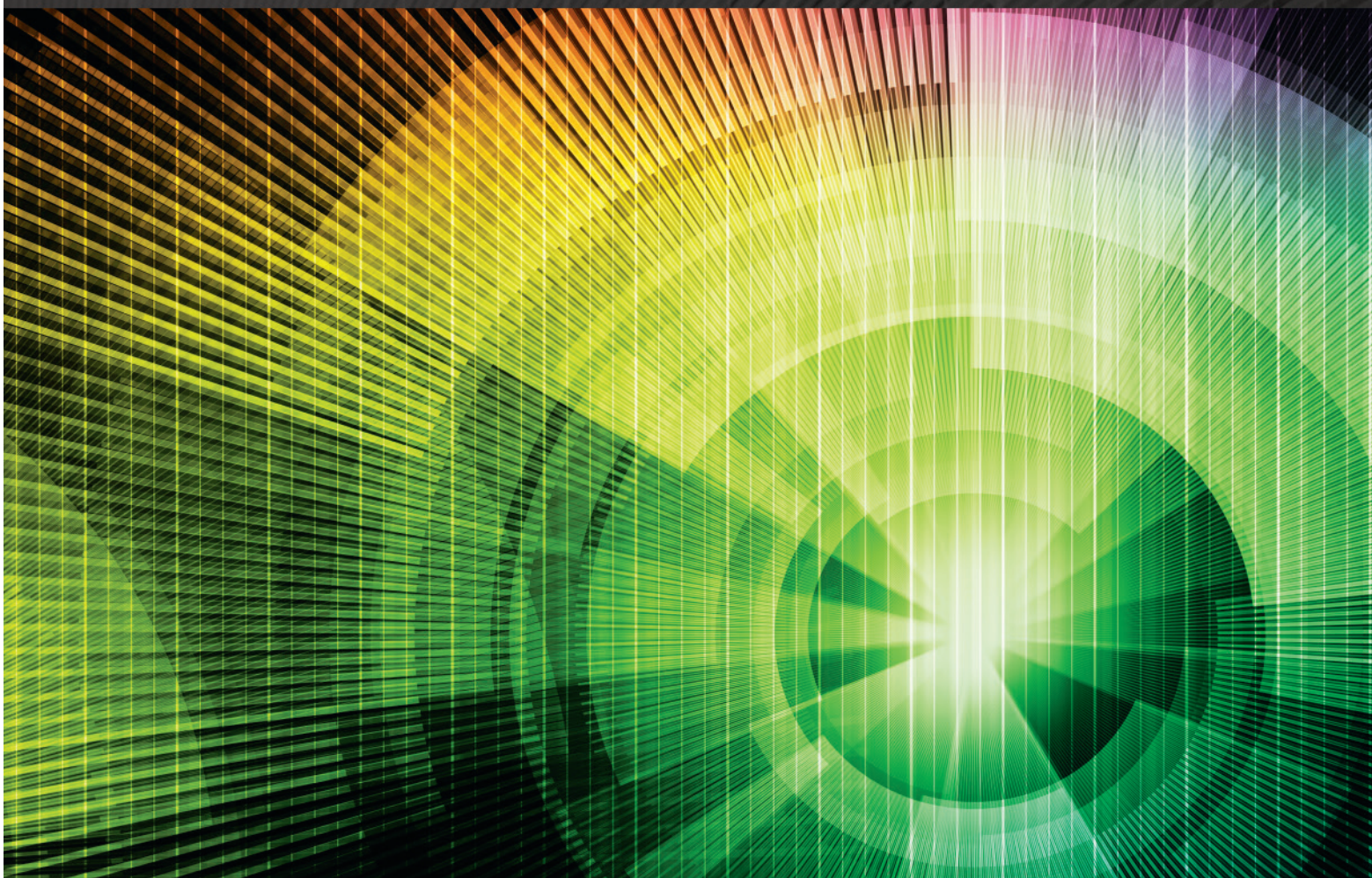


# NSCA Electronic Systems Outlook

*Summer Edition*

2022



**NSCA**<sup>®</sup>  
YOUR VOICE • RESOURCE • ADVISOR





This report was made possible through a partnership between NSCA and FMI. FMI is a leading provider of management consulting, investment banking, and research to the engineering and construction industry. They work in all segments of the industry, providing clients with value-added business solutions (learn more about FMI at [www.fminet.com](http://www.fminet.com)).

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# EXECUTIVE SUMMARY

## KEY TAKEAWAYS

- Total engineering and construction spending for the U.S. is forecast to end 2022 up 9% compared to up 8% in 2021. Spending in reported target nonresidential building segments is forecast to end 2022 up 4% from 2021 compared to down 4% between 2021 and 2020.
- Strong investments in target building segments, including corporate office, retail, healthcare, and manufacturing, will drive industry spending through 2022.
- Year-end 2022 growth will be tempered by ongoing spending declines across various target building segments, including lodging, education, houses of worship, and government buildings.

### 2022 Construction Segments (2022 compared to 2021)

#### Up (5% or more)

- Commercial
- Manufacturing

#### Stable (0% to 4%)

- Corporate
- Healthcare

#### Down (Less than 0%)

- Lodging
- Education
- Houses of Worship
- Government

**CONSTRUCTION OUTLOOK** Overall, our forecast for commercial building construction put in place in 2022 calls for 4% growth; however, with unemployment and GDP reporting contesting conditions through Q1, most notably with Q1 real GDP in decline, the U.S. economy appears to be in the early stages of economic contraction.

Short-term commercial construction activity is expected to be upheld by recent economic expansion; however, contraction across nonresidential construction investment is anticipated in 2024 and 2025 due to lagging near-term economic contraction and likely recession, which is expected to weigh on future industry growth.

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## COMMERCIAL ELECTRONIC SYSTEMS CONSTRUCTION PUT IN PLACE

Estimated Forecast for the United States / Millions of Current Dollars

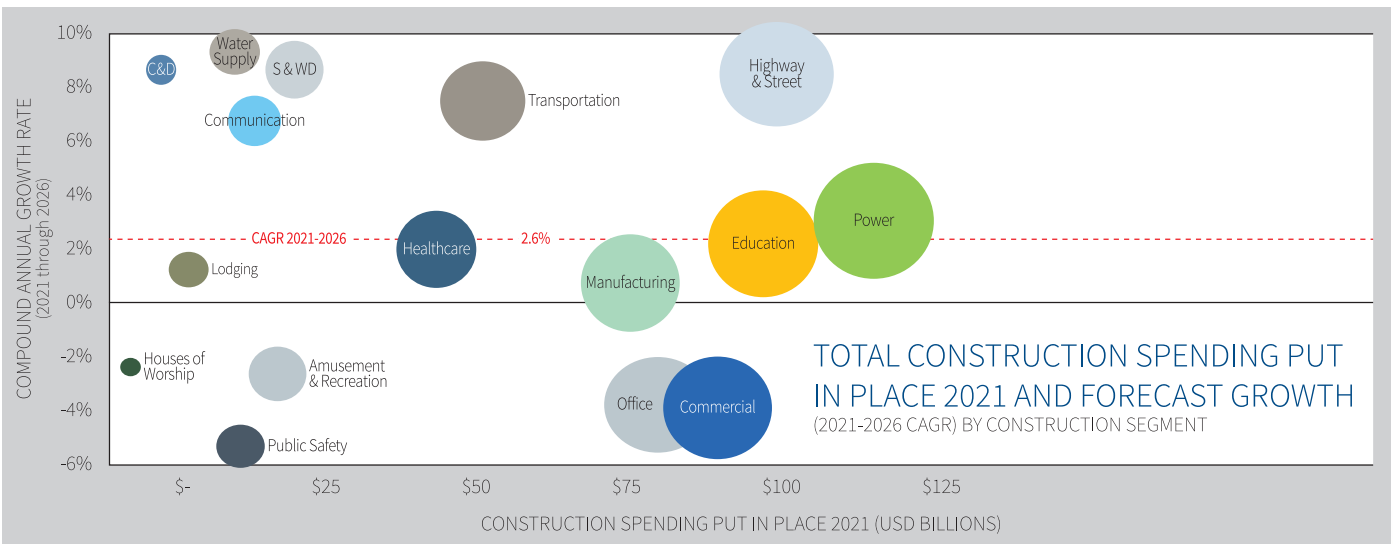
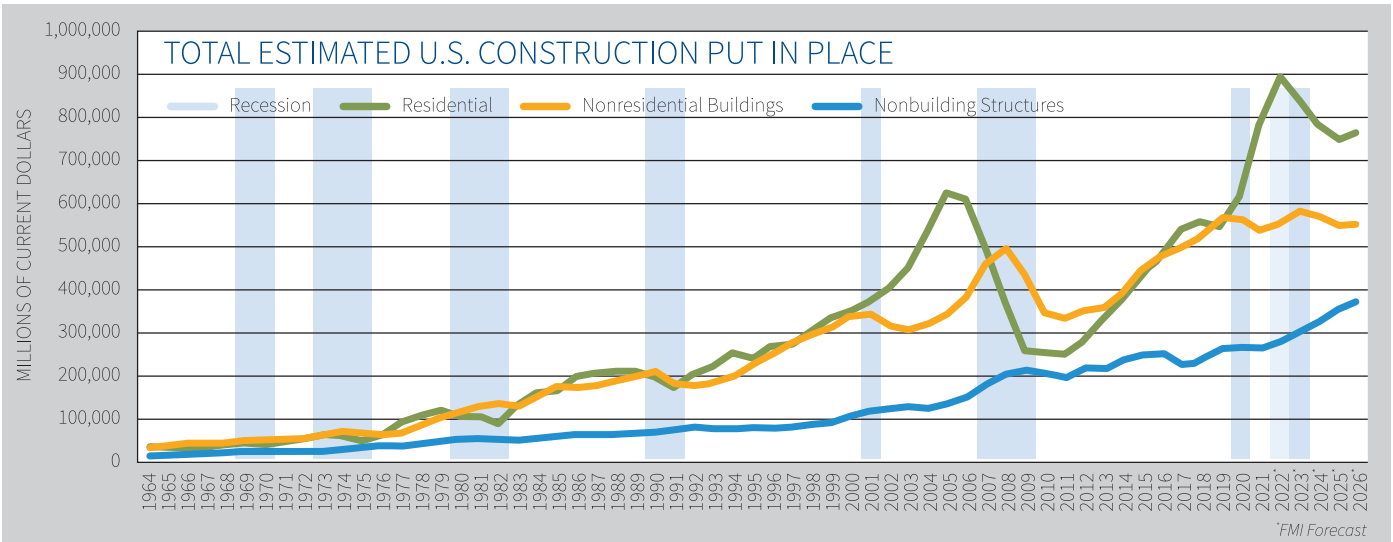
	2022
Total Commercial Building Construction Volume	454,594
Total Commercial Electronic Systems Construction	26,428
Share of Total Construction	5.81%

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Visit the Summary section of this report on pages 18-19 that provides outlines for all the markets and electronic systems, in addition to showing Canadian construction trends.

*NOTE: These numbers reflect construction. They often do not reflect the huge opportunities that exist in nearly all markets for integrators to upgrade existing spaces.*

# EXECUTIVE SUMMARY

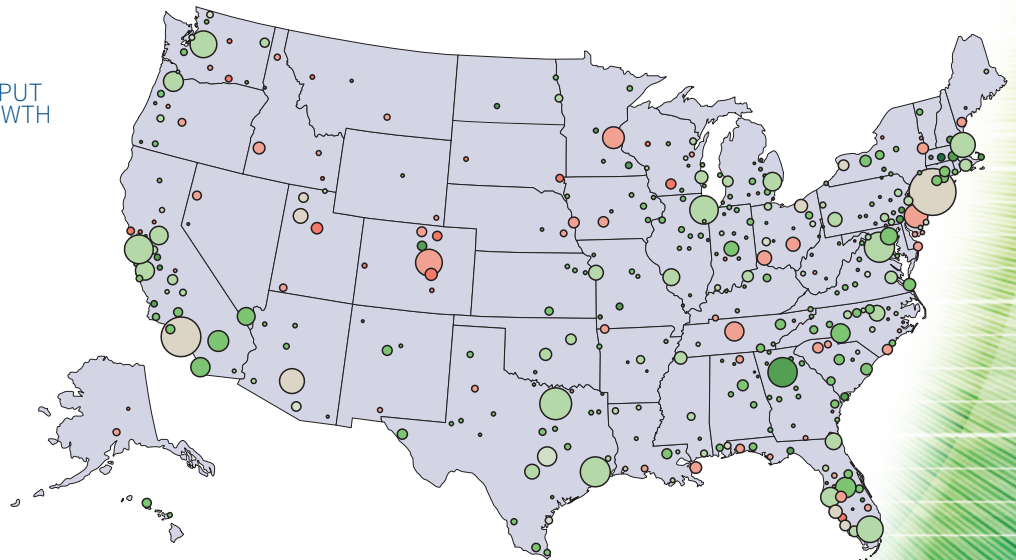


**TOTAL CONSTRUCTION SPENDING PUT IN PLACE 2021 AND FORECAST GROWTH (2021-2026 CAGR) BY METROPOLITAN STATISTICAL AREA**

Bubble Size Represents Total Put in Place Construction Spend (2021)

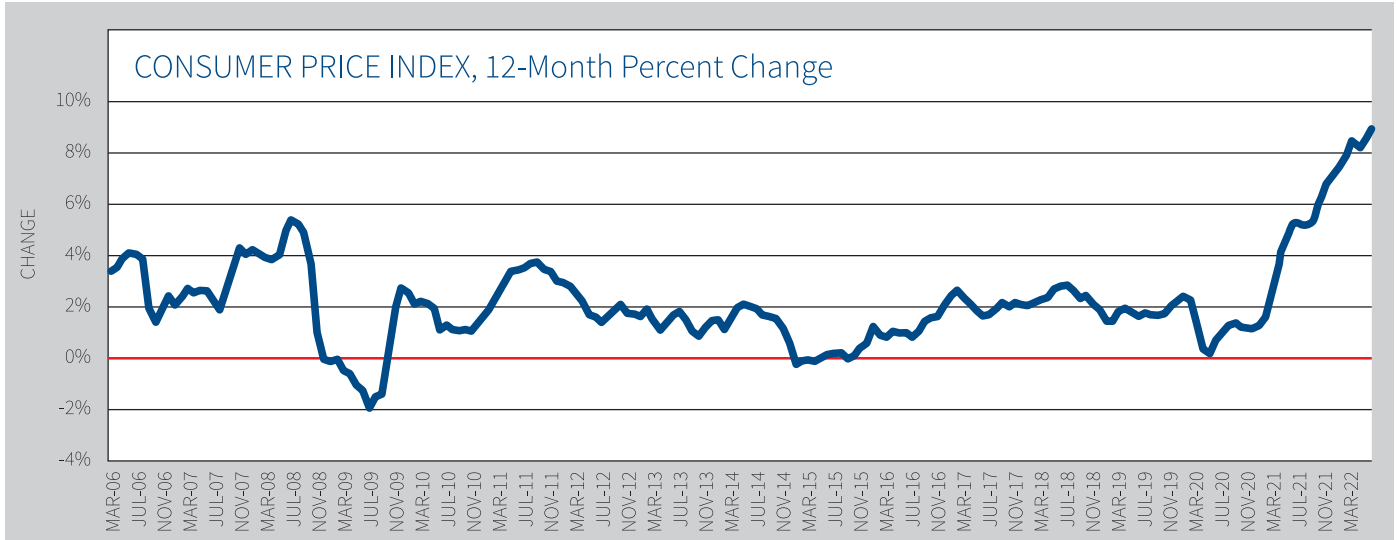
CAGR 2021-2026

-10% 10%



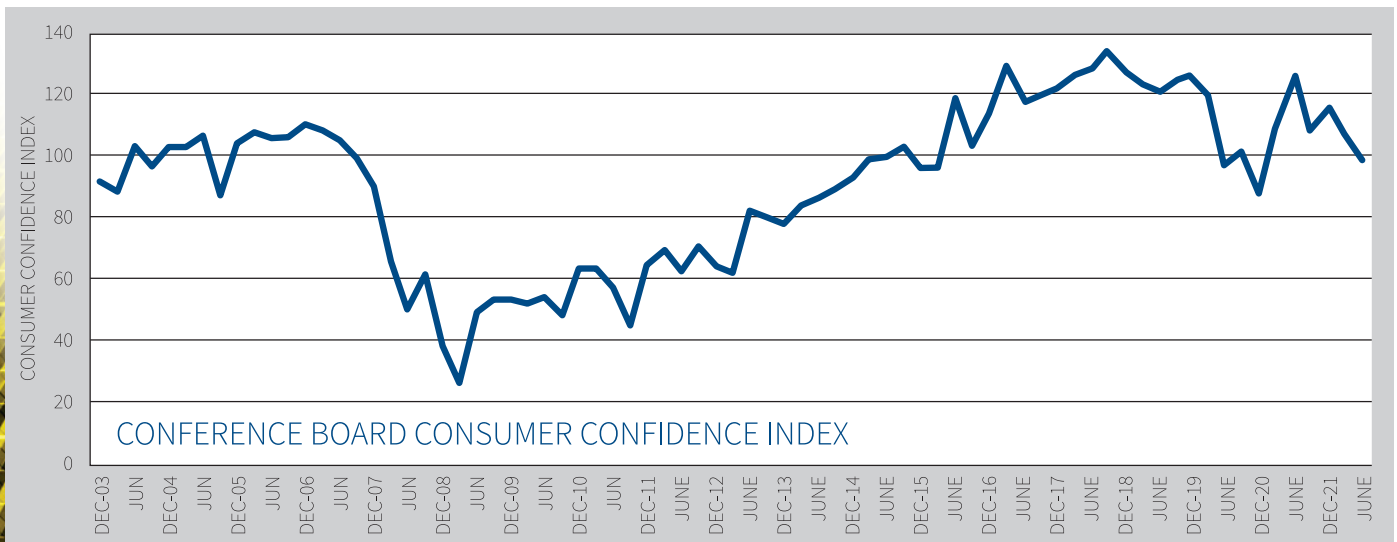
# EXECUTIVE SUMMARY

**KEY ECONOMIC INDICATORS** It's important to consider key economic indicators, such as CPI, CCI, and unemployment rates, when evaluating this report because they provide the general pulse of the economy. These three factors determine interest rates and funding of construction projects. The Fed (formerly known as the Federal Reserve Bank/Federal Reserve) controls interest rates, which CPI, CCI, and unemployment all affect. The graphs below highlight historical changes in CPI, CCI, and unemployment rates.



CPI is a measure of the average change over time in the price paid by urban households for a set of consumer goods and services. An increase in CPI usually leads to adjustments in interest rates to control costs of goods and adjust for inflation. Additionally, CPI is often used in calculating wages, pensions, and salaries.

The CPI graph shows the national percent of change of costs for consumer goods and services over the course of the last 15 years.



CCI is calculated based on a survey of 5,000 U.S. households; it's interpreted by the Conference Board, which extracts data from the survey to forecast future spending by consumers. In general, a 5% swing in either direction is needed to influence a change in decision-making.

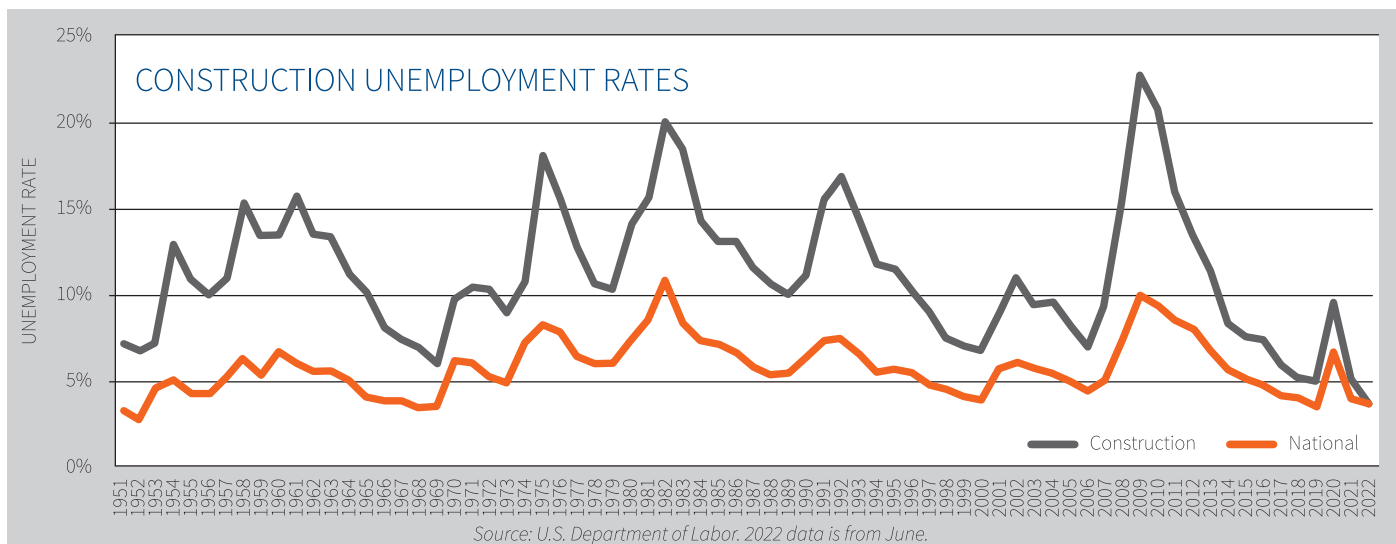
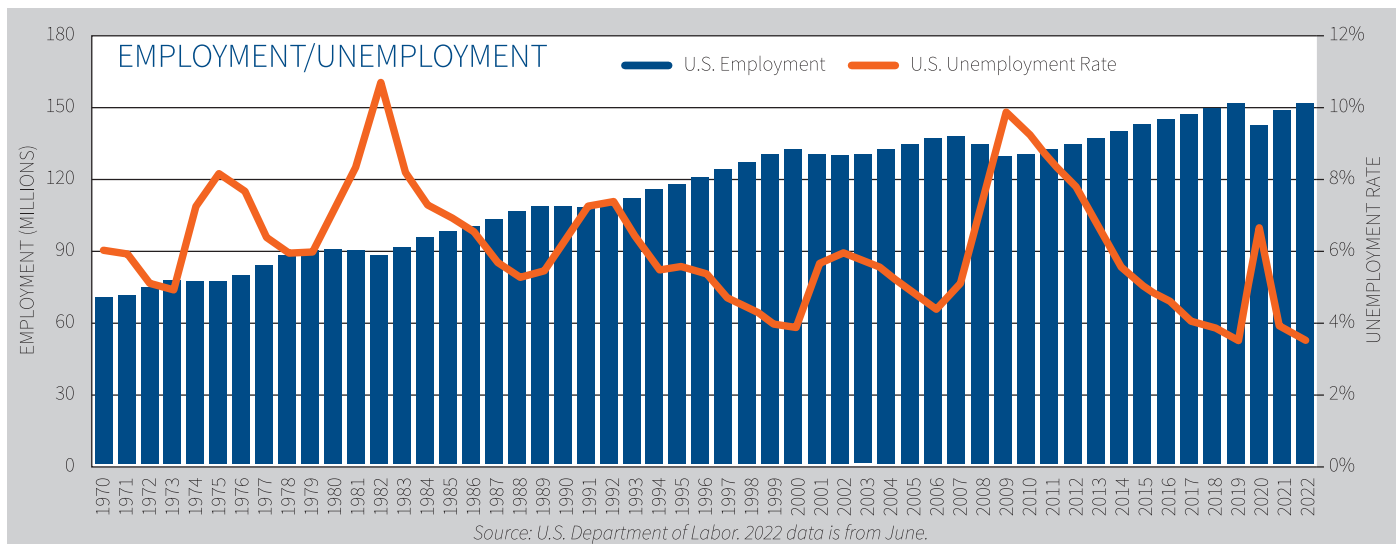


# EXECUTIVE SUMMARY

At this point in 2022, integrators view everything through the lens of supply chain challenges. This report is no different. Experts predict that international supply chain constraints will remain in place well into 2023. This has an impact on product availability and integrators' ability to deliver completed projects. There are impacts on realized revenue and cash flow as well.

Supply chain challenges also affect the market opportunities outlined in this report through construction delays. Construction spending in commercial and manufacturing are projected to be up in 2022, and corporate and healthcare are expected to be stable in 2022, but pandemic-fueled supply chain challenges have taught integrators to proceed cautiously. NSCA is working with members to create supply chain mitigation strategies and resources.

Meanwhile, attracting, onboarding, and retaining employees remain significant challenges for integrators as well. NSCA continues to step up its efforts to assist members in understanding the transition to managed and value-added services as a way to combat low-margin business and compete for top technical talent.



# EXECUTIVE SUMMARY

## RESIDENTIAL CONSTRUCTION

**UP 14%**

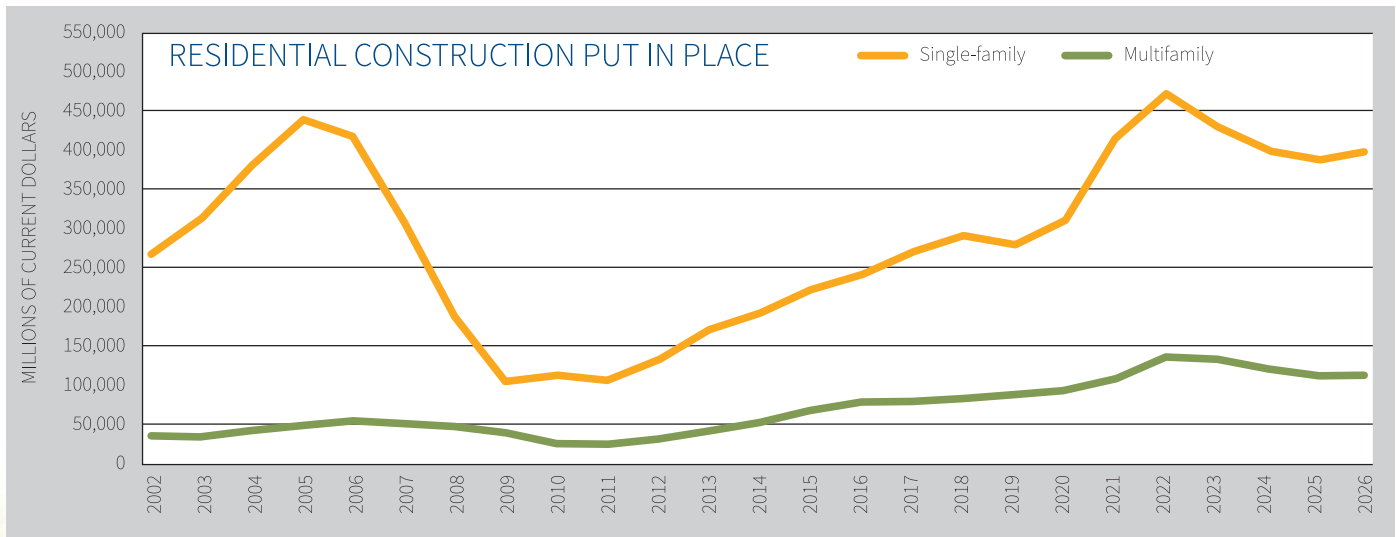
**\$897 Billion**

*2022/2021 Comparison*

### Trends:

- Builders are retooling operations to reduce customization and luxury options to protect margins and streamline delivery of homes
- Increasing mortgage rates through 2022 result in ongoing affordability challenges, fewer buyers, and rising inventories, ultimately supporting demand for rentals
- Increasing demand for rentals draws developers back into urban and suburban multifamily and mixed-use investments
- Reduced home buying and selling, moderated home price appreciation, and diminished refinance activity result in less demand for improvement investments

Drivers include unemployment rates, core CPI, income, mortgage rates, home prices, housing starts, and housing permits.



While the residential sector does not directly create demand for most NSCA members, we should recognize the impact that housing has on other construction segments. Commercial, healthcare, and education segments in particular tend to follow changes in the housing sector. Likewise, home equity values have direct impact on consumer confidence and discretionary spending that drive markets such as retail and hospitality. As it often plays out: When residential markets are booming, it puts additional pressure on NSCA members to recruit and retain key employees whose skills can be used by residential integration companies.



# EXECUTIVE SUMMARY

**VERTICAL MARKET OUTLOOK** Each of the market segments detailed in this report (corporate, education, government, healthcare, houses of worship, lodging, manufacturing, and retail) feature a 2022 outlook to show growth potential and the evaluation of electronic systems for that market, as well as trends and drivers. This information is based upon actual data through Q1 of 2022 and forecasted for the remainder of the year.

Consultants and integrators will find this data helpful in the very early stages of design and should consider using the “percentage of total vertical market construction” averages as a starting point in discussions with clients, tracking how their local marketplace compares to national averages.

Furthermore, this information is critical when budgeting for a project. It can be used to measure growth opportunities and monitor market-share potential. These averages can be used when working with clients to show comparable solutions that fit within the average dollars spent on systems in each vertical market. It gives a baseline average for a good-better-best solution and helps guide clients by avoiding underfunding, which leads to subpar system installation.

The graphs throughout this report specifically outline the systems involved in the low-voltage industry:

- **Acoustics, Audio, and AV:** includes, but not limited to, cable and satellite television systems, public address, paging and intercom systems, security cameras, videoconferencing, video projectors, CCTV, touchscreen controls
- **Phone Systems, Data Networks, IT:** includes, but not limited to, phone and computer systems and cabling, buses, networks, fiber optics
- **Building Automation & Control:** includes, but not limited to, energy metering and monitoring, mechanical systems, malfunction alarms, humidity and ventilation, water systems monitoring, emergency power, electrical fault detection, leak detection
- **Life Safety – Fire & Security:** includes, but not limited to, fire, smoke and security alarm systems, flood safety, air quality sensors, building access systems, nurse call systems
- **Lighting, Digital Signage:** includes, but not limited to, building lighting control, emergency lighting, accent lighting, digital signage

**DATA COLLECTION** This biannual report includes forecasting and systems modeling. FMI first generates a forecast for building construction put in place (new construction, repair, and renovation). Econometric modeling is used to estimate demand. Each market segment has an independent algorithm based on five to eight metrics that have historically correlated best to changes in activity for that market segment over the past 50 years. A preliminary forecast is generated based on projections for each metric (retail sales, consumer confidence, population under age 18) supporting each market segment. The preliminary forecast is then adjusted based on database records for current/planned projects, funding and timing of those projects, contractor backlogs, and FMI’s direct interaction with engineers, architects, owners, and contractors in the field.

Next, the forecast for total construction put in place is modeled to its components and systems. This report is based on analysis of proprietary project records (what goes into construction of a K-12 school of a certain size and geography, for example) and through discussion with architects and estimators. Emerging trends (code changes) are explored through supporting secondary research; final adjustments to the model are then made.

# VERTICAL MARKET OUTLOOKS Corporate

## CORPORATE

STABLE 2%

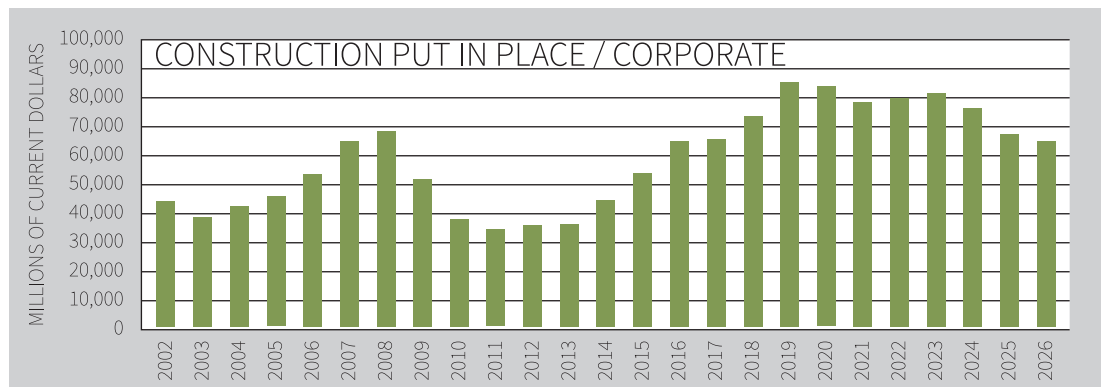
\$80 Billion

2022/2021 Comparison

### Trends:

- Owners will increasingly look to scale back square footage needs over the coming years while reorganization lends to short-term investment in renovations
- Earnings pressures continue to fuel corporate relocations through 2023 and 2024 as companies leave expensive coastal markets (i.e., California).

Key drivers include office vacancy rates and unemployment rates.



## CORPORATE CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	53,891	65,335	66,083	73,758	85,363	84,088	78,982	80,132	81,789	76,496	67,811	65,069
% Change From Year Prior	20.2%	21.2%	1.1%	11.6%	15.7%	-1.5%	-6.1%	1.5%	2.1%	-6.5%	-11.4%	-4%

## SYSTEMS OUTLOOK / CORPORATE in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	516.7	1,112.9	238.5	1,430.8	675.7	3,974.5
2018 Total	638.9	1,320.5	319.5	1,405.6	575	4,259.5
2019 Total	739.7	1,434.5	347.4	1,423.3	538	4,482.9
2020 Total	574.9	1,629	467.1	1,533.1	586.9	4,791.1
2021 Total	694.9	1,743.6	492.8	1,566.7	555.9	5,053.9
2022 Summer Outlook	699.7	1,768.2	508.8	1,564.7	547	5,088.4
% of Total Construction	0.87%	2.21%	0.64%	1.95%	0.68%	6.35%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

# Education VERTICAL MARKET OUTLOOKS

## EDUCATION

**DOWN 1%**

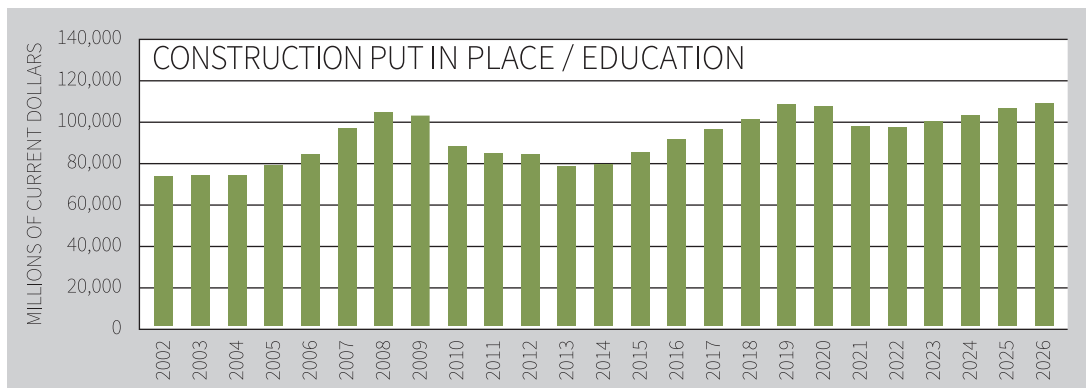
**\$98 Billion**

2022/2021 Comparison

### Trends:

- Short-term, activity will be led by K-12 and private higher-education owners
- Higher-education enrollments are expected to remain depressed through the outlook period
- Recessionary economic factors will encourage student loan forgiveness and other programs that spur demand for enrollment over the coming years

Key drivers include population change in those younger than age 18, population change in ages 18-24, stock market, government spending, and nonresidential structure investment.



## EDUCATION CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	85,346	91,629	96,685	101,210	108,952	107,435	98,189	97,594	100,351	103,713	106,882	109,183
% Change From Year Prior	7.1%	7.4%	5.5%	4.7%	7.6%	-1.4%	-8.6%	-0.6%	2.8%	3.4%	3.1%	2.2%

## SYSTEMS OUTLOOK / EDUCATION in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	724.6	664.2	241.5	3,079.6	1,328.5	6,038.5
2018 Total	801.3	801.3	267.1	3,405.7	1,402.3	6,677.8
2019 Total	825.9	791.4	309.7	3,509.9	1,445.2	6,882.1
2020 Total	591.3	1,256.5	369.5	3,621.6	1,552.1	7,390.9
2021 Total	656.1	1,117.1	301.4	3,511	1,507.2	7,092.8
2022 Summer Outlook	628.0	1,081.6	314	3,471.6	1,482.8	6,978
% of Total Construction	0.64%	1.11%	0.32%	3.56%	1.52%	7.15%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market



# VERTICAL MARKET OUTLOOKS Government

## GOVERNMENT

**DOWN 7%**

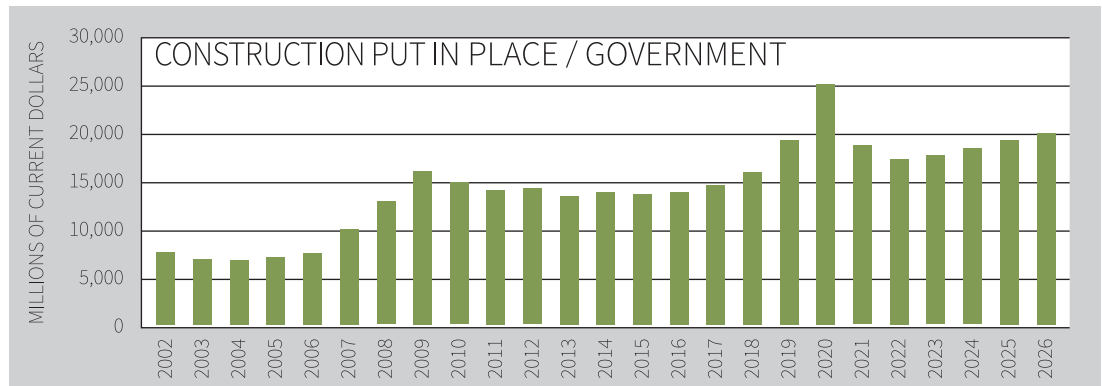
**\$18 Billion**

2022/2021 Comparison

### Trends:

- Addressing rising crime is expected to be in focus throughout mid-term elections
- Ongoing and increased military and correctional spending are anticipated over the coming years

Key drivers include population, government spending, incarceration rates, and nonresidential structure investment.



## GOVERNMENT CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	13,856	14,046	14,705	16,169	19,442	25,246	18,877	17,507	17,806	18,558	19,380	20,157
% Change From Year Prior	-1.1%	1.4%	4.7%	10%	20.2%	29.9%	-25.2%	-7.3%	1.7%	4.2%	4.4%	4%

## SYSTEMS OUTLOOK / GOVERNMENT in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	47.6	219	66.6	476.1	142.8	952.1
2018 Total	64.8	248.3	86.4	518.2	161.9	1,079.6
2019 Total	65.4	243.9	107.1	577	196.3	1,189.7
2020 Total	40.8	312.6	163.1	618.4	224.2	1,359
2021 Total	51.2	321.1	170.8	608.1	215.2	1,366.5
2022 Summer Outlook	44.4	301.4	161.8	561.6	199.9	1,269.2
% of Total Construction	0.25%	1.72%	0.92%	3.21%	1.14%	7.25%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

# Healthcare VERTICAL MARKET OUTLOOKS

## HEALTHCARE

**STABLE 3%**

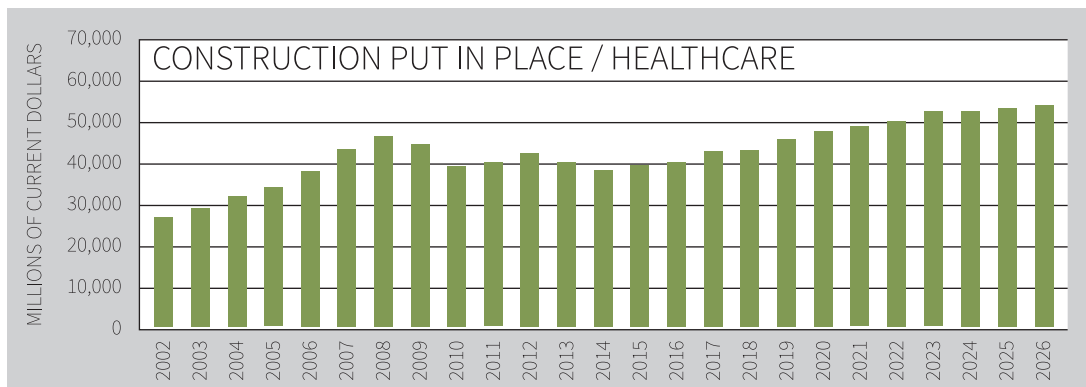
**\$51 Billion**

2022/2021 Comparison

### Trends:

- Driven by increased demand for hospital and medical office facilities, healthcare remains the only institutional segment to experience growth in construction spending through 2022
- Significant hospital investments are in planning stages across many major metropolitan areas, supported by aging and/or expanding populations, but also increasingly challenged by rising operating expenses (i.e., wages) and construction costs

Key drivers include population change, population change in ages 75 and up, uninsured population, government spending, and nonresidential structure investment.



## HEALTHCARE CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	39,665	40,574	43,120	43,450	46,263	48,113	49,147	50,510	52,787	52,979	53,751	54,279
% Change From Year Prior	2.6%	2.3%	6.3%	0.8%	6.5%	4%	2.1%	2.8%	4.5%	0.4%	1.5%	1%

## SYSTEMS OUTLOOK / HEALTHCARE in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	84	644.2	140	1,400.3	532.1	2,800.7
2018 Total	105.1	705.9	120.1	1,486.8	585.7	3,003.7
2019 Total	109.1	724.6	140.3	1,527.2	615.5	3,116.7
2020 Total	137.5	876.4	189	1,580.9	653	3,436.7
2021 Total	118.3	955.4	218.4	1,656	691.5	3,639.5
2022 Summer Outlook	139.2	983.8	232	1,670.6	686.8	3,712.5
% of Total Construction	0.28%	1.95%	0.46%	3.31%	1.36%	7.35%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

# VERTICAL MARKET OUTLOOKS Houses of Worship

## HOUSES OF WORSHIP

**DOWN 9%**

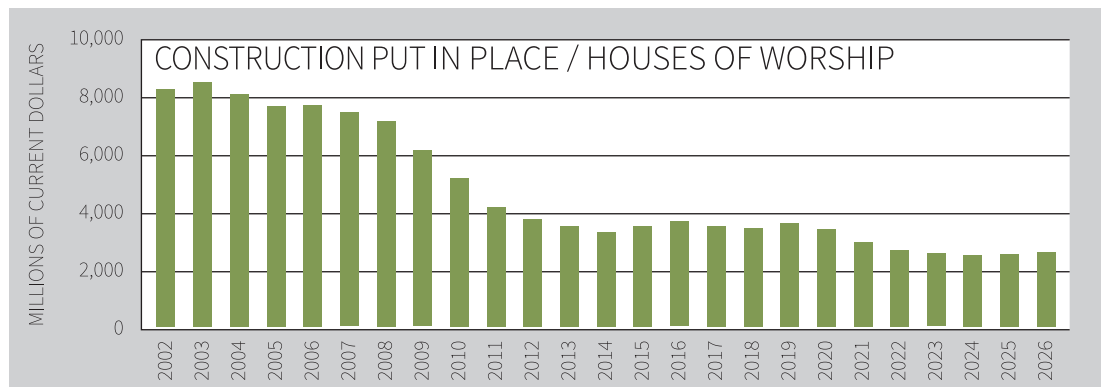
**\$3 Billion**

2022/2021 Comparison

### Trends:

- The increasing number of religious services offered as COVID-19 restrictions lift has not resulted in a corresponding rise in membership or attendance
- Opportunities for renovations and/or acquisitions of vacant worship, lodging, office, and retail spaces will become more practical and attractive over the coming years

Key drivers include GDP, population, income, and personal savings.



## HOUSES OF WORSHIP CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	3,598	3,752	3,586	3,499	3,730	3,500	3,047	2,776	2,654	2,597	2,621	2,705
% Change From Year Prior	6.3%	4.3%	-4.4%	-2.4%	6.6%	-6.2%	-12.9%	-8.9%	-4.4%	-2.2%	0.9%	3.2%

## SYSTEMS OUTLOOK / HOUSES OF WORSHIP in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	26.2	23	27.3	78	55.4	209.9
2018 Total	24.4	22.4	26.4	75.3	54.9	203.5
2019 Total	26.6	20.7	26.6	72.8	50.2	196.7
2020 Total	20.6	26.8	26.8	80.3	51.5	206
2021 Total	23.4	27.9	24.9	77.7	49.2	203.1
2022 Summer Outlook	22.8	27.1	22.8	72.3	45.2	190.2
% of Total Construction	0.82%	0.98%	0.82%	2.6%	1.63%	6.85%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market



# Lodging VERTICAL MARKET OUTLOOKS

## LODGING

**DOWN 11%**

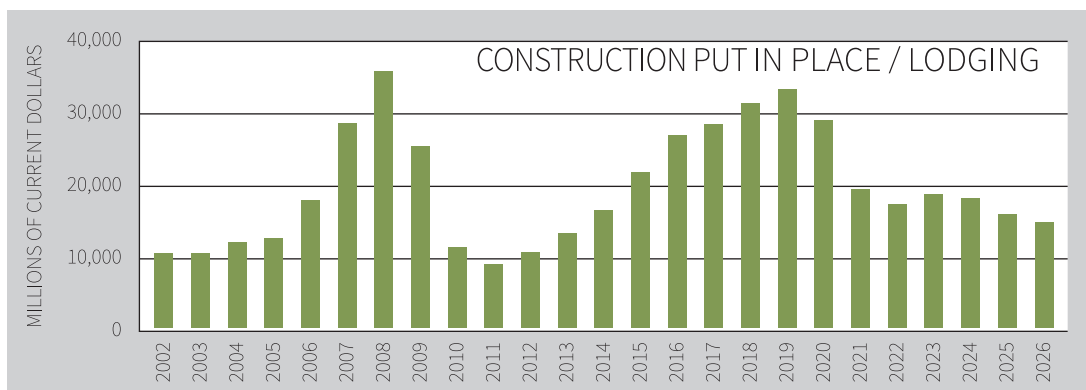
**\$17 Billion**

2022/2021 Comparison

### Trends:

- Central business districts and the top 25 markets are not expected to reach full revenue per available room (RevPAR) recovery until after 2024
- Deferred maintenance and room upgrades will pick up this year
- A large wave of future expansionary spending in planning will be challenged by the onset of recession through the remainder of 2022 into 2023

Key drivers include occupancy rates, RevPAR, average daily rates, and room starts.



## LODGING CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	22,012	27,077	28,660	31,464	33,461	29,053	19,660	17,470	18,931	18,343	16,166	14,958
% Change From Year Prior	31.5%	23%	5.8%	9.8%	6.3%	-13.2%	-32.3%	-11.1%	8.4%	-3.1%	-11.9%	-7.5%

## SYSTEMS OUTLOOK / LODGING in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	89.1	163.4	44.6	742.5	445.5	1,485.1
2018 Total	137.5	257.9	86	808	429.8	1,719
2019 Total	176.2	255.5	88.1	801.7	440.5	1,762
2020 Total	129.4	266.4	68.5	669.7	388.1	1,522.1
2021 Total	87.2	198.9	54.5	485	264.3	1,089.9
2022 Summer Outlook	80.9	182.6	49.8	436.8	236.9	987.1
% of Total Construction	0.46%	1.05%	0.29%	2.5%	1.36%	5.65%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

# VERTICAL MARKET OUTLOOKS Manufacturing

## MANUFACTURING

**UP 15%**

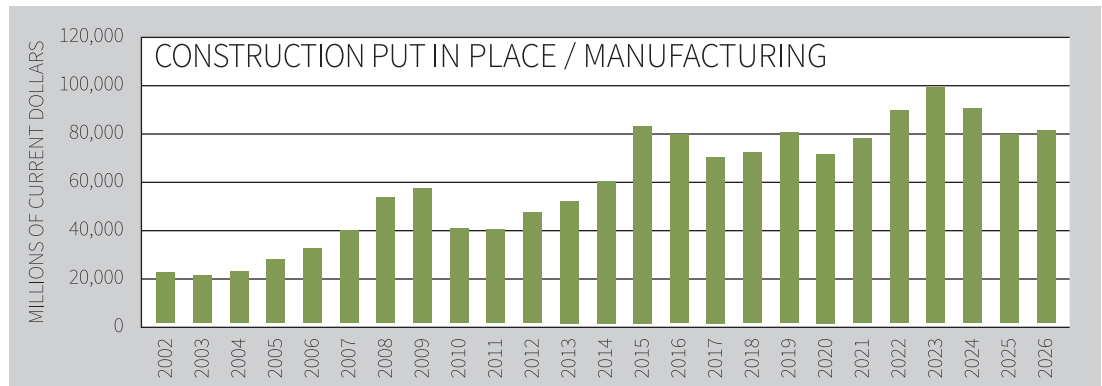
**\$90 Billion**

2022/2021 Comparison

### Trends:

- Manufacturing investment is expected to remain strong over the next 18 to 24 months due to producers addressing domestic demand in a climate of elevated prices, input shortages, and rising trade tensions
- Reduced demand for manufactured goods will challenge future investment over the coming years as economic conditions continue to soften
- International supply chain constraints are expected to remain in place well into 2023

Key drivers include PMI, industrial production, capacity utilization, durable goods orders, and manufacturing inventories.



## MANUFACTURING CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	83,143	79,633	70,682	72,508	80,978	72,143	78,484	90,210	99,299	90,832	80,223	81,505
% Change From Year Prior	37.1%	-4.2%	-11.2%	2.6%	11.7%	-10.9%	8.8%	14.9%	10.1%	-8.5%	-11.7%	1.6%

## SYSTEMS OUTLOOK / MANUFACTURING in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	54.6	136.5	1,010.3	1,037.6	491.5	2,730.4
2018 Total	61.3	245.1	1,164.4	1,103.1	490.3	3,064.1
2019 Total	65.3	244.8	1,224.1	1,207.8	522.3	3,264.2
2020 Total	42.3	287.8	1,354.3	1,235.8	465.5	3,385.6
2021 Total	35.9	314.2	1,463.5	1,301.9	475.9	3,591.4
2022 Summer Outlook	42.2	379.6	1,729.1	1,518.2	548.2	4,217.3
% of Total Construction	0.05%	0.42%	1.92%	1.68%	0.61%	4.68%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

# Retail VERTICAL MARKET OUTLOOKS

## RETAIL

UP 8%

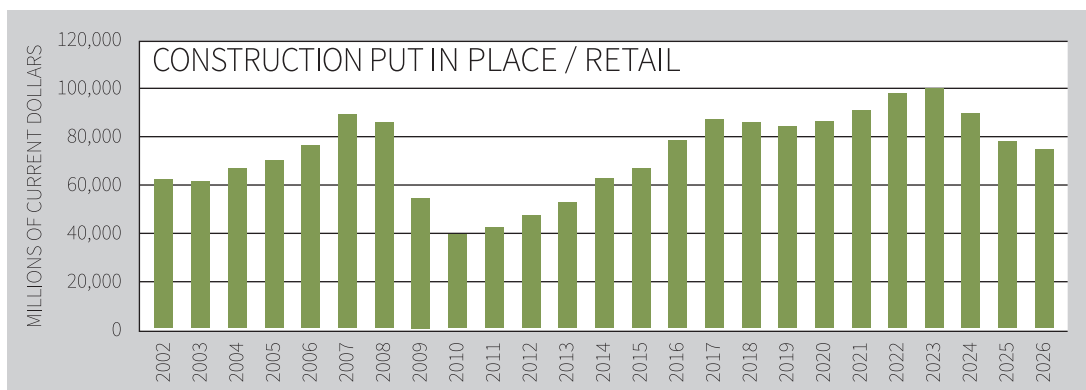
\$98 Billion

2022/2021 Comparison

### Trends:

- National chains and big-box retailers continue renovations to implement efficiencies across online customer pickup and same-day delivery services
- Discretionary spending on retail goods will be reduced by the loss of inflation-led purchasing power and softening economic conditions
- Poor earnings and higher interest rates put many retailers at risk of failure

Key drivers include retail sales, CPI, income, home prices, housing starts, and housing permits.



## RETAIL CONSTRUCTION

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Millions of Current Dollars	66,977	78,696	87,626	86,422	84,345	86,816	91,174	98,394	100,446	90,076	78,151	74,810
% Change From Year Prior	6.6%	17.5%	11.3%	-1.4%	-2.4%	2.9%	5%	7.9%	2.1%	-10.3%	-13.2%	-4.3%

## SYSTEMS OUTLOOK / RETAIL in Millions of Current Dollars

	Acoustics, Audio, AV	Phone Systems, Data Networks, IT	Building Automation & Control	Life Safety: Fire & Security	Lighting, Digital Signage	All Systems
2017 Total	194	355.6	129.3	1,293.2	1,260.8	3,232.9
2018 Total	173.1	450.1	173.1	1,384.8	1,280.9	3,461.9
2019 Total	151	497.3	248.6	1,411.9	1,243.1	3,551.8
2020 Total	122.7	556.4	261.8	1,227.3	1,104.6	3,272.8
2021 Total	110.2	651.9	330.6	1,359	1,221.2	3,672.8
2022 Summer Outlook	119.5	717.3	368.6	1,464.5	1,315	3,985
% of Total Construction	0.12%	0.73%	0.37%	1.49%	1.34%	4.05%

2017 through 2021 Totals – total electronic systems construction put in place in their respective years

2022 Summer Outlook – outlook of total 2022 electronic systems construction put in place based on actual data from 2022 Q1 and Q2 and forecasted for the remainder of 2022

% of total construction – percentage of 2022 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market



# CONSTRUCTION OUTLOOK SUMMARIES

## SYSTEMS OUTLOOK in Millions of Current Dollars (July 2022 Forecast)

	Acoustics, Audio, AV				Phone Systems, Data Networks, IT				Building Automation & Control			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Corporate	739.7	574.9	694.9	699.7	1,434.5	1,629	1,743.6	1,768.2	347.4	467.1	492.8	508.8
Education	825.9	591.3	656.1	628	791.4	1,256.5	1,117.1	1,081.6	309.7	369.5	301.4	314
Government	65.4	40.8	51.2	44.4	243.9	312.6	321.1	301.4	107.1	163.1	170.8	161.8
Healthcare	109.1	137.5	118.3	139.2	724.6	876.4	955.4	983.8	140.3	189	218.4	232
Houses of Worship	26.6	20.6	23.4	22.8	20.7	26.8	27.9	27.1	26.6	26.8	24.9	22.8
Lodging	176.2	129.4	87.2	80.9	255.5	266.4	198.9	182.6	88.1	68.5	54.5	49.8
Manufacturing	65.3	42.3	35.9	42.2	244.8	287.8	314.2	379.6	1,224.1	1,354.3	1,463.5	1,729.1
Retail	151	122.7	110.2	119.5	497.3	556.4	651.9	717.3	248.6	261.8	330.6	368.6
<b>Total</b>	<b>2,159.1</b>	<b>1,659.5</b>	<b>1,777.2</b>	<b>1,776.8</b>	<b>4,212.7</b>	<b>5,211.6</b>	<b>5,330.2</b>	<b>5,441.6</b>	<b>2,491.8</b>	<b>2,900.1</b>	<b>3,056.8</b>	<b>3,387.1</b>

	Life Safety: Fire & Security				Lighting, Digital Signage				All Systems			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Corporate	1,423.3	1,533.1	1,566.7	1,564.7	538	586.9	555.9	547	4,482.9	4,791.	5,053.9	5,088.4
Education	3,509.9	3,621.6	3,511	3,471.6	1,445.2	1,552.1	1,507.2	1,482.8	6,882.1	7,390.9	7,092.8	6,978
Government	577	618.4	608.1	561.6	196.3	224.2	215.2	199.9	1,189.7	1,359	1,366.5	1,269.2
Healthcare	1,527.2	1,580.9	1,656	1,670.6	615.5	653	691.5	686.8	3,116.7	3,436.7	3,639.5	3,712.5
Houses of Worship	72.8	80.3	77.7	72.3	50.2	51.5	49.2	45.2	1196.7	206	203.1	190.2
Lodging	801.7	669.7	485	436.8	440.5	388.1	264.3	236.9	1,762	1,522.1	1,089.9	987.1
Manufacturing	1,207.8	1,235.8	1,301.9	1,518.2	522.3	465.5	475.9	548.2	3,264.2	3,385.6	3,591.4	4,217.3
Retail	1,411.9	1,227.3	1,359	1,464.5	1,243.1	1,104.6	1,221.2	1,315	3,551.8	3,272.8	3,672.8	3,985
<b>Total</b>	<b>10,531.5</b>	<b>10,567</b>	<b>10,565.2</b>	<b>10,760.2</b>	<b>5,051.1</b>	<b>5,025.9</b>	<b>4,980.5</b>	<b>5,061.9</b>	<b>24,446.3</b>	<b>25,364.1</b>	<b>25,710</b>	<b>26,427.6</b>

## CONSTRUCTION OUTLOOK / U.S. in Millions of Current Dollars (July 2022 Forecast)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Corporate	53,891	65,335	66,083	73,758	85,363	84,088	78,982	80,132	81,789	76,496	67,811	65,069
Education	85,346	91,629	96,685	101,210	108,952	107,435	98,189	97,594	100,351	103,713	106,882	109,183
Government	13,856	14,046	14,705	16,169	19,442	25,246	18,877	17,507	17,806	18,558	19,380	20,157
Healthcare	39,665	40,574	43,120	43,450	46,263	48,113	49,147	50,510	52,787	52,979	53,751	54,279
Houses of Worship	3,598	3,752	3,586	3,499	3,730	3,500	3,047	2,776	2,654	2,597	2,621	2,705
Lodging	22,012	27,077	28,660	31,464	33,461	29,053	19,660	17,470	18,931	18,343	16,166	14,958
Manufacturing	83,143	79,633	70,682	72,508	80,978	72,143	78,484	90,210	99,299	90,832	80,223	81,505
Retail	66,977	78,696	87,626	86,422	84,345	86,816	91,174	98,394	100,446	90,076	78,151	74,810
<b>Target Commercial Buildings</b>	<b>368,488</b>	<b>400,742</b>	<b>411,148</b>	<b>428,480</b>	<b>462,534</b>	<b>456,394</b>	<b>437,561</b>	<b>454,594</b>	<b>474,063</b>	<b>453,594</b>	<b>424,985</b>	<b>422,666</b>
Total Commercial Buildings	452,583	486,615	503,985	530,357	568,513	562,069	537,039	553,710	579,644	570,043	548,747	550,827
Total Residential Buildings	438,696	485,964	545,754	563,877	553,442	638,088	785,275	896,548	838,691	776,387	749,587	762,336
Total Nonbuilding Structures	248,883	251,090	230,104	238,951	269,085	268,997	269,356	278,412	296,144	321,047	348,138	366,811
<b>Total Construction Put in Place</b>	<b>1,140,162</b>	<b>1,223,669</b>	<b>1,279,843</b>	<b>1,333,185</b>	<b>1,391,040</b>	<b>1,469,154</b>	<b>1,591,670</b>	<b>1,728,670</b>	<b>1,714,478</b>	<b>1,667,477</b>	<b>1,646,472</b>	<b>1,679,974</b>

## CONSTRUCTION OUTLOOK / U.S. % Change From Year Prior (July 2022 Forecast)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Corporate	20.2%	21.2%	1.1%	11.6%	15.7%	-1.5%	-6.1%	1.5%	2.1%	-6.5%	-11.4%	-4.0%
Education	7.1%	7.4%	5.5%	4.7%	7.6%	-1.4%	-8.6%	-0.6%	2.8%	3.4%	3.1%	2.2%
Government	-1.1%	1.4%	4.7%	10%	20.2%	29.9%	-25.2%	-7.3%	1.7%	4.2%	4.4%	4%
Healthcare	2.6%	2.3%	6.3%	0.8%	6.5%	4%	2.1%	2.8%	4.5%	0.4%	1.5%	1%
Houses of Worship	6.3%	4.3%	-4.4%	-2.4%	6.6%	-6.2%	-12.9%	-8.9%	-4.4%	-2.2%	0.9%	3.2%
Lodging	31.5%	23%	5.8%	9.8%	6.3%	-13.2%	-32.3%	-11.1%	8.4%	-3.1%	-11.9%	-7.5%
Manufacturing	37.1%	-4.2%	-11.2%	2.6%	11.7%	-10.9%	8.8%	14.9%	10.1%	-8.5%	-11.7%	1.6%
Retail	6.6%	17.5%	11.3%	-1.4%	-2.4%	2.9%	5%	7.9%	2.1%	-10.3%	-13.2%	-4.3%
<b>Target Commercial Buildings</b>	<b>14.9%</b>	<b>8.8%</b>	<b>2.6%</b>	<b>4.2%</b>	<b>7.9%</b>	<b>-1.3%</b>	<b>-4.1%</b>	<b>3.9%</b>	<b>4.3%</b>	<b>-4.3%</b>	<b>-6.3%</b>	<b>-0.5%</b>
Total Commercial Buildings	14.8%	7.5%	3.6%	5.2%	7.2%	-1.1%	-4.5%	3.1%	4.7%	-1.7%	-3.7%	0.4%
Total Residential Buildings	14.7%	10.8%	12.3%	3.3%	-1.9%	15.3%	23.1%	14.2%	-6.5%	-7.4%	-3.5%	1.7%
Total Nonbuilding Structures	4.3%	0.9%	-8.4%	3.8%	12.6%	0%	0.1%	3.4%	6.4%	8.4%	8.4%	5.4%
<b>Total Construction Put in Place</b>	<b>12.3%</b>	<b>7.3%</b>	<b>4.6%</b>	<b>4.2%</b>	<b>4.3%</b>	<b>5.6%</b>	<b>8.3%</b>	<b>8.6%</b>	<b>-0.8%</b>	<b>-2.7%</b>	<b>-1.3%</b>	<b>2%</b>

NOTE: "Nonbuilding Structures" are generally horizontal construction projects, including roadways, bridges, tunnels, etc. This data is construction-related, and only projects with building permits were factored into the data.

# CANADA CONSTRUCTION OUTLOOK

FMI does work extensively in Canada with a team dedicated to that area. The historic rule of thumb for Canada was that it was 10% of the United States — no matter what you were talking about. Over the past eight years, that has changed dramatically; today, total Canadian construction volume is closer to one-quarter of the United States. The recession in Canada was not nearly as deep or broad, and the residential sector held up relatively well. The government invested heavily in real infrastructure projects, especially in Ontario. And the oil and gas industry created a boom in Western Canada. We are expecting moderation in the rate of Canada's growth, but the economy will show steady gains for the next 10 years. It is estimated that the Canadian volume is about 18% of the U.S. systems contracting based on the nonresidential building sector; however, drivers and owner practices are different in Canada, which needs to be taken into consideration. NSCA will review this information in the reports to come.

## CONSTRUCTION OUTLOOK/CANADA in Millions of Current Canadian Dollars

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Corporate	8,853	8,637	8,670	9,754	10,873	10,556	10,189	10,263	10,562	10,784	11,336	11,772
Education	5,945	6,645	7,729	7,678	6,744	6,799	7,573	8,907	9,631	9,622	9,836	10,216
Government	2,418	1,904	2,236	2,306	2,810	2,741	2,714	2,816	2,974	3,058	3,235	3,391
Healthcare	5,111	4,823	5,168	5,252	5,319	5,756	6,252	6,917	7,590	7,691	7,567	7,540
Houses of Worship	442	413	386	382	444	415	316	313	327	338	351	361
Lodging	2,470	2,569	2,557	2,766	2,695	2,606	2,555	2,873	2,924	2,979	3,101	3,214
Manufacturing	19,032	17,912	16,441	20,008	23,175	19,896	18,642	20,437	21,798	22,158	23,418	23,761
Retail	14,270	13,357	13,472	14,002	15,748	15,228	14,929	16,221	17,072	18,068	19,000	19,600
<b>Target Commercial Buildings</b>	<b>58,541</b>	<b>56,260</b>	<b>56,659</b>	<b>62,147</b>	<b>67,809</b>	<b>63,998</b>	<b>63,170</b>	<b>68,746</b>	<b>72,878</b>	<b>74,697</b>	<b>77,844</b>	<b>79,857</b>
Total Commercial Buildings	73,071	71,721	72,434	79,641	85,643	81,659	82,002	89,733	95,052	97,245	100,827	103,728
Total Residential Buildings	100,853	105,454	113,821	118,714	118,204	123,416	158,980	172,752	162,127	164,773	169,994	176,869
Total Nonbuilding Structures	95,506	83,136	85,995	81,196	76,629	65,456	75,103	80,267	85,111	87,743	91,458	94,906
<b>Total Construction Put in Place</b>	<b>269,430</b>	<b>260,310</b>	<b>272,251</b>	<b>279,551</b>	<b>280,476</b>	<b>270,532</b>	<b>316,084</b>	<b>342,752</b>	<b>342,290</b>	<b>349,761</b>	<b>362,279</b>	<b>375,503</b>

## CONSTRUCTION OUTLOOK / CANADA % Change From Year Prior

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Corporate	-2.44%	0.38%	12.51%	11.48%	-2.92%	-3.48%	0.73%	2.91%	2.11%	5.12%	-2.44%
Education	11.76%	16.32%	-0.67%	-12.16%	0.83%	11.37%	17.62%	8.13%	-0.09%	2.23%	11.76%
Government	-21.25%	17.44%	3.13%	21.84%	-2.45%	-0.98%	3.74%	5.62%	2.82%	5.79%	-21.25%
Healthcare	-5.63%	7.15%	1.64%	1.28%	8.2%	8.63%	10.62%	9.73%	1.33%	-1.62%	-5.63%
Houses of Worship	-6.59%	-6.63%	-1.06%	16.45%	-6.52%	-24.04%	-0.65%	4.39%	3.32%	3.93%	-6.59%
Lodging	4.03%	-0.48%	8.17%	-2.57%	-3.3%	-1.96%	12.45%	1.78%	1.87%	4.12%	4.03%
Manufacturing	-5.89%	-8.21%	21.69%	15.83%	-14.15%	-6.3%	9.63%	6.66%	1.65%	5.69%	-5.89%
Retail	-6.40%	0.86%	3.93%	12.47%	-3.3%	-1.96%	8.65%	5.25%	5.83%	5.16%	-6.4%
<b>Target Commercial Buildings</b>	<b>-3.9%</b>	<b>0.71%</b>	<b>9.69%</b>	<b>9.11%</b>	<b>-5.62%</b>	<b>-1.29%</b>	<b>8.83%</b>	<b>6.01%</b>	<b>2.5%</b>	<b>4.21%</b>	<b>-3.90%</b>
Total Commercial Buildings	-1.85%	1%	9.95%	7.54%	-4.65%	0.42%	9.43%	5.93%	2.31%	3.68%	-1.85%
Total Residential Buildings	4.56%	7.93%	4.3%	-0.43%	4.41%	28.82%	8.66%	-6.15%	1.63%	3.17%	4.56%
Total Nonbuilding Structures	-12.95%	3.44%	-5.58%	-5.62%	-14.58%	14.74%	6.88%	6.03%	3.09%	4.23%	-12.95%
<b>Total Construction Put in Place</b>	<b>-3.38%</b>	<b>4.59%</b>	<b>2.68%</b>	<b>0.33%</b>	<b>-3.55%</b>	<b>16.84%</b>	<b>8.44%</b>	<b>-0.13%</b>	<b>2.18%</b>	<b>3.58%</b>	<b>-3.38%</b>

NOTE: We don't have the actual system type values per category determined as of yet. For now, use the averages in the U.S. to estimate value.

NOTE: "Nonbuilding Structures" are generally horizontal construction projects, including roadways, bridges, tunnels, etc. This data is construction-related project based, and only projects with building permits were factored into the data.



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