



Commercial Construction Whitepaper:
Industry poised for growth – traditional drivers take back seat



An L.E.K. Consulting LLC and Wells Fargo Securities Collaboration

Fall 2014

Executive summary

Commercial construction spending¹ is at just 67% of its previous peak (in real dollars) and remains below 2003 spending levels (trough level reached during the previous commercial construction downturn). In fact, current spending would need to increase by 25% to reach 2003-2008 average spending levels. When is this explosive commercial growth expected to unleash? Our building products clients with commercial construction exposure have not yet realized this anticipated growth. Industry forecasters remain puzzled, consistently reducing their estimates that typically begin the year with optimism and end the year with the inflection point being pushed out a year. These forecasts are generally based on the long-term assumption that the commercial construction recovery is mean reverting.

Our thesis is different. Rather than drawing conclusions by viewing the industry through a broad lens, we analyzed each commercial subsector under the premise that growth and, more importantly, the drivers of that growth, will vary across the individual subsectors. Our conclusion: historical drivers in certain subsectors have changed and new ones have emerged, resulting in a slower recovery than history would suggest (albeit still meaningful). Industry forecasters expect annual growth of 6%-8% over the next few years. Based on our bottoms-up analysis as reflected in this commercial construction whitepaper, we forecast Commercial construction to grow approximately 5%-6% annually over the next four years.

Figure 1: Historical and forecasted growth for commercial (by segment)

	2013 Spending (\$MM)	TTM YoY Growth	Historical CAGR % (1993 - 2013)	Historical CAGR % (2003 - 2008)	Forecast CAGR % (2014 - 2018E)
Education	\$77,997	(4.9%)	2.6%	3.8%	4.6%
Health Care	\$41,484	(6.5%)	2.0%	6.5%	2.5%
Other Institutional	\$28,816	0.3%	0.1%	2.0%	0.7%
Commercial (Retail and Warehouses)	\$50,992	8.1%	(0.6%)	3.7%	7.0%
Office	\$37,620	12.2%	0.1%	8.3%	7.3%
Lodging / Travel	\$13,133	20.7%	2.9%	24.9%	12.9%
Manufacturing	\$47,226	5.4%	1.1%	16.4%	3.3%
Total Commercial	\$297,268	2.4%	1.0%	6.9%	5.4%

Source: U.S. Census Bureau, L.E.K. / WFS Analysis

Note: In real dollars; TTM is defined as trailing twelve month average since August 2014

Key takeaways

Given the recovery outlook, there are several implications for manufacturers, distributors, and investors with commercial construction exposure:

- The commercial construction recovery is still in its early days; spending¹ is at just 67% of its previous peak
- Growth is forecasted to be 5% - 6% per year through 2018, slower than in previous recoveries
- Unlike residential, commercial market growth alone will not be sufficient to drive substantial margin expansion through operating leverage
- Industry participants should look to both organic and inorganic strategies to accelerate growth
- Current valuation multiples may reflect inflated growth expectations, so mergers and acquisitions (M&A) strategies should be evaluated carefully
- Industry participants should consider the subsector when developing inorganic strategies; growth will vary significantly across the key segments of commercial construction

¹ Commercial construction includes education, health care, other institutional (e.g., public safety, recreation / amusement, religious), commercial (retail and warehouse), office, lodging and manufacturing as defined by the U.S. Census Bureau in its Value of Construction Put in Place Survey

Introduction: Bottoms-up approach to evaluating the commercial construction recovery

L.E.K. Consulting LLC (L.E.K.) and Wells Fargo Securities (WFS) collaborated and put forth an encouraging yet realistic prediction in a September 2014 report alerting industry participants that the timing, speed, and focus of the commercial construction recovery has likely changed. A simple reversion to the mean seems unlikely as certain fundamentals have evolved since the onset of the construction downturn. While commercial construction spending as a whole may be experiencing a modest recovery, specific subsectors are behaving differently with some trending positively and others trending negatively or remaining stagnant. As a result, our report takes a bottoms-up approach by evaluating a subset of commercial segments and their respective drivers to develop a long-term view of the commercial construction recovery.

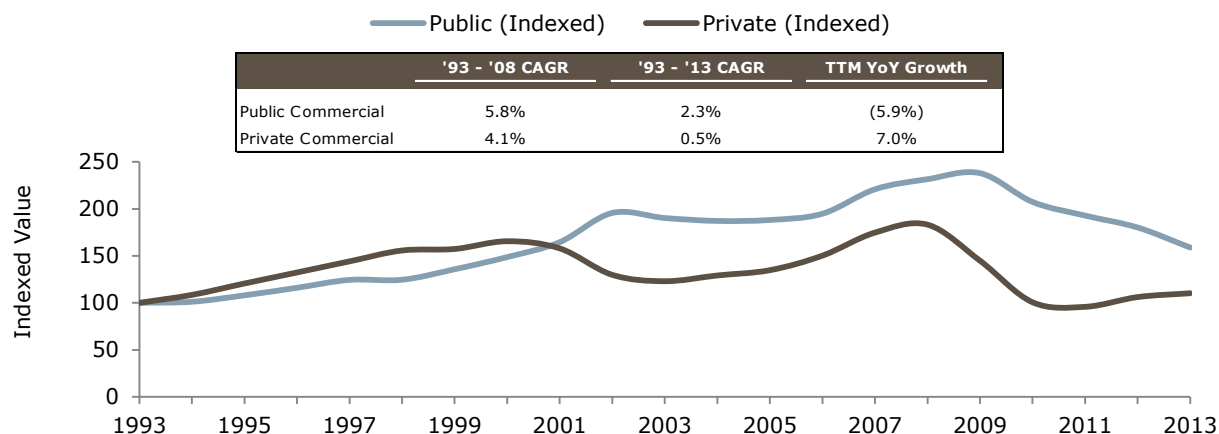
We targeted specific subsectors within non-residential construction where structure-oriented building products and related companies have the greatest exposure. These subsectors represent roughly 50% of the annual \$600 billion U.S. non-residential market as defined by the U.S. Census Bureau in its Value of Construction Put in Place report. We defined our targeted group as “commercial” and include the following spending subsectors: education, health care, other institutional (public safety, recreation / amusement, and religious), commercial (e.g. retail and warehouses), office, lodging, and manufacturing. In our bottoms-up approach, we analyzed several potential drivers in each category and filtered the list to the key two or three metrics that produced the highest correlation with that subsector’s spending trends. For example, within health care, we compared 20-year historical spending trends to state and local tax revenues, municipal bond issuances, amount of people insured, hospital capital expenditures, hospital FTEs, and federal spending, among others, and discovered that state and local tax revenues and municipal bond issuances experienced the strongest correlation. We used these key drivers, various third party forecasts and a formulated thesis as to whether or not these trends are “mean reverting” to build our forecast model.

Historical commercial construction trends: A story of private vs. public spending

Traditionally, the consensus view has been that commercial construction spending is strongly correlated with residential construction spending and would lag that recovery by 12 to 18 months. With the housing recovery beginning in 2011, this hypothesis would suggest that commercial spending would be in the midst of a recovery. However, when speaking to our building products clients with commercial construction exposure, most of them are seeing little demand growth. After analyzing the more relevant subsectors to our clients that we previously defined as commercial construction, spending has grown merely 3% over the last two years (2012 to August 2014) compared to residential spending growth of 31% during that same period. More specifically, there have been bifurcating trends between public and private spending that should continue to influence markets going forward.

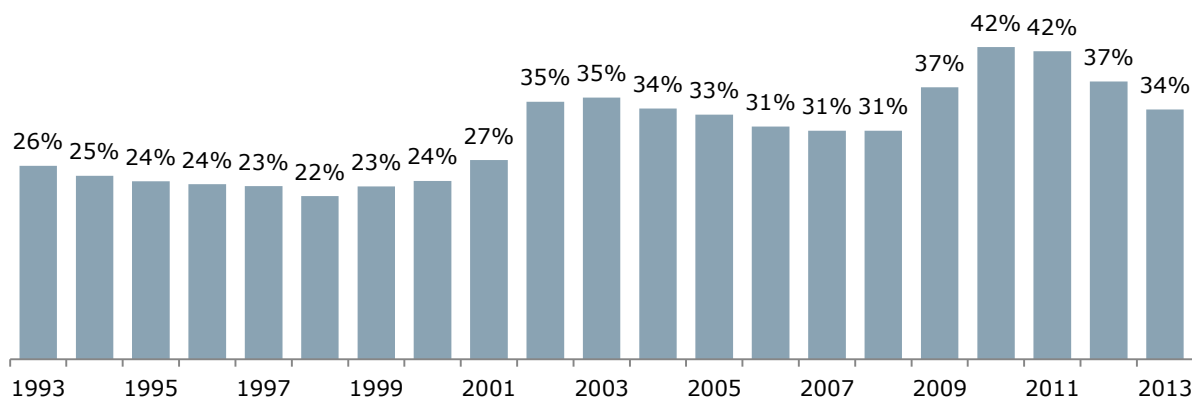
As highlighted in Figure 2 and Figure 3, public spending has outperformed private spending over the last 20 years, and, more interestingly, after the 2001 recession, has become a meaningfully larger contributor to overall commercial spending. In fact, prior to the 2008 downturn, public commercial spending had grown every year since 1993 except for 2003 when it declined less than 1% (in nominal dollars). During the 1990s, public commercial spending contributed on average 24% of total commercial spending compared to 35% on average since 2002. This 11% difference represents approximately \$33 billion of incremental commercial spending based on 2013 commercial spending levels, or nearly the entire amount spent on office construction in 2013.

Figure 2: Indexed commercial public vs. private spending (1993 – 2013)



Source: U.S. Census Bureau
 Note: In real dollars; TTM is defined as trailing 12-month average since August 2014

Figure 3: Public commercial spending as % of total (1993 – 2013)



Source: U.S. Census Bureau

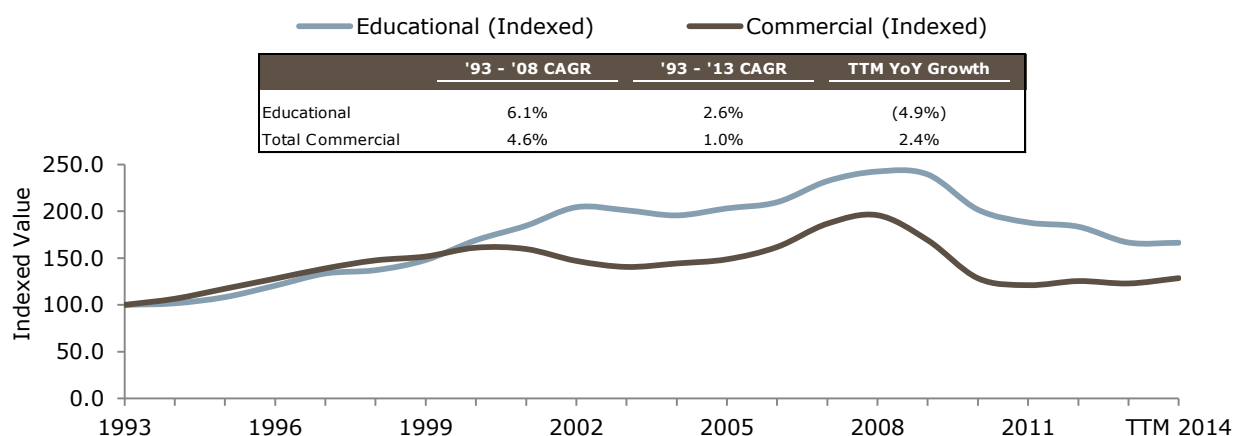
We draw two conclusions from these observations. One, the more obvious observation, is that public commercial spending historically had been less cyclical. During the most recent downturn, public commercial spending declined 17% from 2008 to 2011 compared to private commercial spending declining 48% during the same period. Second, analyzing trends since 2011, growth in private and public spending has diverted. Private commercial spending has shown attractive growth, increasing 15% from 2011 to 2013 and, today, is up 9% year-over-year on a trailing three-month average. Yet, public commercial spending has continued its decline and offset most of this private growth, falling 18% from 2011 to 2013 and, today, is down 2% year-over-year on a trailing three-month average. 79% of the 2011 to 2013 decline, or \$17 billion, in public commercial spending comes from only two categories: education and office.

Noting this shift between private and public spending, our report examined, by subsector, what factors changed and, more importantly, what the outlook might be going forward. Institutional categories such as education, health care, and other institutional (public safety, recreation / amusement, and religious) are similarly influenced by public factors such as state and local spending, federal spending, and tax revenues. A range of economic, political, and demographic variables drive budget decisions, positive and negative. On the other hand, the sectors of commercial, office, lodging and manufacturing, unlike the first three, are distinct from each other in what drives them. Not surprisingly, they are less affected by government spending and legislation.

Education construction spending: A state and local government decision

Education is the largest contributor to commercial construction, representing nearly 27% of total commercial spending on average over the last 10 years. More than 80% of total education spending is government related and relies almost entirely on state and local spending. Prior to the 2009 downturn, education spending had grown every year in nominal dollars since 1993 except for 2004 when it declined 0.1%. In fact, education was one of the fastest growing sectors through the 1990s and 2000s (with a 1993 to 2013 CAGR of 3%, in real dollars). However, the unprecedented economic downturn drove declining tax revenues and ultimately reductions in state and local spending on education, resulting in one of the steepest declines in state and local investment among the individual subsectors. In addition, the drop in the stock market during the recession took a toll on charitable contributions and the value of the portfolios of educational entities, driving an incremental decline in construction of private educational facilities. Since 2011, education has continued to be the largest impediment to the commercial construction recovery, declining 9%, or nearly \$8 billion, in nominal dollars compared to broader commercial growth of 9%, or \$26 billion. Excluding education, commercial would have grown 17%.

Figure 4: Indexed educational construction spending (1993 – TTM 2014)

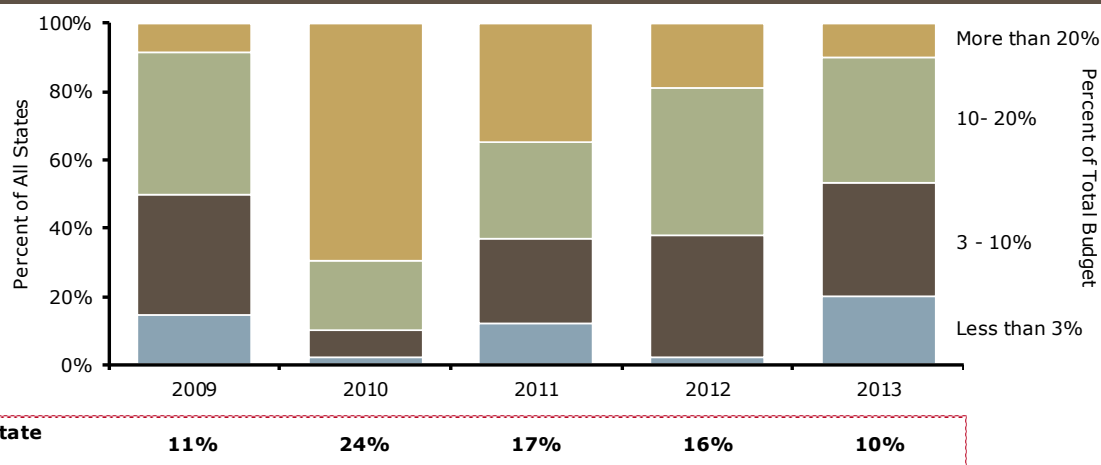


Source: U.S. Census Bureau
 Note: In real dollars; TTM is defined as trailing 12-month average since August 2014

So far in 2014, improving state and local tax revenues have stabilized education spending. As budget pressures have subsided and tax receipts have increased, plans to supplement existing education funds are now a priority for many states. According to National Governors Association, education was the most discussed topic amongst governors across the U.S. in their speeches that laid out priorities for 2014.

Although tax revenues are continuing to grow, a key question remains around the longer-term slope of the government spending recovery. Commercial public spending peaked at \$146 billion in March 2009 and is at \$101 billion today, or 70% of peak. The Great Recession that started in 2007 caused the largest collapse in state revenues on record. As shown in Figure 5, many states have still not fully recovered. For example, 30 states had budget gaps totaling \$49 billion for fiscal year 2013. Moreover, total state-run pension shortfalls across the U.S. grew from \$452 billion 2008 to \$915 billion in 2012.

Figure 5: State budget shortfalls as a percentage of total budget (2009 – 2013)



Source: Center on Budget and Policy Priorities, Pew Charitable Trusts, L.E.K. / WFS Analysis

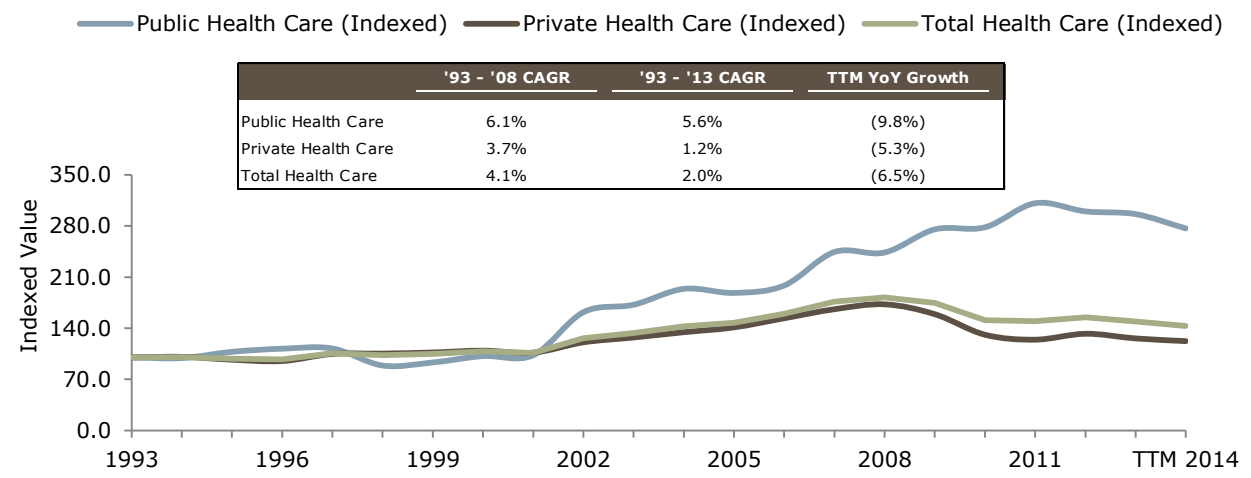
As a result, longer-term, we believe government spending will recover at a slower pace than these historical trends might imply. We believe the lagging recovery in government spending will have the greatest impact on education spending, in addition to health care and other institutional categories. Traditionally, school enrollment (number of students) and levels of government spending (with a two-year lag in the data) have driven education spending. According to the U.S. Department of Education, from 1990 to 2010, total school enrollment (including postsecondary) grew by 15 million students, increasing at a steady 1% annual rate while never experiencing a decline in any particular year during that period. However, beginning in 2011, school enrollment began to decline, and from 2011 to 2013, the student population decreased by 345,000 students. This trend is expected to reverse in 2014 with much of that cumulative loss being made up in 2014. Yet, the U.S. Department of Education’s outlook is for below trend growth going forward. From 2014 through 2017, they project a 1% CAGR, nearly half the long-term average. With below trend expectations in both school enrollment and government spending, our projected 2014-2018E CAGR of 5% is less optimistic than historical trends would suggest.

Health care construction spending: A new act

Similar to education spending, health care had grown every year in nominal dollars since 1993 except for 1998 when it declined 1%. It has also experienced relatively stronger growth than its commercial construction peers with a 1993 to 2013 CAGR of 2% (in real dollars). Like education, government spending is a main driver, but private spending plays a more meaningful role with an average contribution of 79% over the last 10 years. With the new legislative changes and the Affordable Care Act, public spending’s presence is growing and, in 2013, public spending represented 27% compared to 18% in 2008. During the downturn, health care was the least cyclical sector, only declining 14% compared to the broader commercial construction decline of 35%. Unlike the other institutional categories, health care grew positively in both 2011 and 2012. Health care’s relatively strong performance has been driven by the increased public spending, specifically federal spending. In fact, federal spending on health care construction has nearly tripled over the last 5 years, increasing \$2.6 billion to a total of \$4.0 billion in 2013. As a comparison, federal spending in the other construction categories decreased \$2 billion over this same time period from \$11 billion to \$9 billion. State and local spending has remained flat with 2008 levels compared to the large reductions in education. However, health care’s growth trend reversed beginning in 2013 as federal spending flattened and private spending declined. Uncertainty surrounding the Affordable Care Act likely kept many health care providers on the sidelines, and healthcare private spending is one of the only categories to experience a decline in spending in 2013, decreasing 5% compared to broader Commercial private spending growth of 5%. This trend has accelerated in 2014 with government spending now in decline. Currently, on a trailing 12-month basis, public health care spending is down 10% year-over-year, but on a trailing three month average, this downward trend has accelerated and is down 16% year-over-year. With continued uncertainty, private health care spending also continues

to decline albeit at a slower pace than public spending and is down 5% year-over-year on a trailing 12-month basis.

Figure 6: Indexed health care construction spending (1993 – TTM 2014)



Source: U.S. Census Bureau
 Note: In real dollars; TTM is defined as trailing 12-month average since August 2014

While this subsector has historically tracked state and local tax revenues and municipal bond issuance, we believe the industry dynamics have changed due to the implementation of the Affordable Care Act. The political uncertainty clouds the near-term forecast, but our long-term view is that the Affordable Care Act will have the effect of increasing demand for medical services while changing the type of facilities constructed. It is likely to reduce demand for emergency room care and increase use of preventive care. As a result, the need for new health care facilities in new locations will increase. Yet, the competition between large institutions (hospitals) and various groups of medical practitioners (mainly groups of doctors) could also potentially create pressure to build new facilities. Therefore, we are cautious in the near-term but our long-term forecast estimates a 2014-2018E CAGR of 3%.

Other institutional construction spending: Small and cyclical

Other institutional construction is a category that includes the three smallest categories defined by the U.S. Census Bureau: public safety, recreation / amusement, and religious. Combined, the three categories represented 10% of commercial construction with \$29 billion of total spending in 2013. Other institutional construction spending grew at a CAGR of 0.1% from 1993 through 2013, driven by a decline in religious construction offset by flat public safety construction and slight growth in recreation / amusement construction over the period. The funding sources and demand drivers for each category are unique and should be evaluated independent of each other.

Recreation and amusement construction is the largest of the three sub-categories, and represented 53% of the other institutional categories on average from 1993 - 2013. Spending in the category is funded approximately 50-50 from both public and private sources. Large projects like stadiums and arenas, make recreation and amusement spending lumpy. However, long lead times create a backlog that aids in forecasting future growth.

Public safety construction is the second largest of the three sub-categories, and represented 27% of the other institutional categories on average from 1993 - 2013. Spending in the category is funded almost entirely by public sources with only 5% average private funding since 1993. Overcrowding in prisons is expected to drive growth in the category, however, the rate of incarceration is falling, hitting the lowest rate in over 15 years in 2013.

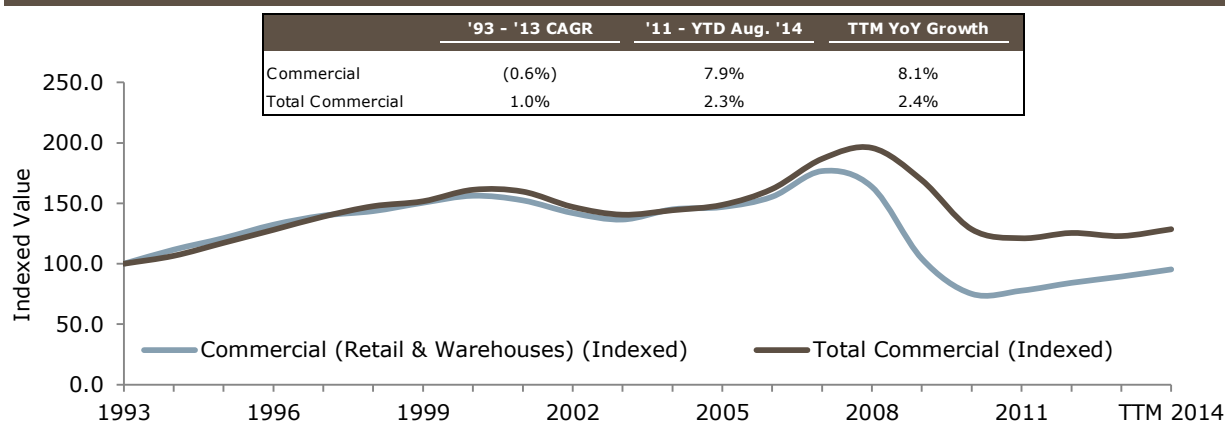
Religious construction is the smallest of the three sub-categories, and represented 21% of the other institutional categories on average from 1993 - 2013. Spending in the category is funded entirely by private sources. New construction for religious buildings has declined due to decreases in personal income, personal savings rates and tightening lending standards.

As the two largest pieces of other institutional construction spending are predominantly funded by public sources, the category has historically tracked state and local tax revenues closely. Based on projected data for these demand drivers, we are forecasting a 2014 – 2018E CAGR of 1%.

Commercial construction spending: A changing storefront

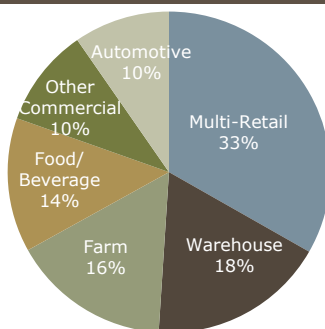
Commercial spending, commonly referred to as retail, but also including warehouses, is almost entirely dependent on private spending with just 5% of spending derived from public sources. As a result, it is more cyclical and experienced a dramatic peak-to-trough decline of 58% (in real dollars) as housing, personal consumption and retail sales plummeted during the recession. Today, commercial spending remains at just 54% of its last peak and 74% below its 20-year average (in real dollars). In fact, the 2013 spending level of \$51B is below the 1993 spending level of \$57B (in real dollars). As illustrated in Figure 7, retail construction spending has been a bright spot in the recovery, increasing 15% from 2011 through 2013. Much of this activity was the result of reviving earlier projects that had been shelved during the recession. In 2014, spending trends have lost momentum, and while year-over-year trends remain at double digit growth rates, annualized monthly spending rates though mid 2014 have remained flat with levels reached in 2013.

Figure 7: Indexed commercial construction spending (1993 – TTM 2014)



Source: U.S. Census Bureau
 Note: In real dollars; TTM is defined as trailing 12-month average since August 2014

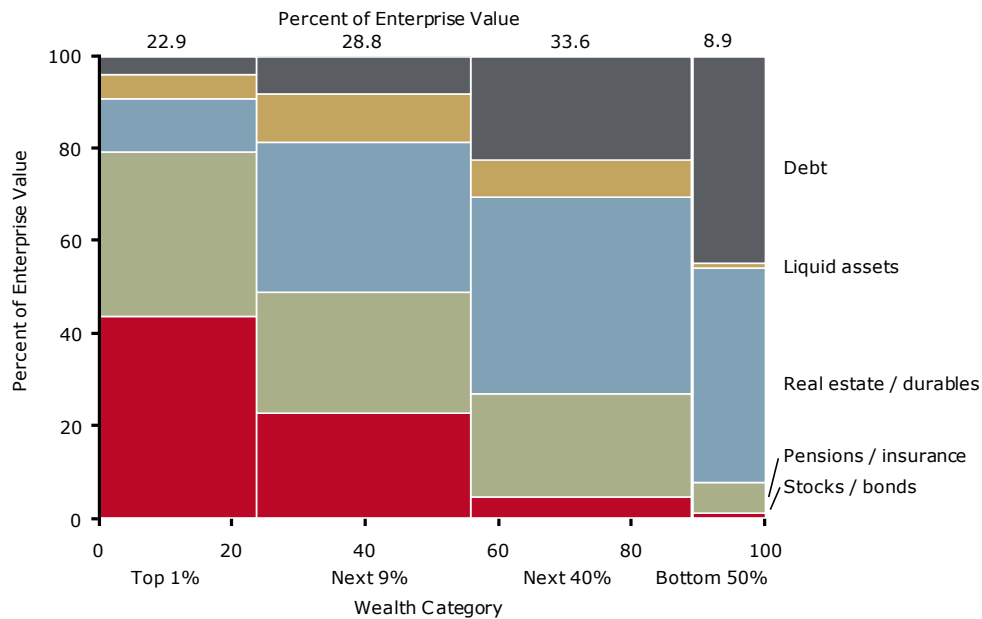
Figure 8: 2013 Private commercial construction by category



Source: U.S. Census Bureau

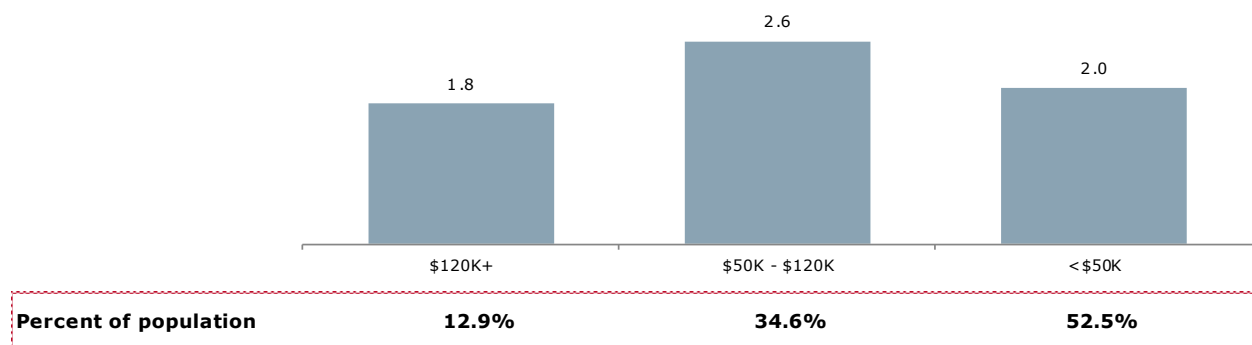
Trends in commercial spending provide an example of how the fundamentals have likely changed. Should the historical correlation hold, the sector would see a reasonable 9% CAGR. Previously driven by personal consumption spending, retail sales, and housing starts, the sector's outlook has been affected by three different factors. First and most positive, is an improvement in personal balance sheets, with home values recovering and giving people the confidence to shop more. Secondly, overbuilding in the sector with excess capacity lingering — witness the “dead malls” littering the landscape in some regions — is likely to continue to limit growth. We would note though that at the peak, construction spending on shopping malls was only \$4B, or less than 5% of total spending in this sector.

Figure 9: U.S. household enterprise value by wealth, 2013



Source: U.S. Statistical Abstract, Bureau of Labor Statistics, Federal Reserve 2004 Survey of Consumer Finance, National Association of Realtors, L.E.K. / WFS Analysis

Figure 10: U.S. consumer expenditure by income (\$T), 2012

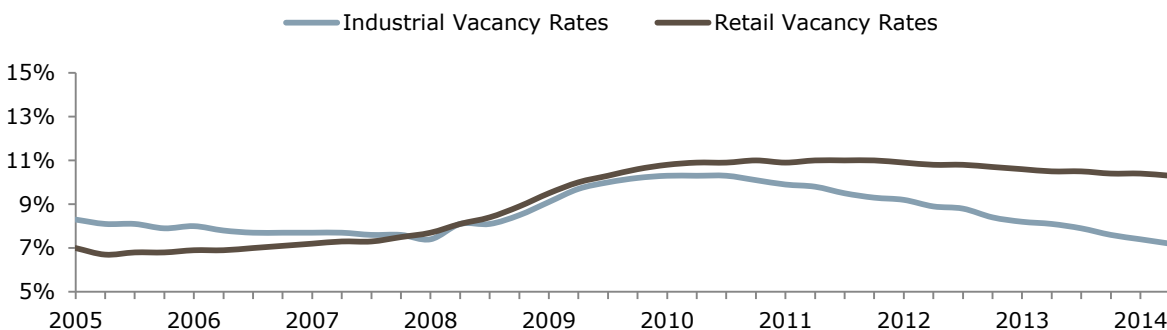


Source: U.S. Statistical Abstract, Bureau of Labor Statistics, Federal Reserve 2004 Survey of Consumer Finance, National Association of Realtors, L.E.K. / WFS Analysis

The third factor is e-commerce, whose ultimate impact on retail construction is unknown. Our question and debate centers around the long-term impact this will have on brick-and-mortar construction and retail construction. The rapid growth in e-commerce has forced retailers to downsize floor plans and open fewer stores, a trend we expect to continue. Yet, this shift away from traditional retail outlets has

perpetuated absorption and new construction in the warehouse and industrial segment to support the demand for mega distribution centers. Comparing trends in retail vacancy rates against industrial vacancy rates, industrial vacancy rates have declined at a much faster pace as shown in Figure 11. In addition, warehouse construction spending is up 52% year-over-year on a trailing three month basis and is quickly growing its share of commercial spending, currently representing 24% of commercial spending versus a 10-year average of 19%.

Figure 11: Retail and industrial vacancy rates (2005 – YTD 2014)



Source: Reis

Our long-term view is that this sector will experience strong growth as personal consumption spending improves and retail chases housing starts and new communities. We believe that warehouse construction will continue to help offset some of the reduced retail construction. As a result, we take a slight haircut to what our models project and forecast a 2014 - 2018E CAGR of 7%.

Office construction spending: Towering fundamentals

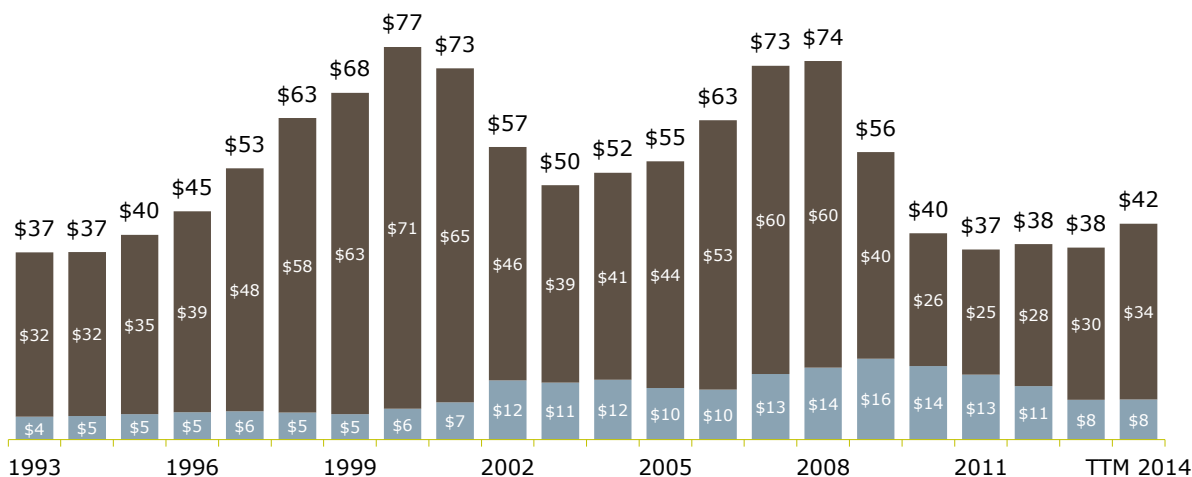
Office spending is one of the more volatile subsectors and experienced a dramatic peak-to-trough decline of 55% (in real dollars). Today, office spending remains at 55% of its last peak and 20% below its 20-year average. Similar to the broader bifurcation of private and public commercial spending, private office construction growth has been largely offset by much smaller, but fast declining, public office construction. Over the last 10 years, private office spending represented 76% of total spending, increasing its share during cyclical peaks and declining during downturns. As illustrated in Figure 12, total office construction spending increased just 1% from 2011 through 2013 compared to a 21% increase in private office construction spending. However, in 2014, spending trends have gained momentum and trailing 12-month average spending is up 12%, with an 18% increase and 8% decrease in private and public office construction spending, respectively.

Figure 12: Public and private office spending (1993 – TTM 2014)

(\$ in Billions)

■ Public ■ Private

	'03 - TTM '14 CAGR	'11 - '13 Growth	TTM YoY Growth
Public Office	(3.2%)	(38.4%)	(8.1%)
Private Office	(1.1%)	21.1%	18.2%
Total Office	(1.5%)	0.9%	12.2%



Source: U.S. Census Bureau

Note: In real dollars; TTM is defined as trailing twelve month average since August 2014

Historically, growth or decline in the sector has tracked office vacancy rates and office-using employment¹. With office vacancy rates beginning to improve in 2011, private office spending followed. The fundamentals continue to improve, albeit slowly, and according to Reis, longer-term, office vacancy rates are expected to return to mid-2000 levels of 14%, down from 17% levels today. Growth in office-using employment has outpaced total employment with much of the gain concentrated in professional and business services, which includes many tech occupations. The solid growth in office-using employment should help to continue to boost office demand. Risks include underutilized work space and increased home office employment. However, we believe what has driven spending in the past is likely to drive it in the future and these minor risks will not disrupt historical trends. We expect to see net absorption continue to accelerate as the workforce expands and rents increase and, therefore, forecast a 2014 - 2018E CAGR of 7%.

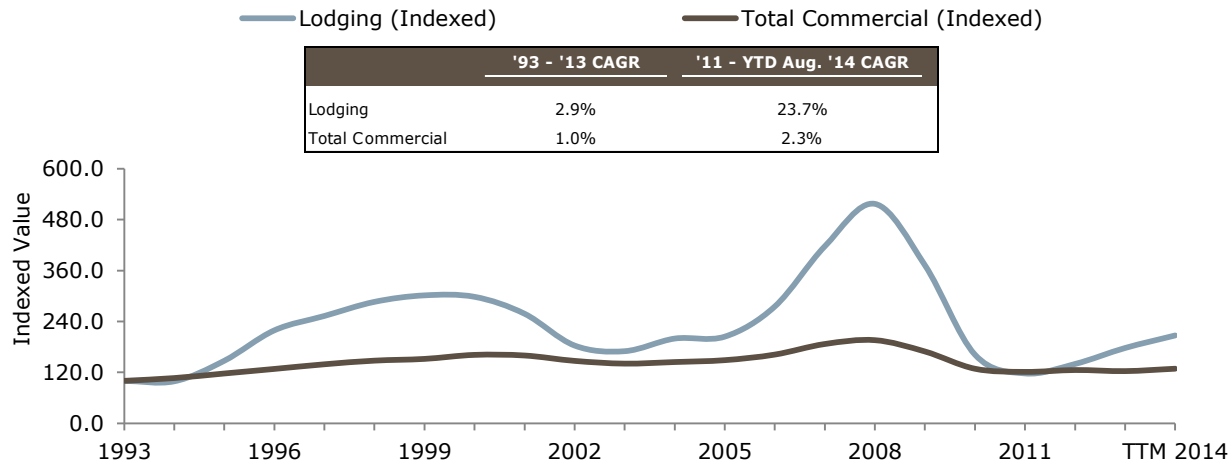
Lodging construction spending: Volatile, yet predictable

Lodging construction spending is the most volatile subsector but only contributes a small portion to overall commercial construction spending with a 10-year average contribution of just 5%. Similar to office and commercial, lodging experienced a near halt in construction with a peak-to-trough decline of 77% (in real dollars), or a \$30 billion loss to \$9 billion in 2011. Many companies deferred maintenance and new construction disappeared with heavily reduced income coming in from business and leisure travel.

Today, lodging spending still remains at just 40% of its last peak and 11% below its 20-year average (measured in real dollars). However, as illustrated in Figure 13, lodging construction has rebounded sharply, growing the fastest of all categories, albeit off a small base. As the business climate improved, companies increased travel budgets and improving employment and job security drove higher leisure travel. In 2014, lodging construction has continued to expand at a robust rate.

¹Aggregate of BLS's employment categories of professional and business services, financial activities, and information.

Figure 13: Indexed Lodging Spending (1993 – TTM 2014)



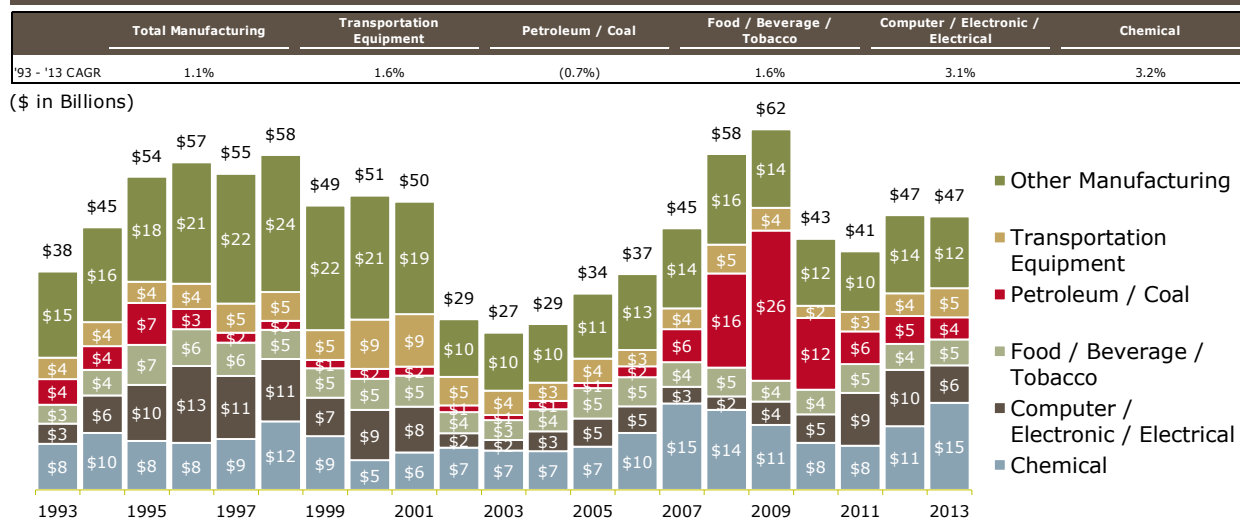
Source: U.S. Census Bureau
 Note: In real dollars; TTM is defined as trailing twelve month average since August 2014

While volatility is high, we believe there are a few surprises around the fundamental demand drivers. Our model shows the number of passenger trips and level of unemployment as the highest correlated drivers. As a result, we forecast a 2014-2018E CAGR of 13%.

Manufacturing construction spending: The return of “Made in the U.S.A.”

Manufacturing construction spending is a sizeable and important piece of commercial construction, representing 13% of total commercial spending on average from 1993 – 2013. Spending in this category is funded entirely by private sources, as public spending on manufacturing construction has averaged less than 1% since 1993. Over the long-term, manufacturing construction spending has been a steady growth category with real 1993 – 2013 CAGR of 1%. However, the absence of public funding and the number of subsectors included in manufacturing construction (16 as defined by the U.S. Census Bureau), has led to some variability in growth. The top-five subsectors of (food/beverage/tobacco, petroleum/coal, chemical, computer/electronic/electrical, and transportation equipment) have accounted for 66% of total manufacturing construction spending since 1993, and have remained relatively stable as a percent of the total category from year-to-year.

Figure 14: Manufacturing spending (1993 – 2013)



Source: U.S. Census Bureau
 Note: In real dollars

In recent years, the U.S. shale boom has been a strong growth driver for growth in manufacturing spending. Initially, growth was focused on the petroleum/coal subsector, as investment was made in exploration and drilling. As a result, real spending on petroleum/coal manufacturing grew from \$876 million in 2005 to \$26 billion in 2009, a CAGR of 133%. Spending on petroleum/coal manufacturing has since reverted to more normalized levels, and was at an annual rate of \$4 billion in 2013. The increase in drilling activity and the domestic supply of oil and natural gas spurred additional growth in downstream chemical manufacturing spending, particularly companies that use natural gas as a feedstock. Real spending on chemical manufacturing increased from \$8 billion in 2011 to \$15 billion in 2013, a CAGR of 40%.

Going forward, low energy costs are expected to drive additional growth in U.S. industrial manufacturing activity. As U.S. manufacturing becomes more competitive from a cost perspective, reshoring is emerging as a trend. Foreign direct investment in U.S. manufacturing is also trending positively as the relative cost position of localized U.S. production versus tariffs and other trade barriers make importing less economical. Chinese foreign direct investment in the U.S. has grown rapidly over the last five-years and is now greater than the flow of foreign direct investment from the U.S. into China.

Fueled by growth in U.S. natural gas production, we forecast steady near-term growth in manufacturing construction spending. As industrial capacity utilization approaches long-term historical averages we expect manufacturing construction spending to be a source of steady growth over the long-term. Based on projected data for these demand drivers, we are forecasting a 2014 - 2018E CAGR of 3%.

Forging ahead, carefully, subsector by subsector

Based on our bottoms-up analysis, we believe that the commercial construction markets are poised for growth but some traditional drivers have taken a back seat. As a result, we conclude that this cycle is likely to have slower growth than in previous recoveries. Broadly, market growth alone will not be sufficient to drive revenues and earnings back to prior peak levels. Industry participants should look to both organic and inorganic strategies to accelerate growth. When deriving external growth strategies, individual subsectors need to be evaluated separately as growth and risks to that growth will vary significantly.

Commercial Construction Whitepaper: Industry poised for growth – traditional drivers take back seat is an L.E.K. Consulting LLC and Wells Fargo Securities collaboration. L.E.K. contributors include Robert Rourke, managing director, Chris Rule, managing director, and Marc Chernoff, principal. Wells Fargo Securities contributors include Harry Shaw, managing director, Casey Rentch, director, and Ben Hughes, vice president.

Appendix: Historical commercial construction spending (in real dollars)

Figure 15: Commercial construction by category (in real \$, 1993 – 2013)

(\$ in Billions)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Category:																					
Education	\$47	\$48	\$51	\$56	\$63	\$64	\$69	\$79	\$86	\$96	\$94	\$92	\$95	\$98	\$109	\$114	\$112	\$94	\$88	\$86	\$78
Health Care	\$28	\$28	\$27	\$27	\$29	\$29	\$29	\$30	\$30	\$35	\$37	\$40	\$41	\$44	\$49	\$51	\$49	\$42	\$42	\$43	\$41
Other Institutional	\$28	\$29	\$31	\$33	\$38	\$40	\$43	\$41	\$42	\$43	\$41	\$39	\$36	\$40	\$44	\$46	\$43	\$36	\$32	\$30	\$29
Commercial (Retail)	\$57	\$64	\$69	\$75	\$80	\$82	\$86	\$89	\$87	\$81	\$78	\$83	\$84	\$89	\$101	\$93	\$59	\$43	\$44	\$48	\$51
Office	\$37	\$37	\$40	\$45	\$53	\$63	\$68	\$77	\$73	\$57	\$50	\$52	\$55	\$63	\$73	\$74	\$56	\$40	\$37	\$38	\$38
Lodging / Travel	\$7	\$7	\$11	\$16	\$19	\$21	\$22	\$22	\$19	\$14	\$13	\$15	\$15	\$20	\$31	\$38	\$28	\$12	\$9	\$10	\$13
Manufacturing	\$38	\$45	\$54	\$57	\$55	\$58	\$49	\$51	\$50	\$29	\$27	\$29	\$34	\$37	\$45	\$58	\$62	\$43	\$41	\$47	\$47
Total Commercial	\$242	\$258	\$284	\$310	\$336	\$357	\$367	\$390	\$386	\$356	\$340	\$349	\$360	\$392	\$452	\$474	\$409	\$311	\$293	\$303	\$297
Total Non-Residential	\$419	\$428	\$459	\$480	\$508	\$535	\$561	\$595	\$602	\$578	\$557	\$559	\$581	\$633	\$732	\$769	\$707	\$595	\$555	\$583	\$569

Source: U.S. Census Bureau

Figure 16: Commercial construction by category (% change, 1993 – 2013)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Category:																					
Education	2%	7%	11%	11%	3%	8%	14%	9%	11%	(2%)	(3%)	4%	3%	11%	4%	(1%)	(16%)	(7%)	(2%)	(9%)	
Health Care	1%	(2%)	(1%)	9%	(3%)	2%	3%	(2%)	19%	6%	7%	3%	8%	11%	3%	(4%)	(14%)	(1%)	4%	(4%)	
Other Institutional	2%	8%	6%	14%	6%	7%	(4%)	1%	4%	(5%)	(5%)	(8%)	11%	10%	4%	(6%)	(17%)	(11%)	(5%)	(4%)	
Commercial (Retail)	12%	9%	9%	6%	3%	5%	4%	(2%)	(7%)	(4%)	6%	1%	6%	14%	(7%)	(36%)	(28%)	4%	8%	6%	
Office	0%	9%	11%	19%	19%	8%	13%	(5%)	(21%)	(13%)	5%	4%	15%	17%	1%	(24%)	(28%)	(8%)	3%	(2%)	
Lodging / Travel	(1%)	49%	49%	15%	13%	5%	(1%)	(13%)	(29%)	(7%)	18%	2%	35%	52%	24%	(28%)	(57%)	(27%)	19%	27%	
Manufacturing	20%	19%	5%	(4%)	6%	(15%)	4%	(2%)	(41%)	(8%)	6%	18%	10%	21%	28%	7%	(30%)	(5%)	15%	(0%)	
Total Commercial	7%	10%	9%	9%	6%	3%	6%	(1%)	(8%)	(4%)	3%	3%	9%	15%	5%	(14%)	(24%)	(6%)	4%	(2%)	
Total Non-Residential	2%	7%	5%	6%	6%	5%	6%	1%	(4%)	(3%)	0%	4%	9%	16%	5%	(8%)	(16%)	(7%)	5%	(2%)	

Source: U.S. Census Bureau

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