricing. Limited relaxing of crude exports from Alberta is in place for 2020, but only by rail transport.

Year-over-year crude runs at Gulf Coast refineries declined. The Texas Gulf Coast refinery average annual capacity utilization, as defined by the Department of Energy, for 2019 was 90.3 percent compared to 94.9 percent in 2018. TS Imelda and unplanned operational interruptions (i.e., fire at ExxonMobil Baytown) can be blamed for some of the production dips in ‘19.

The Muse, Stancil U.S. Gulf Coast composite refining margin (Oil & Gas Journal) for 2019 is down about 23% from where it was for 2018. For 2019, Baker & O’Brien Inc.’s PRISM® cash margins for refining on the Gulf Coast (PADD 3) averaged $3.34 per barrel lower than the same period for the prior year. Another third-party subscription service reflects a 5.5% decrease in U.S. composite refiner earnings from ’18 to ‘19 and then forecasts flat earnings from the 2019 level through 2020. Houston Refining reported a year-over-year decrease of about $230 million in EBITDA on higher crude runs but lower margins for all products. Refiner margins will be site-specific depending on configuration, crude diet, and utilization, but in general, it was not a good year for the segment.

The price of D6, or ethanol-based, RINs (Renewable Identification Numbers; the renewable fuels trading/compliance mechanism) fell for 2019 and their average cost was about half of the 2018 average. Diesel RINs (D4) was only off about 10-15% in 2019 compared to 2018. For 2020 the EPA will apply a different approach to the calculation of the renewable volume obligation (RVO) which will exclude the small refiner obligation upfront instead of retroactively. This may shift a higher RINs cost burden to bigger refiners in proportion to their production/obligation.

Valero owns the only new construction in the Harris County refining space for 2019 as they completed work on a new $300 million alkylation project mid-year, 2019.

At the end of January 2019, Chevron Corp. announced its intention to buy Petrobras’ Pasadena refinery for $350 million. The acquisition was completed on May 1st. On November 11th Calumet Specialty Products Partners closed on its sale of the 21,000 bpd San Antonio refinery for $63 million.

The chemicals industry is heavily dependent on auto manufacturing and home building and, as the economy goes, so goes the chemical industry. GDP is up around 2% for the 2019 year as a whole and expectations are that it could be around 2% for 2020 and 2021. Housing starts are up for both single-family and multi-family residences, but automotive sales were down and production was 4.1% less than last year.

Texas has been blessed with oil and natural gas fields that continue to be discovered, or through newer technologies, have been newly developed. West Texas is still the hot area currently with new growth in the oil and gas industries, drilling and processing are very strong in this area. The glut of natural gas that has been in place since 2005 has caused a tremendous amount of new construction to process the gas. Cheap natural gas means lower raw material costs for many chemicals and possibly greater profit margins for their products, but gas may not stay cheap forever.

Many companies have begun exporting natural gas through LNG liquefaction terminal. Expansion of existing facilities and construction of new projects is on the horizon and with natural gas going out to the world market, natural gas prices may not be as cheap or as stable as they have been for the past 10 years. Only time will tell, but natural gas feedstocks have already caused a squeeze in margins for producers who depend on natural gas or natural gas components like ethane & propane.

Crude oil prices were not strong in 2019, the price per barrel of WTI peaked near $65 in April and then began to settle around $55. Toward the end of the year and early in 2020, the price has dropped steeply to $45 per barrel causing some production to curtail or stop in hopes that the price will bounce back. While oil has dropped significantly from being over $100 per barrel, natural gas will continue as the preferred feed product for chemical manufacturing.

Economics of the large commodities chemical units built in the Gulf Coast has become very ugly, especially if foreign countries decide that they don't want our plastics, or that they can get them cheaper from the Middle East or Asia.

Operation rates for olefins units have been lower in 2019 at an annual average of 88.5 percent. Oil prices appear to not have any effect on olefin unit run rates at this point, but oil is impacting the overall economy of Texas and the US which does affect profitability. It appears that 2019's decreased production may be due to the squeeze in overall economics. All together this industry appears to have peaked in 2015 for the current 5-15 year cycle; values will likely decline over the next few years especially with the impact of the massive new plants in place.

This year has also been fraught with industrial accidents such as the ITC terminal fire and the TPC butadiene plant explosion in Port Neches. It was a very active year for fires and things going boom. This will likely impact values for those facilities that had the events, but also to the surrounding facilities that rely on the infrastructure of the damaged facility. The ITC fire impacted other sites because they held raw materials and finished goods of other plants around them as well as pipelines that run through their property that had to be shut down for safety reasons. Not to mention the ship channel traffic that was impacted by the event.

Chemical-related inventory volumes should be near the levels they were on January 1, 2019, and prices are up or down depending on the chemical. Value changes for most chemical facilities look to be down for commodity chemicals going into 2020 but may be up or down more for specialty chemicals.

Electric

The electric power generation sector continues through a great deal of turbulence and it doesn't look like it's going to get any better soon. Historically, the price of electricity has followed the dominant fuel used to generate power for peaking plants. In Texas, natural gas is our primary fuel. However hotter weather last year and low reserve capacity margins combined with excessive reliance on renewable generation caused power prices to spike in 2019.

The Competitive Renewable Energy Zones (CREZ) initiative was adopted by the Public Utility Commission of Texas (PUCT) in April 2008, with a $5 billion plan to add transmission infrastructure to move electricity from wind farms in West Texas to markets in the North, South, and Houston zones. Wind energy has zero fuel costs and is a clean alternative to burning hydrocarbons. Wind generation can receive federal tax incentives allowing them to sell power at negative prices (loss of ~20+ dollars per Megawatt) and the federal government makes up that difference. When the government incentives go away, wind power producers will have to bid in at positive pricing increasing the average price for electricity. Phase-out of the incentives began in 2017 for projects that started construction after 1/1/2017. Under the current law, no incentives will be available for projects that start construction in 2021 or later (this was extended 1 year from 2020 to 2021 last year). There were several spikes in power pricing in 2019 due to weather and reduced reserve capacity in ERCOT. ERCOT had 2 periods of Emergency Alerts in 2019 where prices hit the cap of $9000/MWH. Reserve capacity has dropped primarily due to the shutting down of multiple coal-fired power plants in 2017 and 2018. Additional coal-fired plants are scheduled for closure soon. ERCOT has attempted to raise the market price during these extreme periods to encourage the addition of new reliable (non-renewable) electrical production.

In addition to new wind farm construction that began almost entirely before 1/1/2017, there has been a new trend of taking existing wind farms that have lost their incentives and replacing the turbines which allow the wind farm to qualify for the incentives all over again. These "re-power" windfarms are getting another 10 years of production tax credits in addition to local abatements on property taxes. Additionally, Texas is now seeing an increase in solar farm construction that also enjoys tax incentives from the federal government.

Peaker plants were proposed all over Texas to help offset the load loss when the wind stops and wind generation dies out or the sun does not shine for solar, but very few projects have broken ground. Changes by ERCOT in 2019 to incentivize industry to build additional capacity did increase the cost of power but so far has not resulted in new capacity. ERCOT will increase their adjustments during high demand periods in 2020 in an attempt to encourage new capacity.

Natural Gas

Natural Gas Distribution utility companies are always requesting that regulators allow them higher returns (through the rates they are allowed to charge their customers) to pay for the cost of expansion when needed, repair storm damage at times, and maintain reliable service overall. However, the main goal of regulators is to make sure gas distribution companies remain operational while keeping service costs as low as possible, in return for the monopoly power given to these companies over designated service areas. Because both revenues and expenses tend to be held in line with this process, the values of property owned by these natural gas distribution businesses tend to be rather stable. Other factors that augur well for continued healthy future demand for utility services are a) the nation's population appears to be on a steady upward growth course; b) limited practical alternatives exist for consumers seeking a steady supply of natural gas, and c) natural gas supplies in this country are abundant thanks to proficient drilling and extraction technologies. Unseasonably warm or cold weather can always cause substantial volatility in quarterly operating results; however, companies strive to counteract this exposure through long-term oriented temperature-adjusted rate mechanisms.

For 2020, the market values of the companies in this sector should remain steady if not trend upwards because of improved earnings, relative to the previous year's totals. Supporting factors include new rates, an expanded customer base, plus higher consumption levels. The market is optimistic, in general, about the sector's operating performance over the long term. Natural gas ought to remain an abundant resource in the United States, brought about partially by new technologies, so a shortage does not seem probable anytime soon. Too, there are limited alternatives for the services the companies in this category offer. Furthermore, it's a challenge for new entrants in the market, given such factors as the size of existing competitors and the substantial initial capital outlays that are required. Finally, the country's population ought to remain on a steady, upward course, which augurs well for future demand for utility services.

Telecommunications Services

Merger and acquisition (M&A) activity remain robust within the Telecommunications Services Industry. A plethora of deals have been penned over the past year, including the potential marriage of T-Mobile and Sprint Corp. Most Telephone companies in addition to the traditional landlines have a thriving cell phone business which currently is the most profitable portion of the communications sector. For the traditional portion of Telephone Utilities, the number of phone lines in the United States continues to decrease. Many people are dropping traditional phone lines for internet phone services or have chosen to carry just cellular phones. Margins remain under pressure across the Telecommunications Services Industry.

Data usage has grown exponentially over the past few years as technological innovation has led to faster networks and more powerful handsets, giving consumers new uses for their phones. Thus, price competition has become more intense. We could be near the nadir for pricing, however. The advent of 5G technology has the potential to increase network speeds markedly and allow a plethora of new uses and services. The infrastructure for 5G will be expensive, and it's likely that as new services are introduced, they will come with added costs to help cover some of the expenses of the network upgrades. Traditional telephone property across the state is expected to continue declining over the next few years. It should be noted that all telephone calls, including cell calls, are currently still directed through the traditional telephone switching system.

The cable companies and telephone companies compete for the same market. The ability of these industries to provide phone, television and the internet has reduced the ability for both industries to earn a profit. Looking ahead, we expect spending for infrastructure buildout to remain elevated through 2021. We think the companies that get 5G to market quickly will have an advantage. The network carriers should benefit as consumers buy new equipment to take advantage of the networks and buy new services. Traditional telecommunications and cable TV providers will continue to decline as 5G advances

Underground Storage

Natural gas–a colorless, odorless, gaseous hydrocarbon–may be stored in many different ways. It is most commonly held as inventory underground under pressure in three types of facilities. These underground facilities are:

- depleted reservoirs in oil and/or natural gas fields;
- salt cavern formations; and
- aquifers.

Natural gas is also stored in liquid or gaseous form in above-ground tanks, such as liquid natural gas (LNG) export facilities. Each storage type has its physical characteristics (porosity, permeability, retention capability) and economics (site preparation and maintenance costs, deliverability rates, and cycling capability) which govern its suitability for particular applications. Two important characteristics of an underground storage facility are its capacity to hold natural gas for future use and the rate at which gas inventory can be withdrawn–called its deliverability rate.

The principal owners/operators of underground storage facilities are interstate pipeline companies, intrastate pipeline companies, local distribution companies (LDCs), and independent storage service providers. If a storage facility serves interstate commerce, it is subject to the jurisdiction of the Federal Energy Regulatory Commission (FERC); otherwise, it is state-regulated. Most working gas held in storage facilities is held under a lease with shippers, LDCs, or end users who own the gas.

Underground gas storage serves a variety of purposes. Pipeline companies, both interstate and intrastate, rely heavily on underground storage to facilitate load balancing and system supply management on their long-haul transmission lines. Local gas distribution companies generally use underground storage exclusively to serve various customer needs directly. Independent storage service providers build and own underground storage facilities to almost exclusively serve third-party customers like marketers and electricity generators on an "open access" basis. All of these storage purposes exist because of the underlying principle that injection will/must happen during summer months when demand is relatively low (and which keeps upstream producers in business), and conversely, withdrawal will/must happen in the winter months when there isn't enough upstream gas being produced to satisfy total demand. This underlying principle has been somewhat eroding over the last ten years as available supply from upstream producers has ramped up to be more or less adequate year-round now, thus negatively affecting (diminishing) the value of underground storage facilities.

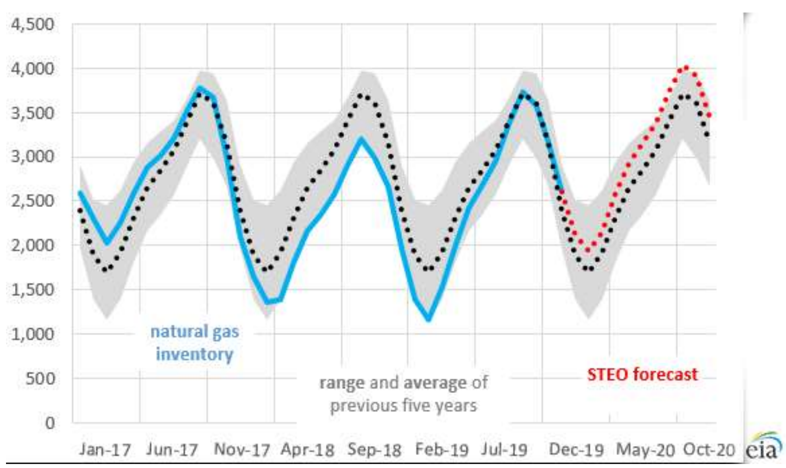
In the U.S. Energy Information Administration's (EIA) February Short-Term Energy Outlook (STEO), EIA forecasts working natural gas in storage (stocks) for the Lower 48 states will end the 2019–20 heating season (November 1–March 31) at 1,935 billion cubic feet (Bcf), or 243 Bcf more than the five-year average. In the forecast, net injections during the refill season (April 1–October 31) will bring working gas stocks to about 4,029 Bcf, which would be the most natural gas in U.S. inventory on record as of the end of October 2020.

EIA expects net withdrawals from working natural gas stocks during the 2019–20 heating season to total 1,790 Bcf, 10% less than the five-year average. After stocks totaled 3,725 Bcf at the beginning of November, this heating season would have had the smallest net withdrawals reported for a heating season since 2015. A combination of mild temperatures and continuing strong production caused lower net withdrawals from working natural gas stocks during the 2019–20 heating season. Net withdrawals from working natural gas stocks as of February 14 in this heating season totaled 1,382 Bcf, or 10% less than the five-year average, according to the EIA Natural Gas Storage Report. EIA forecasts that working gas stocks will end the injection season at their highest levels since 2017, when stocks totaled 2,035 Bcf at the end of March 2017.

The market for natural gas storage has materially shifted. A year ago, the amount of natural gas in storage was below the five-year average. But near-record net injections during the summer of 2019 erased the deficit to the five-year average. The year-over-year increases in natural gas production exceeded increases in natural gas consumption and LNG exports, lowering natural gas prices and increasing the surplus to the five-year average working natural gas inventory. EIA projects that working natural gas stocks will exceed the five-year average for the remainder of 2020, despite anticipated declines in dry natural gas production, more natural gas consumption for power generation, and continued growth in natural gas exports.

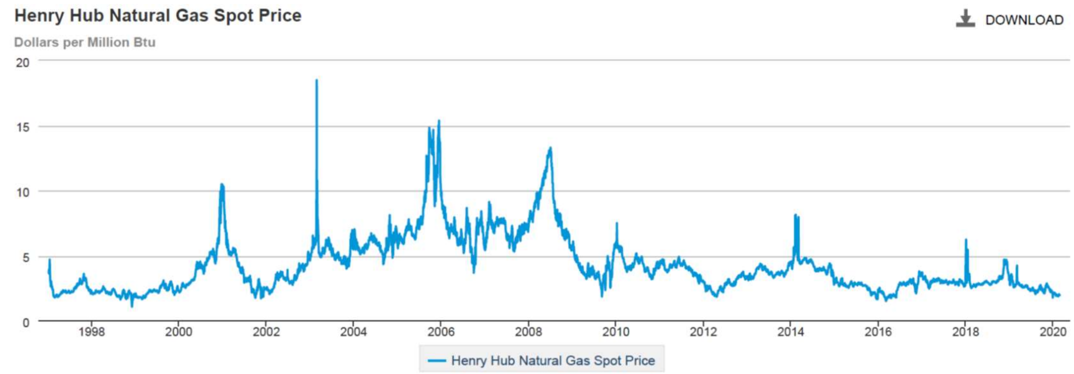
The amount of gas in underground storage in the South Central Region (includes Harris County) was 1,097 Bcf as of Jan. 2, 2020, which was 3.7% higher than the five-year average of 1,058 Bcf. Salt dome storage accounted for about 29% of the total storage figure.

Injection and withdrawal amounts can fluctuate widely over short periods, particularly in winter when significant cold weather events can trigger large sudden withdrawals. However, over time, storage levels have a predictable swing pattern of increasing during the summer months and depleting during the winter months:



The storage volumes at individual storage facilities such as Kinder Morgan Clear West Lake facility or Energy Transfer's Bammel facility do not necessarily follow overall U.S. trends. In any event, gas inventories present on the inventory owner's chosen lien date (either January 1 or September 1) will be appraised with the prevailing price at that time.

U.S. dry natural gas production set a new record in 2019, averaging 92.0 billion cubic feet per day (Bcf/d). Even so, EIA forecasts dry natural gas production will continue to rise to 94.7 Bcf/d in 2020. EIA forecasts that Henry Hub natural gas spot prices will average $2.33 per million British thermal units (MMBtu) in 2020, down from $2.57/MMBtu in 2019. As of Feb. 25, 2020, the spot price for Henry Hub delivery is less than $2/MMBtu:



As with any other commodity, the price of natural gas is naturally regulated by supply and demand. In the last decade since shale production started to truly disrupt the energy market, both supply and demand of domestically produced natural gas have steadfastly increased. The bulk of the increase in natural gas supply has come about because of the increase in the production of oil wells which results in vast amounts of associated (casing head) gas. Even with the tremendous gains in the export business related to LNG facilities recently built (with several more currently in construction), along with increasing exports of natural gas to Mexico, the price of natural gas is currently forecasted to remain constrained below $3.00/MMBtu for the foreseeable future due to supply is more than adequate to meet demand from all anticipated sources. As typical, short-term spikes and troughs will periodically occur. **With this price constraint in place, all facets of business related to the handling of this commodity will face profitability headwinds. This includes upstream producers, midstream gathering and transportation providers, and processing and storage services.** End users, such as those in the gas-fired electricity generation and petrochemical industries that use natural gas or its components as raw input, will be the beneficiaries of this low commodity price environment.

Manufacturing

Texas manufacturing dropped significantly finish to 2019 after posting a 12-year record high production index of 35.2 in May 2018. The production index is a key measure of state manufacturing conditions. The index had fallen to 3.6 by December 2019 according to business executives responding to the Texas Manufacturing Outlook Survey, which polls businesses on whether key indicators of activity have increased, remained the same, or decreased from the previous month. The survey is conducted monthly by the Federal Reserve Bank of Dallas and the survey responses are used to calculate an index for each indicator. The indexes of future general business activity and future company outlook fell grew from 3.2 and 8.8 to 6.4 to 13.9, respectively from December 2018. Most other indexes for future manufacturing remained solidly in positive territory.

TCEQ is beginning a rulemaking process that they project to complete by Tax Year 2021 that addressed the exemption of Heat Recovery Steam Generators (HRSGs). The industry has been pressing to get HRSGs exempt from taxation even though they typically cost less than alternatives and produce a marketable product (electricity). For those taxpayers who have not applied for HRSG exemptions, this could result in a windfall of tax exemptions depending on the outcome of TCEQ's rulemaking process.