Publication Underwritten by:

TRANSWESTERN®
Houston’s economic downturn is over and a slow recovery has begun. Job growth won’t return to normal for at least another year or so and the aftereffects of the layoffs, overbuilding and budget cuts will linger for the rest of the decade.

What signals the downturn is over?

- West Texas Intermediate (WTI), the U.S. benchmark for light, sweet crude, now trades near $50 per barrel. WTI traded as low as $26 in mid-February.
- The number of drilling rigs working in the U.S. reached 593 in mid-November. Only 404 rigs, the fewest in recent history, were in the field in mid-May.
- After 21 months below 50, the Houston Purchasing Managers Index hit 51.1 in October. Readings above 50 signal pending expansion; below 50, contraction.

One might compare the recent downturn to a tropical storm. The damage done depended on where one stood as the system passed over Houston. Those businesses and individuals closest to the energy industry felt the full fury of the storm. Those distant from oil and gas, to extend the metaphor a bit further—on the dry side of the storm—were buffeted but not blown away.

That said, Houston weathered Hurricane Oil better than one might have expected. The unemployment rate never rose above 5.8 percent. The bulk of the bankruptcies were confined to the energy industry. Various sectors lost jobs, but Houston never had a 12-month period in which employment growth dipped below zero. And even though thousands of Houstonians were laid off, stories of evictions and foreclosures were rare.

But the downturn did cause damage. For one, Houston’s economy shrank. The U.S. Bureau of Economic Analysis (BEA) placed the metro area’s gross domestic product (GDP) at $503 billion in ’15, down from $522 billion in ’14. Given that ’16 started on a weak note, manufacturing remains sluggish, and construction has slowed, one shouldn’t expect any improvement when BEA reports Houston’s GDP for this year.

Second, Houston nearly lost its ranking as the nation’s leading exporter. Shipments overseas fell to $97 billion in ’15, a $21.9 billion drop from the previous year. Only $1.4 billion separated Houston from second place New York. Lower commodity prices and weaker demand overseas stifled our exports. There was little danger of dropping to third place, though nearly $30 billion separates Houston from Seattle.

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1 Houston’s on track to finish ’16 with approximately 20,000 net new jobs. The Partnership’s forecast issued last December called for the region to create 21,900 jobs this year.

2 Throughout the document, Houston refers to the nine-county metro area—Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties—unless specified otherwise.
And third, 85,000 Houstonians lost their jobs, and these were well-paid jobs. Compensation in mining and logging (i.e., upstream oil and gas) averages $150,000 per year; in oil field equipment manufacturing, $75,000 per year. The jobs Houston created to replace those lost don’t pay as well. The typical restaurant worker earns less than $20,000 per year; the typical retail worker, less than $27,000. As a result, total salaries and wages paid to all Houston area workers fell by $3.4 billion, about 6.6 percent, in Q2/16 compared to Q2/15, after adjusting for inflation.

Throughout the downturn, Houstonians never sank into despair. Some even remained upbeat. In the most recent Kinder Houston Area Survey, respondents were asked to rate job opportunities in Houston. Sixty-two percent classified them as “good” or “excellent.” It warrants note that the survey was conducted in Q1/16, the lowest point of the downturn, and 62 percent was among the highest ratings in the survey’s 35-year history.

### GOING FORWARD

A recovery is clearly underway, but what shape will it take? A checkmark? A hockey stick? A bathtub? A checkmark recovery suggests a sharp bottom and a quick rebound. For this to occur, oil prices would need to double, the rig count would need to triple and all furloughed workers would need to be recalled. That’s not likely to happen, so rule out the checkmark. A hockey stick recovery suggests a deep plunge then a recovery characterized by steady, uninterrupted growth. For the economy to follow that path, oil prices need to rise at a steady pace, construction activity needs to remain elevated and layoffs need to stop. All are unlikely, so rule out the hockey stick. Houston won’t enjoy robust growth until all the excess capacity—apartments, office space, factories, drilling rigs, fracking equipment, labor—has been drained from the system. Given the size of the glut, this may take several years, which suggests a wide, flat growth curve, a shape that looks somewhat like a bathtub.

If one had to find an historical parallel for Houston’s outlook, that would be ‘01 through ‘03, years in which Houston recorded marginal job losses. But today there’s a difference. Back then, Houston struggled with the collapse of Enron, a loss of confidence after the attacks of 9/11, the impact of a U.S. recession and a collapse in oil prices. This time around, Houston is dealing only with weak oil prices, so rather than several years of marginal losses, Houston is likely to experience several years of marginal job growth.

### METRO HOUSTON JOB GAINS AND LOSSES

#### December ’14 – October ’16

<table>
<thead>
<tr>
<th>BIGGEST WINNERS</th>
<th>BIGGEST LOSERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hotels, Restaurants, Bars</strong></td>
<td><strong>Manufacturing</strong></td>
</tr>
<tr>
<td>27,600 jobs</td>
<td>-30,400 jobs</td>
</tr>
<tr>
<td><strong>Health Care</strong></td>
<td><strong>Mining and Logging</strong></td>
</tr>
<tr>
<td>24,500 jobs</td>
<td>-25,600 jobs</td>
</tr>
<tr>
<td><strong>Local Public Education</strong></td>
<td><strong>Engineering Services</strong></td>
</tr>
<tr>
<td>11,200 jobs</td>
<td>-10,700 jobs</td>
</tr>
<tr>
<td><strong>Services to Buildings</strong></td>
<td><strong>Employment Services</strong></td>
</tr>
<tr>
<td>7,000 jobs</td>
<td>-5,400 jobs</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td><strong>Wholesale Trade</strong></td>
</tr>
<tr>
<td>6,100 jobs</td>
<td>-5,400 jobs</td>
</tr>
<tr>
<td><strong>Food and Beverage Stores</strong></td>
<td><strong>Transportation, Warehousing, Utilities</strong></td>
</tr>
<tr>
<td>5,100 jobs</td>
<td>-3,100 jobs</td>
</tr>
</tbody>
</table>

Source: Texas Workforce Commission
KEY ASSUMPTIONS

The Partnership’s jobs forecast is based on several key assumptions:

• U.S. GDP grows at an annual rate of 2.0 percent or better, adjusted for inflation.

• The U.S. economy creates about 200,000 jobs per month.

• Any unrest in oil exporting countries has a minimal impact on oil prices.

• The global economy continues to grow at its current tepid pace.

• When the Federal Reserve raises interest rates, the action has no detrimental effect on the local economy.

• Washington issues no new environmental or business regulations that negatively impact Houston’s key industries, or any changes to existing laws are implemented over a reasonable time.

• Any appreciation in the value of the dollar against the currencies of Houston’s major trading partners is minimal and has no significant effect on the region’s exports.

• The price of West Texas Intermediate (WTI) holds above $45 per barrel. If the price slips below $45, the dip is transitory.

• Houston continues to attract residents from other cities, states and countries.

IN A NUTSHELL

Recovery for the energy industry won’t occur until crude prices approach $60. The recovery in manufacturing depends on a steady rise in the rig count. The petrochemical construction boom, which offset weakness in upstream energy, is winding down and will become a drag on employment growth. Houston has too many apartments and too much empty office space to warrant starting many new projects. The transportation sector awaits growth in energy, manufacturing and wholesale trade. Wholesale trade needs to see growth in energy and manufacturing before it flourishes again. Retail, health care, restaurants and bars will do well as long as population continues to grow. And the government sector, which is dominated by public education, still needs to catch up to the growth of the past several years.

The forecast calls for employment growth in manufacturing, wholesale trade, retail trade, finance and insurance, real estate, business, professional and technical services, educational services, health care, administrative services, arts and entertainment, accommodation and food services, other services, and government. Jobs losses will continue in exploration and production, oil field services, construction and information. The Partnership’s forecast calls for Houston to create 29,700 net jobs in ’17.

METRO HOUSTON JOB GROWTH, December to December, (000s)

Source: Texas Workforce Commission *Partnership Forecast
MINING AND LOGGING

The worst of the oil bust is over. Crude prices hit bottom in mid-February and have trended upward since. The domestic rig count touched bottom in late May. More than half the rigs returned to service have been deployed in Texas. The pace of bankruptcy announcements has slowed. And reports of layoffs in the oil patch, an almost daily occurrence a year ago, are less frequent now.

The industry, however, continues to lose money. For exploration firms, the losses have shrunk with each passing quarter. But the benefits of higher oil prices have yet to trickle down to the service firms. They continue to bleed cash.

The industry needs oil to stay above $50 for an appreciable period before true healing begins. At present, oil prices remain too low and too volatile. In the 10 weeks prior to Thanksgiving, WTI traded between $43 and $52 a barrel on the spot market. Over that time, prices fell as often as they rose.

The outlook is more upbeat now than earlier in the year. Nearly half of the energy firms responding to a Q3/16 survey by the Federal Reserve Bank of Dallas reported their outlook was improving. That’s up from less than one-fourth in the Q1/16 survey. Bloomberg News reports that several firms plan to increase exploration budgets in ‘17, albeit by small amounts. And in a recent press release, Halliburton chairman and CEO Dave Lesar said, “things are getting better for us and our customers.”

But structural constraints temper prospects for a quick recovery. Many workers laid off in the downturn have found work elsewhere, either in another industry or another state.

Rigs parked for months won’t be in optimal condition. Some will suffer from deferred maintenance; others have been cannibalized for spare parts. Shops and factories have been shut down. Cash flow remains tight. Many firms lack working capital and won’t be able to expand when business picks up. The industry needs time to heal, so ‘17 remains a recovery year.

The Partnership’s forecast assumes no major supply disruptions occur overseas; crude averages $50 a barrel or better for most of the year; prices remain stable; exploration budgets remain flat; growth in the rig count occurs gradually; firms continue to restructure; and a final round of layoffs is completed.

The forecast calls for job cuts to continue, albeit at a slower pace. The industry is expected to lose an additional 3,500 jobs in ‘17.

HOUSTON ENERGY COMPANIES Q3/16 EARNINGS PER SHARE

<table>
<thead>
<tr>
<th>Stock</th>
<th>EPS, Fully Diluted, Continuing Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anadarko</td>
<td>$-1.61</td>
</tr>
<tr>
<td>Apache</td>
<td>$-1.51</td>
</tr>
<tr>
<td>Baker Hughes</td>
<td>$-1.00</td>
</tr>
<tr>
<td>Chevron</td>
<td>$0.68</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>$-0.84</td>
</tr>
<tr>
<td>EOG</td>
<td>$-0.35</td>
</tr>
<tr>
<td>ExxonMobil</td>
<td>$0.63</td>
</tr>
<tr>
<td>FMC</td>
<td>$0.20</td>
</tr>
<tr>
<td>Halliburton</td>
<td>$0.01</td>
</tr>
<tr>
<td>Hess</td>
<td>$-1.12</td>
</tr>
<tr>
<td>Marathon</td>
<td>$-0.23</td>
</tr>
<tr>
<td>NOV</td>
<td>$-3.62</td>
</tr>
<tr>
<td>Occidental</td>
<td>$-0.32</td>
</tr>
<tr>
<td>Oil States</td>
<td>$-0.22</td>
</tr>
<tr>
<td>Schlumberger</td>
<td>$0.13</td>
</tr>
<tr>
<td>Shell</td>
<td>$0.17</td>
</tr>
<tr>
<td>Tesco</td>
<td>$-0.48</td>
</tr>
<tr>
<td>Weatherford</td>
<td>$-1.98</td>
</tr>
</tbody>
</table>

Source: Company Reports  Note: Includes audited and unaudited results
Houston has enjoyed a five-year construction boom. More than $90 billion in commercial, industrial and residential contracts have been awarded since January ’11. Construction has helped offset weakness in Houston’s economy after the energy industry collapsed. But that won’t be the case in ’17. In a reversal of roles, construction will be a drag on Houston next year.

The industry accounts for about six percent of the region’s gross domestic product. In autumn ’15, at the height of the boom, construction employed more than 227,000 workers, one in every 13 in the region. Annual payroll exceeded $15.6 billion that year.

But the boom is winding down. Through October ’16, City of Houston building permits fell 25 percent compared to the same period in ’14. Contract awards in the nine-county region are half the level of two years ago. And data from the Texas Workforce Commission (TWC) indicate the sector has cut 6,500 jobs so far this year. With a few exceptions, construction activity will continue to shrink next year.

**OFFICE**

The office market is grossly overbuilt. More than 33 million square feet of direct space and another 12 million square feet of sublease was available in Q3/16. The effective vacancy rate exceeds 20 percent. A rate reflecting a balanced market would be in the low teens. Without significant job growth, that space will sit empty for years.

The glut has yet to affect published lease rates, though. Landlords are reluctant to lower rents because doing so would have a spiraling effect on the market. They would also have to live with the cuts for the life of a contract. Instead, owners have offered generous tenant improvement allowances, i.e., money to build out lease space. The permit data bear this out. Over the past 12 months, permits for commercial alteration and repair work are up $381 million, or 13.8 percent, in the city—the only segment of the construction market showing an increase.

In Q3/16, only 2.3 million square feet of space was under construction, down from 10.7 million in Q3/15 and 17.3 million in Q3/14. Houston won’t see much construction activity for the next few years, and any that occurs will likely be for single-tenant or substantially preleased buildings.

**MULTIFAMILY**

The only market in worse shape than office is multifamily. Since December ’14, developers have added more than 37,000 units to local inventory. Another 15,000 are under construction, the majority scheduled to open in the next 12 months. That equates to 52,000 units delivered in a market that’s struggling to create jobs. Over the past 12 months, the region has absorbed about 6,500 units.

The glut cut overall occupancy to 88.9 percent in November ’16, down from 91.5 percent at its June ’15 peak. Occupancy rates below 90 percent favor tenants. Rents have responded accordingly, dropping between two and six percent, depending on the apartment class.

**METRO HOUSTON MULTIFAMILY MARKET**

**November ’16**

<table>
<thead>
<tr>
<th>Class</th>
<th>Units</th>
<th>Occupancy</th>
<th>Average Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>146,527</td>
<td>79.1%</td>
<td>$1,428</td>
</tr>
<tr>
<td>Class B</td>
<td>241,446</td>
<td>92.2%</td>
<td>$942</td>
</tr>
<tr>
<td>Class C</td>
<td>187,605</td>
<td>92.3%</td>
<td>$760</td>
</tr>
<tr>
<td>Class D</td>
<td>49,945</td>
<td>89.2%</td>
<td>$611</td>
</tr>
<tr>
<td>Total or Average</td>
<td>625,523</td>
<td>88.9%</td>
<td>$975</td>
</tr>
</tbody>
</table>

Source: Apartment Data Services
The market absorbed 14,000 Class A units through the first 10 months of ’16, but this performance came at the expense of Class B, C and D properties, which collectively lost 7,500 tenants over the same period. Traditional Class B and C tenants have been lured into the Class A market with deposit waivers, free rent (as much as three months) and other enticements. Whether these tenants renew their leases in 12 months remains to be seen.

How long before the market recovers? During the boom, Houston created about 95,000 jobs and absorbed about 15,000 units per year. That fits an industry rule of thumb that for every six jobs created, the market absorbs one unit. Applying that rule, Houston needs to add 156,000 jobs to cut the current surplus in half. Once the economy recovers, growth should return to the long-term trend—50,000 to 60,000 jobs per year.

In the meantime, developers continue to ignore the market signals as well as the headlines. The City of Houston is on track to permit an additional 5,000 units this year. And according to a report from Apartment Data Services, another 16,500 units have been proposed. One hopes the lenders will hold back the funds until the market rebalances.

**INDUSTRIAL**

Like office and multifamily, the industrial boom has begun to wind down. Q3/16 saw 8.0 million square feet under construction, down from 11.6 million at mid-year. Sublease space has begun to hit the market—4 million square feet in Q3/16, up from 2 million in Q3/15.

Vacancy rates recently ticked up, lease rates have slipped and landlords have begun offering more generous tenant improvement allowances. But unlike multifamily, lenders have forced more discipline on the market. Developers must hold significant equity positions in their projects or buildings must be substantially preleased before construction can begin. Of the 12 largest projects under construction in Q3/16, eight are 100 percent preleased and a ninth is 67 percent. As a result, the risk of overbuilding is minimal.

**HOUSING**

Despite the downturn, housing has held up well. For the past two years, the 12-month total closings tracked by the Houston Association of Realtors® has held between 89,000 and 90,000. With a 3.8-month supply, inventory remains tight. Six months is considered a balanced market. Foreclosure sales account for less than three percent of closings. Coming out of the Great Recession, they accounted for more than 20 percent.

New home sales have also held up well. As of Q3/16, Houston was second in the nation in housing starts, behind Dallas. Builders are on pace to start about 25,500 single-family homes in ’16. MetroStudy expects 26,250 single-family starts in ’17 and 28,500 in ’18.

Some aspects of the housing market have weakened. Homes priced above $500,000 are slow to sell now, the market shrinking under the vast number of energy layoffs. Price appreciation has slowed to single digits, the market responding to the slackening in demand. And the average number days on market before closing continues to climb. The weaker economy has reigned in the sense of urgency many would-be buyers felt two years ago.

**HEAVY INDUSTRIAL**

The boom in petrochemical construction that began several years ago is peaking. Construction snafus may postpone the peak but the downturn is inevitable.

The impact on employment is uncertain. For one, a sizable portion of the construction workforce is mobile, moving up and down the coast as projects break ground. They likely will leave Houston as local projects wind down. Second, once operational, the plants will require a corps of pipefitters, welders, electricians and carpenters to conduct routine maintenance and upkeep work. Third, during the boom, a significant number of turnaround and maintenance projects were deferred. Those projects can now be attended to. All three will soften the blow of the anticipated layoffs.

There are a few bright spots. Nine local hospitals are in various stages of planning and construction. And in the November ’16 elections, voters approved $638 million in local construction bonds. That’s on top of the $10.6 billion approved since May ’14.

The forecast for ’17 assumes no new office construction; minimal industrial

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**METRO HOUSTON INDUSTRIAL MARKET Q3/16**

<table>
<thead>
<tr>
<th>Flex/R&amp;D</th>
<th>Inventory</th>
<th>Available Space</th>
<th>Vacancy with Sublet (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>42,389,346</td>
<td>3,045,314</td>
<td>7.0%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>79,086,246</td>
<td>2,124,783</td>
<td>3.2</td>
</tr>
<tr>
<td>Warehouse/Distribution</td>
<td>370,996,842</td>
<td>24,173,256</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td>492,472,434</td>
<td>29,343,353</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: Transwestern

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3 Number of months it will take to deplete current active inventory for the single-family market based on the prior 12 months sales activity.
construction; multifamily beginning to taper off; single-family home construction holding firm; chemical construction winding down; medical construction proceeding apace; institutional construction doing likewise; and commercial remodeling ticking up.

Unfortunately, there won’t be enough medical, institutional and remodeling work to offset losses elsewhere. Construction employment has trended down since the first of the year. The forecast anticipates that trend will continue, the sector losing 16,000 jobs in ‘17.

METRO HOUSTON RESIDENTIAL HOUSING MARKET
Sales/Listings, Thousands

MANUFACTURING

No industry has suffered greater losses in the downturn than manufacturing. Since December ‘14, the sector has cut more than 34,000 jobs. Two sectors account for most of the losses: fabricated metal products (e.g., pipes, valves, flanges) and machinery manufacturing (primarily oil field equipment). Combined, they have cut 31,000 jobs.

The loss in manufacturing jobs is tied to the collapse in the U.S. rig count. From peak to trough, the fleet lost 1,527 rigs, a 79.1 percent drop. With fewer rigs in the field, the demand for new rigs and replacement parts plummeted. Demand fell again when firms needing to conserve cash cannibalized idle rigs for spare parts. With orders down to a trickle, hours were cut, then headcount was cut, then hours were cut again. One in five workers (18.8 percent) in fabricated metal products lost their jobs. One in three workers (31.8 percent) in oil field equipment manufacturing.

The outlook for ‘17 has improved somewhat. As noted earlier, the rig count continues to recover. At some point, the industry will reach a threshold where none of the mothballed rigs are in good enough shape to redeploy. Orders for new rigs and spare parts will follow. At first, manufacturers will meet the increased demand with overtime. Workers who had their hours cut will welcome the opportunity to earn the extra income. But hiring won’t start until backlogs are rebuilt and orders can no longer be met with overtime. That won’t occur without a dramatic increase in the rig count, which depends on exploration budgets. By mid-‘17, activity should pick up, and with it, employment in energy-related manufacturing.

Oil field equipment and fabricated metal products account for about 42 percent of all manufacturing jobs in the region. Those are just two of 83 manufacturing subsectors in Houston. Food processing, chemicals and plastics, refining, computers and electrical equipment combine for another 42 percent of manufacturing employment.

Employment in computers and electrical equipment has been on a downward trajectory since the late ’90s. At its peak, the sector employed nearly 12 percent of the region’s manufacturing workers. Now it employs less than 7 percent. The Texas Gulf Coast contains one-fourth of the nation’s refining capacity. Employment in the industry has declined since the mid-’90s. Neither is expected to add jobs in the coming months.

A score of petrochemical plants are slated to come on line in ‘17; some will require a few dozen technicians to operate, others a few hundred.

Food processing includes everything from bakeries to breweries to slaughter houses. Driven primarily by population growth, the sector typically adds a few hundred jobs each year.

Another 79 sectors employ the remaining 16 percent of the manufacturing workforce. With marginal growth, these sectors will combine to create a few hundred jobs.
Wholesalers are true middlemen, purchasing in bulk, stocking their bins and warehouses, then reselling their inventory to businesses and merchants at a profit. The wholesaler might hawk the iron and steel that goes into a drilling rig, sell a bulldozer to pave a street, deliver cases of toilet paper to a neighborhood convenience store or load plastic pellets into containers and ship them overseas.

Historically, wholesale trade accounts for six to eight percent of Houston’s GDP. At its December ’14 peak, the sector employed 174,000 workers, or 5.8 percent of all jobs in the region. The sector paid out $13.8 billion in wages that year. And like manufacturing, wholesale has struggled during the downturn. Since December ’14, the sector has cut 5,400 jobs.

The recent trajectory of the rig count offers hope, though. As more wells are drilled, parts will wear out. As parts wear out, firms will order replacements. As orders pick up, manufacturing activity will increase. As manufacturing increases, purchasing managers will order more nuts, bolts and spare parts. And as the economy improves, consumer confidence will rebound, cash registers will ring more often and merchants will restock their shelves more frequently.

Wholesale activity will improve in ’17, and with it prospects for employment in the sector. But not until the increase in drilling activity and the subsequent demand for equipment has been sustained for several months will the industry feel more comfortable hiring staff. Job growth might not occur until the second half of the year. As a result, gains will be tepid. The forecast calls for wholesale to add 1,000 jobs in ’17.

The forecast assumes that by the end of the year enough drilling rigs have been redeployed to boost the demand for parts and equipment; population growth increases the demand for food and beverage products; recent foreign investments in local manufacturing begin to bear fruit; the ramp-up in chemical production boosts plant hiring; the U.S. economy remains healthy; and there’s no drop in demand for the products Houston manufactures and ships overseas. Taking these factors into consideration, manufacturing should add about 3,000 jobs in ’17.
Retail trade accounts for 4.5 percent of Houston’s GDP and 10.3 percent of all jobs in the region. Only health care and government employ larger shares of the workforce. The sector also happens to be dominated by positions at the low end of the pay scale. The typical stock clerk earned $27,030 in ’15; the typical salesperson, $26,250; the typical cashier, $20,480, all well below the average of $51,830 for all occupations in Houston.

The sector, however, plays a key role in meeting the region’s workforce needs. Many teenagers land their first job stocking shelves or bagging groceries. Retail provides career options for those with limited education or training. And for professionals between jobs, a short stint in retail helps to bridge the gap between paychecks.

A number of factors drive retail growth—population, employment and income. Over the past 35 years, Houston has added 3.4 million residents, 1.5 million jobs and real personal income has grown at a 6.1 percent annual rate. The Partnership sees nothing in the forecast to disrupt the long term trend, but weak job growth may impact retail in the short run.

A number of new retailers will enter the market in ’17, including 365 (Whole Foods value store), Amazon-Fresh (grocery delivery service), CB2 (modern furniture and home décor), Field & Stream (sporting goods), Lidl (German discount supermarket), PGA Tour Superstore (golf accessories) and Total Wine & More (alcohol and gift retailer). And about two million square feet of retail space is under construction, much of it for delivery next year. That space will need to be filled with clerks, cashiers, stockers and managers.

Employment growth should continue in ’17. The forecast calls for retail to add 4,500 jobs by year’s end.

<table>
<thead>
<tr>
<th>METRO HOUSTON RETAIL OUTLETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline &amp; Shoes</td>
</tr>
<tr>
<td>Clothing &amp; Shoes</td>
</tr>
<tr>
<td>Drug</td>
</tr>
<tr>
<td>Grocery</td>
</tr>
<tr>
<td>General Merchandise</td>
</tr>
<tr>
<td>Convenience Stores</td>
</tr>
<tr>
<td>Furniture &amp; Furnishings</td>
</tr>
<tr>
<td>Electronics</td>
</tr>
<tr>
<td>Car Dealers &amp; Building Materials</td>
</tr>
<tr>
<td>Automotive Parts</td>
</tr>
<tr>
<td>Beer, Wine, Liquor, Tobacco</td>
</tr>
<tr>
<td>Tire Dealers</td>
</tr>
<tr>
<td>Jewelry</td>
</tr>
<tr>
<td>Cosmetics &amp; Beauty Supplies</td>
</tr>
<tr>
<td>Gifts, Novelties, Souvenirs</td>
</tr>
<tr>
<td>Used Merchandise</td>
</tr>
<tr>
<td>Sporting Goods</td>
</tr>
<tr>
<td>Meat Markets</td>
</tr>
<tr>
<td>All Others*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

*Includes 32 merchandise categories not listed above  
Source: Texas Workforce Commission

Transportation, warehousing and utilities account for about seven percent of Houston’s GDP and five percent of total employment. As of October ’16, approximately 140,000 Houstonians worked in the sector.

Passenger traffic at the Houston Airport System (HAS) has held up well considering the collapse in corporate travel. Through September ’16, traffic has slipped less than 0.1 percent compared to the same period in ’15. Air cargo volume is down 1.0 percent. Growth in international traffic at Houston Hobby has helped to offset a drop in domestic traffic system wide. The overall weakness has cost the sector a few hundred jobs.

Shipments of chemicals, iron, steel and industrial machinery through the Houston-Galveston Customs District have fallen off last year’s pace. Through the first nine months of ’16, 82.3 million metric tons of cargo have crossed local docks, a 4.5 percent drop from the same period in ’15. Exports are flat and imports are down significantly. Because of weak commodity prices, the value of shipments has fallen 21.8 percent year to date. One bright note: container traffic is on pace to set another record this year.

With exploration firms drilling fewer wells, fewer rigs need to be moved around the state. With fewer rigs operating, fewer supplies needed to be delivered to drill sites. With the energy industry cutting back on purchases, truckers made fewer trips to the factory or warehouse. The sector lost 1,500 jobs in the downturn.

Railroads represent less than one-tenth of one percent of all jobs in the region. That’s not to diminish their importance to the region. Houston was once known as “the city where 17 railroads meet the sea.” Many of those rail connections...
Professional, scientific and technical services includes a host of firms—accounting, advertising, engineering, environmental, graphic design, human resource, technology consulting, marketing, management consulting, tax prep and various others. The sector accounts for about seven percent of total employment and nine percent of Houston’s GDP.

Houstonians who work in the professional, scientific and technical sector has been in decline since the early ’00s, the bulk of the decline coming in telecommunications and traditional media. Since December ’00, the month of peak employment, 19,000 jobs have been cut. Jobs have been lost to technology, the Internet and social media. The sector managed to eke out job growth in ’12 and ’13, only to give up those gains in ’14 and ’15. There’s no sign the long-term trend is about to reverse. The forecast calls for the sector to lose another 200 jobs in ’17.

services tend to be well-paid. Annual compensation averages $110,000, twice the metro average. Because of the high salaries, job losses in the sector have a disproportional effect on the rest of the economy. Professional, scientific and technical services lost nearly 8,000 jobs in the downturn. That equates to a loss of nearly $900 million in aggregate salaries and wages.

For the past two decades, the sector benefited from the energy industry’s push to outsource as many non-core functions as possible. From October ’91 to October ’16, professional, scientific and technical services added more than 100,000 jobs. By comparison, mining and logging added about 25,000 and manufacturing about 27,000. The growth of professional services is one reason Houston is recognized as more of a white-collar than a blue-collar town.

The employment data suggest the sector hit bottom in Q2/16 and

remained in place, and their importance will grow as chemical production ramps up.

Houston controls 44 percent of all U.S. oil pipeline capacity and

52 percent of the natural gas pipeline capacity. The sector employs about 11,000 Houstonians and tends to add a few hundred each year. Protests continue to delay the construction of new pipelines. Future growth will come largely from merging and consolidating existing pipeline management into Houston.

Finally, employment in utilities has barely grown over the past 10 years. Growth in the customer base has been managed through improvements in technology.

The public and private sectors continue to invest in the local transportation infrastructure. The Bush Intercontinental Airport Redevelopment Program is moving through the City of Houston’s review process. The Port Commission recently approved $88 million in capital expenditures tied to channel improvements and new terminals. United Airlines is currently constructing a new Terminal C North facility slated to open in early ’17. And FedEx and Amazon have announced plans to open major distribution facilities next year.

After bottoming in the spring, transportation began adding jobs in the summer. That recovery should continue in ’17. The forecast assumes domestic drilling activity continues to rebound; manufacturing output gradually improves; restrictions on corporate travel are eased; overseas consumers continue buying Houston-made goods; container volume at the Port of Houston continues to grow; and expanding chemical production drives up demand for rail, truck and waterborne transportation services. Based on those assumptions, the forecast calls for the sector to add 2,100 jobs in ’17.
marginal growth began the following quarter. A number of events could accelerate that growth. A major overhaul to the U.S. tax code would create new uncertainties, thus providing work for Houston’s accounting and law firms. The same holds true for a surge in energy bankruptcies, mergers and acquisitions. A major commitment to infrastructure investments, either private or public, would benefit the architecture and engineering firms. Balance sheets with more black ink than red would free up funds for advertising, marketing and management consulting services. And more contracts with firms outside energy or outside Houston would boost local revenues.

But politicians have talked about reforming the tax code and rebuilding the nation’s infrastructure for decades and made little progress. Local energy firms don’t have the capital to expand their facilities. The wave of mergers expected in energy never occurred. Bankruptcies appear to be tapering off as well.

A set of more likely scenarios includes Houstonians finding clients outside energy and outside the region, oil prices stabilizing above $50 but not yet at $60; the general economy slowly improving; and billings at local service firms remaining flat during the first half of the year. Based on those assumptions, the forecast calls for the sector to add 2,400 jobs in ’17.

HOUSTON PROFESSIONAL, SCIENTIFIC, TECHNICAL SERVICES
Share of Employment Within Sector

<table>
<thead>
<tr>
<th>Category</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural and Engineering</td>
<td>17%</td>
</tr>
<tr>
<td>Management Consulting</td>
<td>31%</td>
</tr>
<tr>
<td>Computer Systems Design</td>
<td>14%</td>
</tr>
<tr>
<td>Accounting and Bookkeeping</td>
<td>12%</td>
</tr>
<tr>
<td>Legal Services</td>
<td>2%</td>
</tr>
<tr>
<td>Other Services</td>
<td>2%</td>
</tr>
<tr>
<td>Scientific Research Services</td>
<td>9%</td>
</tr>
<tr>
<td>Advertising and PR</td>
<td>12%</td>
</tr>
</tbody>
</table>

Source: Texas Workforce Commission

ACCOMMODATION AND FOOD SERVICES

In case you haven’t heard, Houston will host Super Bowl LI on Feb. 5, 2017. Organizers expect 150,000 visitors in town the week of the event. Nearly all of Houston’s 84,000 hotel rooms will be booked. Lines at local restaurants will stretch out the door. More than a million people will stop by Discovery Green for the Super Bowl LIVE fan festival. And the weeklong event will inject millions of dollars into Houston’s economy.

But once the parties are over and everyone goes home, how will the local hospitality industry fare?

Business travel will remain weak. The energy industry has slashed travel and training budgets, which translates into fewer employees booked into local hotels for meetings and conferences.

Tourism will continue to grow, however. Houston welcomed 17.5 million visitors in ’15, up from 14.5 million in ’14. Houston First Corporation and the Greater Houston Convention & Visitors Bureau have an ambitious plan to increase annual visitors to 20 million in ’18. The plan includes a combination of marketing, tourism summits, industry outreach and infrastructure improvements.

Houston’s tourism industry continues to receive national accolades.

- Earlier this year, Travel + Leisure ranked Houston No. 2 among “Friendliest Cities in America” and No. 10 among “America’s Best Music Scenes.” U.S. News & World Report ranked Houston as the seventh “Best Foodie Destination in the USA.”
- Last year, National Geographic ranked Houston No. 8 “Top Nightlife Cities in the World.” Houston was the only U.S. destination on the Boston Globe’s list of six “Places to Visit in 2015.”
- More than 70 local restaurants and bars, all listed on the GHCVB’s website, have won awards or have been featured in national media in recent years.

Restaurants and bars have notorious failure rates, but more open than close every year. In a typical year, Houston has a net gain of 300 or so. These new bars and restaurants need wait staff, cooks and dishwashers. A fast-casual restaurant, like Torchy’s Tacos or Beck’s Prime, can manage with a handful of employees, but large restaurants, like a Pappas or Landry’s,
One in 15 Houstonians, over 215,000 residents, work in the clumsily named “Administrative and Support and Waste Management and Remediation Services.” The sector might be better named “Outsourcing and Other Stuff” since it includes firms that provide clerical, janitorial, personnel, and protective services for a fee, temporary help and employment agencies, telemarketers, collections agencies, landscaping firms, travel agencies, garbage hauling and hazardous waste treatment. The sector accounts for about 3 percent of regional GDP.

Administrative support serves as a bellwether for broader trends in the economy. When a recession sets in, companies lay off contract workers first and scale back on outsourcing. When the recovery begins, businesses add contract workers to handle the initial upick in demand and outsourcing contracts are reinstated.

In the most recent downturn, sector employment peaked four months before total employment peaked. The sector cut nearly 14,000 jobs between August ‘14 and February ‘16. Administrative employment began to grow again in March ‘16, three months before the trend was obvious in the broader economy. The sector has since recouped about 65 percent of its losses, which also suggests improvement in the broader economy is not far behind.

The forecast for ‘17 assumes Houston’s economy continues to improve; firms hire additional contract workers to handle increasing demand; outsourcing contracts are renewed and upgraded; and as new apartment communities come on line, management hires crews to landscape and guard services to protect them. Based on those assumptions, the sector should add 4,900 jobs in ‘17.
OTHER SERVICES

Other Services seems like the catch-all for what the government couldn’t fit in anywhere else. “Other” includes automotive repair, beauty salons, car washes, civic organizations (like the Greater Houston Partnership), commercial machinery repair, dry cleaning, foundations (like Houston Endowment), funeral homes, home repair services, labor unions, nail salons, parking garages, religious organizations (like the Archdiocese of Galveston-Houston) and social advocacy organizations (like the United Way of Greater Houston). The sector employs just over 100,000 Houstonians, or about three percent of the local workforce and accounts for about two percent of regional GDP. The firms tend to be small—80 percent have fewer than 10 employees, making them difficult for TWC to survey, which in turn makes job growth difficult to track, much less forecast. That doesn’t mean one shouldn’t try. In a robust economy, Other Services creates about 2,100 jobs in a year. The forecast calls for the sector to create 1,100 jobs in ’17.

EDUCATIONAL SERVICES

This sector includes private education—vocational training, technical schools, private universities, private schools and testing services. School districts and community colleges are classified as local government. The University of Houston and Texas Southern University are part of state government.

School enrollments rise for several reasons: a growing school-age population, workers seeking to upgrade their skills and parents seeking alternatives to public education. Growing enrollments require more instructors, administrators and tutors.

This is a small sector, only 59,000 jobs as of September ‘16, about 2.0 percent of total employment in the region. The sector accounts for about half a percent of the region’s GDP.

Educational services has added jobs in 21 of the past 25 years. Over the past five, it’s averaged 2,900 per year. The forecast assumes nothing to derail this growth, but errs on the side of caution, and calls for the sector to add 2,400 jobs in ‘17.

GOVERNMENT

More Houstonians work in government than any other sector. The region’s 390,000 public servants account for one in every eight jobs in the region. In ’15, they earned more than $15.1 billion in wages and salaries and contributed about 7 percent to the region’s GDP.

State and local education—school districts, community colleges and public universities—account for about two-thirds of all public sector employment. BLS estimates there are 160,000 teachers, teaching assistants and librarians in Houston. One shouldn’t underestimate the importance of public education salaries to the local economy. This group earned $10.5 billion in ’15. That money was spent in the malls and movie theaters, and applied to mortgage payments and car notes.

Three factors influence hiring in the public sector—population growth, available revenues and public attitudes.

As the region’s population grows, the need for fire and police protection grows, as does the number of potholes that need to be filled. Doing so requires additional personnel. Over the past two decades, the region has added 2.5 million residents. The public sector has added 103,000 employees, 72 percent in education, 26 percent in state and local government, and two percent in federal.

The bulk of local government revenue comes from two sources—property taxes and sales and use taxes. Over the past five years, the market value of property in the region has grown more than 40

FULL MARKET VALUE OF TAX ROLLS - Billions

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>’15</th>
<th>’11</th>
<th>$ Change</th>
<th>% Change</th>
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</thead>
<tbody>
<tr>
<td>Harris County</td>
<td>524.3</td>
<td>368.6</td>
<td>155.7</td>
<td>42.20%</td>
</tr>
<tr>
<td>City of Houston</td>
<td>278.6</td>
<td>192.5</td>
<td>86.1</td>
<td>44.70%</td>
</tr>
<tr>
<td>Houston ISD</td>
<td>207.1</td>
<td>139.3</td>
<td>67.8</td>
<td>48.70%</td>
</tr>
</tbody>
</table>

Source: Houston Facts
percent in the region’s larger jurisdictions, giving them a wider base on which to levy taxes.

Sales tax revenues have not been as robust. Through the first 11 months of ’16, allocations are down in 43 of the 113 cities in the region which levy a sales tax. Collectively, that’s a loss of about $34.2 million. A common misperception is that all sales tax collections come from consumer purchases. In fact, a large portion comes from business-to-business transactions. As Houston’s economy improves, tax collections from businesses should as well.

Local attitudes toward government are more difficult to quantify. In September, a national Gallup poll found that seven in 10 respondents say they have a “great deal” or a “fair amount” of trust in local government to handle problems, compared with six in 10 who say the same for their state government. Another indicator of trust: over the past three years, local governments have placed 104 bond issues on the ballot. Voters have approved all but 10 of them.

A final note about the public sector—though many believe government has grown too big in recent years, its share of local employment is smaller today (13.2 percent) than it was 25 years ago (14.3 percent).

The employment forecast for this sector assumes that population growth continues; cities and counties add personnel to handle the larger constituencies; school enrollments continue to climb; school districts hire more educators and other staff to serve the larger enrollments; tax revenues increase slightly; and attitudes toward local government remains positive. On that basis, the forecast calls for the government sector to add 6,200 jobs in ’17.

More than 325,000 Houstonians work in health care. Only the government sector employs more people. Health care also accounts for one in nine jobs and nearly one in every 10 payroll dollars.

Health care remains one of the most resilient of Houston’s industries. Not once in the past 30 years has the sector finished the year with fewer jobs than it started. The industry has struggled at times, creating as few as 2,000 jobs in lean years, and prospered at others, creating as many as 12,000 in the fat years. From December ’14 to October ’16, a period when mining and logging lost nearly 25,000 jobs, health care created nearly 23,000.

The location of health care employment has shifted over time. In ’91, more than a third (37.3 percent) of all health care professionals worked in the Texas Medical Center (TMC). As Houston’s population has moved to the suburbs, so has the health care industry. Today, less than a third (32.2 percent) of Houston’s health care jobs can be found in the vicinity of Fannin, Main and Holcombe.

The shift to the suburbs continues. Over the next four years, Memorial Hermann will open or expand hospitals in the TMC, as well as in Katy, Sugar Land, Pearland, Cypress and northeast Houston. Texas Children’s will open or expand hospitals in the TMC as well as The Woodlands and West Houston. Houston Methodist will open hospitals in West Houston, Sugar Land and The Woodlands. The University of Texas Medical Branch will open a hospital in League City. And Baylor/CHI will open a hospital in the TMC.

The industry has grown despite recent headwinds. The loss of well-paid energy jobs with generous benefits packages has forced patients to cancel procedures and postpone doctor visits. Nontraditional providers have entered the market—grocery stores now offer flu shots and pharmacy clinics see patients on weekends. Insurance carriers continue to pressure health care providers to lower costs. And

HEALTH CARE AND SOCIAL ASSISTANCE

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a never-ending shortage of nurses and other health care professionals plagues the industry. As of late November, Texas Children’s listed nearly 250 job openings on its website; CHI St. Lukes Health, more than 300; Memorial Hermann, 800; Houston Methodist, 1,100.

The much maligned Affordable Care Act (ACA) has had some positive effects on the region. According to the U.S. Bureau of the Census, 82.7 percent of all Houstonians had health care insurance in ’15, up from 76.1 percent in ’13. Presumably, if someone has a health policy, they’re more likely to see a doctor when sick instead of waiting until far more expensive emergency room service is available. With more than 1.1 million residents still lacking coverage, Houston still has one of the largest uninsured populations in the country.

The forecast sees nothing in the near future to disrupt health care’s continued growth. The forecast assumes the region’s population will continue to grow, thus expanding the industry’s patient/client base; any changes Washington makes to the ACA will be implemented over time; the industry continues to fill its backlog of open positions; hospitals that open next year will be fully staffed; and job growth in other sectors provides insurance and paychecks, enabling more Houstonians to visit their doctors. Assuming these trends continue and no black swan event derails growth, the forecast calls for health care to add 9,800 jobs in ’17

FINANCIAL ACTIVITIES

More than 150,000 Houstonians work in financial services, about five percent of total employment. The sector provides seven percent of total wages and salaries and accounts for around 13 percent of the region’s GDP. Included are commercial banking, credit unions, consumer lending, insurance, investment advice, securities brokerages, portfolio management, real estate services and rental services.

Banking, the largest employer, has struggled through the downturn while investment and insurance services, the second largest employer, has fared quite well. Since December ’14, banking cut around 2,000 jobs while insurance and investments added about 2,000.

Why the difference? In Houston, banking is closely tied to oil and gas, while insurance is more tied to demographics.

But blaming all of banking’s woes on the energy downturn would be inaccurate. The U.S. Federal Reserve’s reluctance to raise its interest rates has kept banks from raising theirs. Increased government scrutiny has boosted compliance costs and cut into bank profits. Competition from nontraditional lending sources (e.g., online banks, crowd sourcing) has siphoned away customers. And general weakness in the local economy has limited banks’ opportunities to make loans beyond energy.

Real estate employment has remained flat the past two years. Brokers work on commission, so any drop in transactions affects earnings but not necessarily employment. The delivery to the market of hundreds of office, industrial and multifamily properties has driven demand for management services, which helped offset job losses elsewhere in the sector. And it seems like Houston can’t have too many self-storage warehouses.

The “rentals” part of this sector includes the leasing of appliances, furniture, automobiles, heavy machinery, recreational equipment and trucks. Both the consumer-oriented and business-oriented segments have held up well,
RISKS TO THE FORECAST

The Partnership’s economic forecast represents the organization’s best effort to explain the factors influencing job growth next year. The employment forecasts are based on a set of overall assumptions affecting the economy as a whole, set forth at the outset, and on industry-specific trends and expectations noted in each sector or industry discussion.

Like all economic outlooks, this prognosis runs the risk that outside forces might derail the forecast. The risks to the forecast can be positive, yielding higher job growth than projected, or negative, yielding lower job growth than projected. The major risks are outlined below.

WHAT COULD GO WRONG? – THE DOWNSIDE RISKS

Oil prices could fall below $40 per barrel and stay there. Any such drop in oil prices would derail the recovery in the energy industry, possibly leading to a new round of layoffs. (Note: The Partnership’s forecast went to press prior to OPEC’s November 30 meeting, at which the cartel hoped to implement production cuts to support global oil prices.)

Recent anti-globalization sentiment could force nations around the world to pre-emptively raise tariffs and erect barriers to trade. At least a fourth of Houston’s economy is directly tied to global commerce.

The U.S. dollar could strengthen considerably. This development would make Houston’s exports more expensive to overseas buyers.

Washington might, as promised in the presidential campaign, repeal or replace the Affordable Care Act. Regardless of what—if anything—supplants the ACA, the transition to any new plan would create uncertainty and affect the demand for health care.

China’s economy might falter. Such an event would drive down oil prices and send shock waves throughout the global economy.

Additional energy mergers could occur. Such an event would inevitably lead to layoffs.

WHAT COULD GO RIGHT? – UPSIDE RISKS TO THE FORECAST

The U.S. economy could heat up, boosting growth above 3 percent. Though Houstonians don’t like to admit it, what happens outside Texas influences the local economy.

OPEC might agree to production cuts to support higher oil prices. Higher prices would boost cash flow and move the industry closer to profitability.

A long, hard winter might smother the U.S. Demand for natural gas would soar, prices would rise, cash flow would improve, and the energy industry would move more quickly toward profitability.

Exploration could pick up in the Eagle Ford. So far, the play has gained only four rigs in the recovery. It remains 221 rigs below its peak.

Washington could pass a massive infrastructure bill. Such a measure would be a boon to Houston’s engineering and construction firms,
and to a lesser extent, manufacturing, wholesale trade and transportation as well.

A dramatic increase in oil prices would reinforce the cost advantages of U.S. petrochemical production. Ethane, which is found in natural gas, provides the primary feedstock for U.S. chemical production. Naphtha, which is derived from crude, provides the primary feedstock for chemical production overseas. The greater the price differential between natural gas and crude, the more competitive advantage U.S. chemical production enjoys.

Impasses over pipeline construction might finally be resolved.

Such an outcome would provide a boost to local engineering and construction firms.

**CONCLUSION**

In mid-'14, when oil prices started to slide, Houstonians reassured themselves that things would be different this time. “Houston is more diverse,” we told ourselves. “The region has other sectors that will keep our economy afloat.” But as we said this, we may have crossed our fingers, knocked on wood, or spat over our left shoulder—any gesture to help “guarantee” the outcome.

Over the next 24 months, as oil prices fell, the rig count dropped, and the layoffs came quicker than in any prior downturn. Houston's economy struggled but didn't collapse. Developers soon found themselves with too much vacant office space and landlords with too many empty apartments. Vehicle sales slipped. Sales tax revenues fell. But homes sales maintained their pace. The region continued to create jobs, though they didn’t pay as well as those lost in the energy industry. And thousands of people continued to move here from around the U.S. and overseas.

Everyone can uncross their fingers now because the worst is over. '17 isn’t likely to be a banner year for the region’s economy, but it should be a further step on the road back to robust growth.

This forecast was prepared by Patrick Jankowski with assistance from Jenny Philip, Allegra Ellis, Roel Martinez, Josh Pherigo, Nadia Valliani, Ashley S. White and Skip Kasdorf.