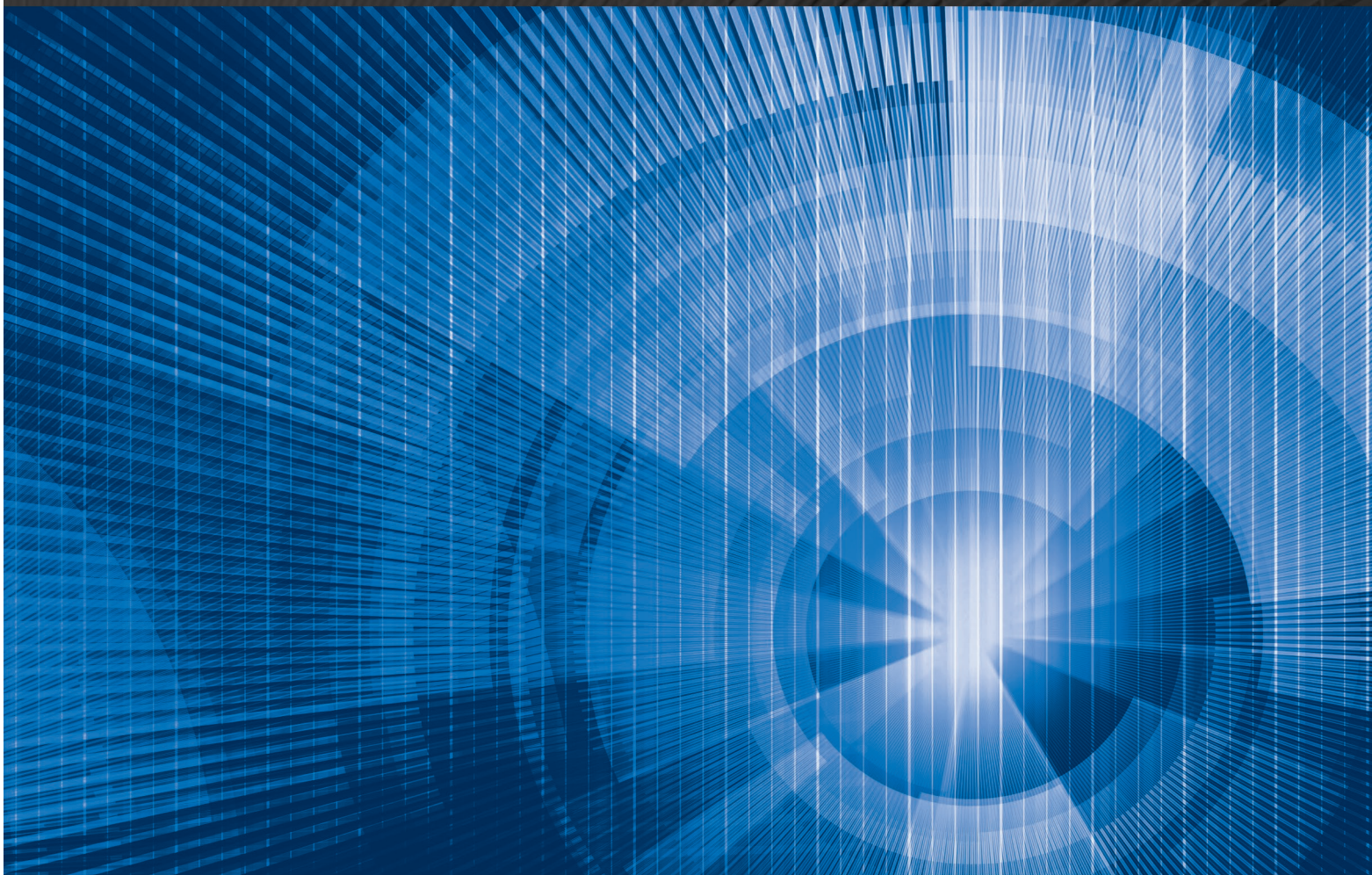



NSCA Electronic Systems Outlook

Winter Edition

2023



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YOUR VOICE • RESOURCE • ADVISOR



This report provides systems construction put-in-place outlooks for four U.S. regions and Canada. These numbers are based on percentages of total construction put in place for each region. The new regional data will only be available in Winter Editions of the NSCA Electronic Systems Outlook.

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).

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EXECUTIVE SUMMARY

KEY TAKEAWAYS

- Total U.S. engineering and construction spending is forecast to end 2023 up 10%, a slightly slower pace than 12% in 2022. Gains in 2023 were primarily attributed to significant investments in nonresidential buildings and nonbuilding infrastructure.
- Looking to 2024, FMI forecasts a 2% increase in engineering and construction spending levels compared to 2023.
- The highest overall growth segments in 2023 include manufacturing, multifamily residential, lodging, sewage and waste disposal, water supply, and conservation and development.
- The highest growth among NSCA’s targeted segments include manufacturing, lodging, and houses of worship. All targeted segments are anticipated to end the year with growth exceeding 9% over 2022 spending levels.
- The latest Nonresidential Construction Index (NRCI) score of 46.0 is nearly flat from the previous quarter. This is the seventh quarter with a reading of less than 50, indicating that participants remain cautious about the overall outlook in the first quarter of 2024. While there was some improvement in productivity, ongoing issues with labor and materials pricing, as well as weakening expectations across private lodging, office, and commercial segments, are likely going into 2024.

2023 Construction Segments (2023 compared to 2022)

Up (5% or more)

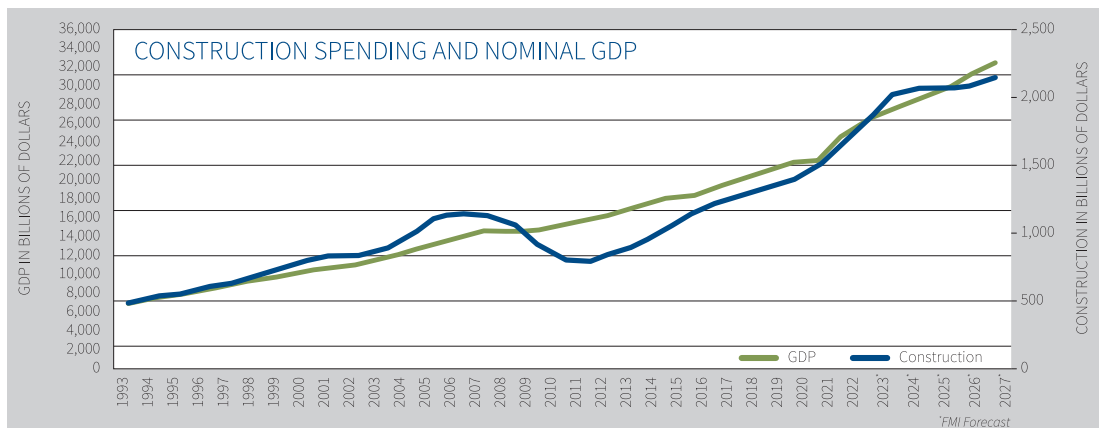
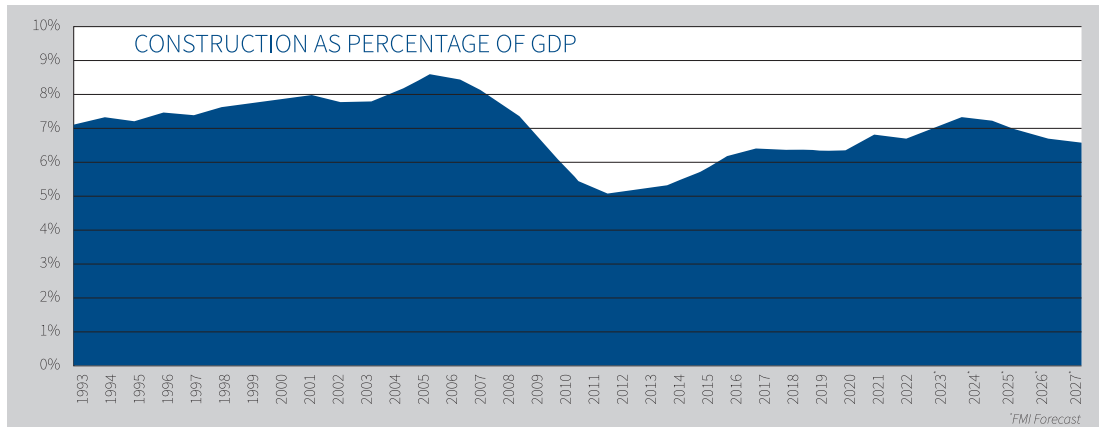
- Educational
- Government
- Healthcare
- Houses of Worship
- Lodging

Stable (0% to 4%)

- Manufacturing
- Nonbuilding Structures
- Office
- Other Nonresidential
- Retail

Down (-1% to -5%)

- Residential



EXECUTIVE SUMMARY

CONSTRUCTION OUTLOOK Overall, our forecast for total construction put in place in 2023 calls for a 10% increase, driven by strong demand across multifamily residential, manufacturing, and heavy civil markets. The most recent annualized reading for real GDP growth is 3.3% in Q4 2024, which remains strong and above historical averages.

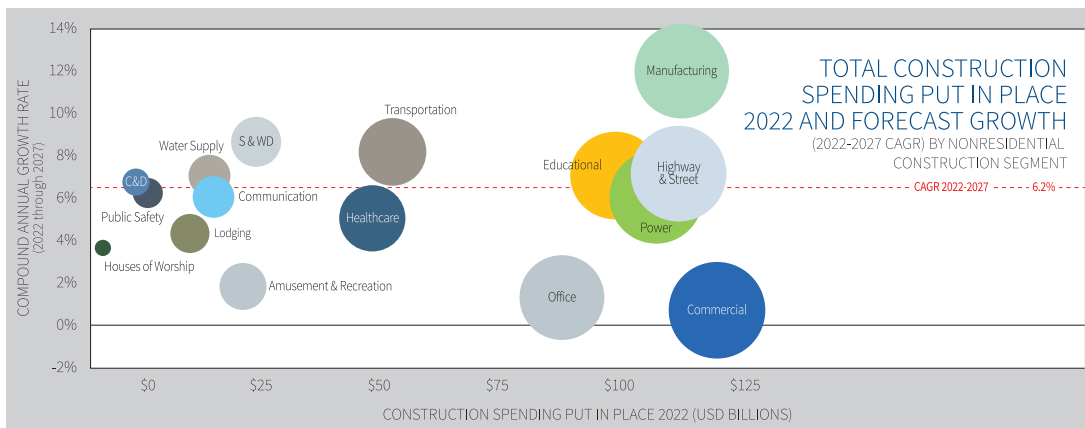
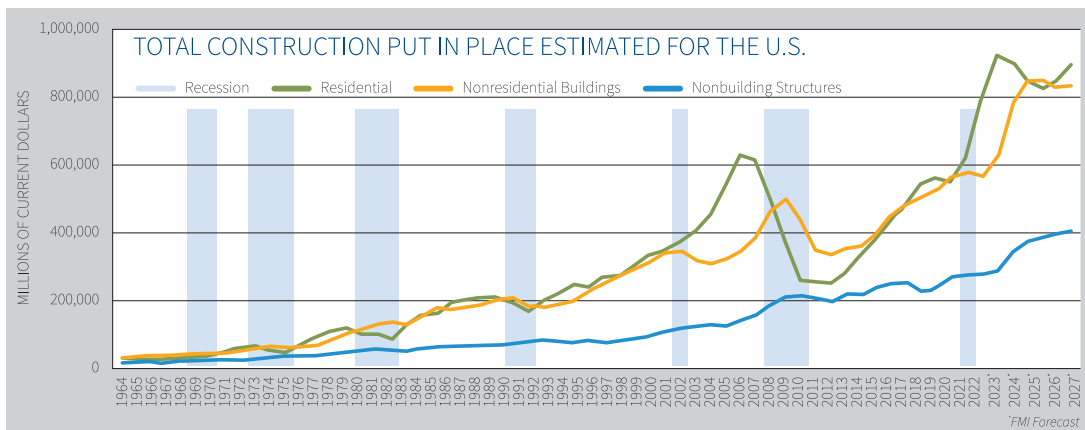
Growth through 2024, however, is anticipated to slow mainly due to weakening consumer spending and business investment against increased uncertainty and market volatility in a presidential election year, as well as ongoing and rising global economic challenges.

COMMERCIAL ELECTRONIC SYSTEMS CONSTRUCTION PUT IN PLACE

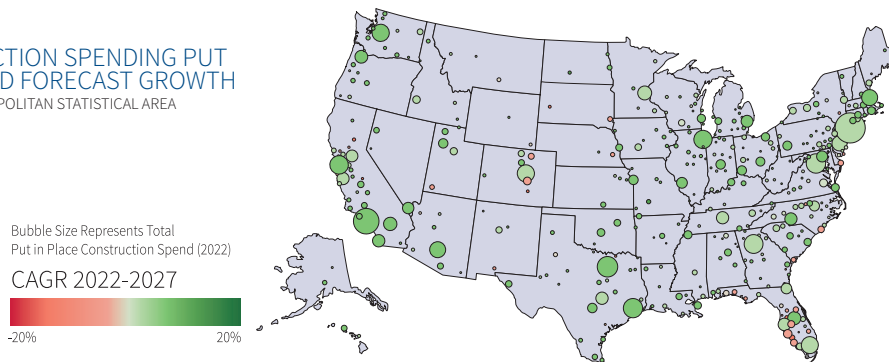
Estimated Forecast for the United States / Millions of Current Dollars

	2023
Total Commercial Building Construction Volume	666,462
Total Commercial Electronic Systems Construction	37,877
Share of Total Construction	5.68%

Visit the Summary section of this report on pages 26 and 27 that provides outlines for all the markets and electronic systems, in addition to showing Canadian construction trends.

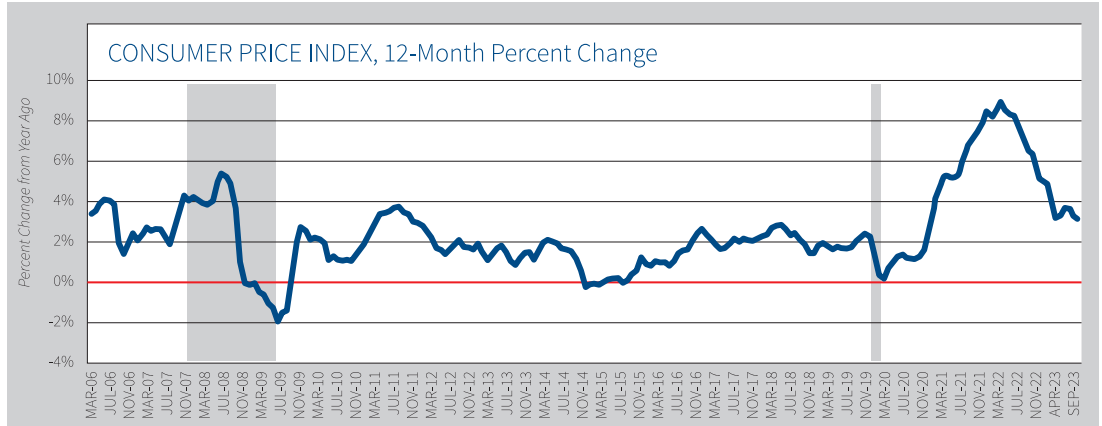


TOTAL CONSTRUCTION SPENDING PUT IN PLACE 2022 AND FORECAST GROWTH (2022-2027 CAGR) BY METROPOLITAN STATISTICAL AREA



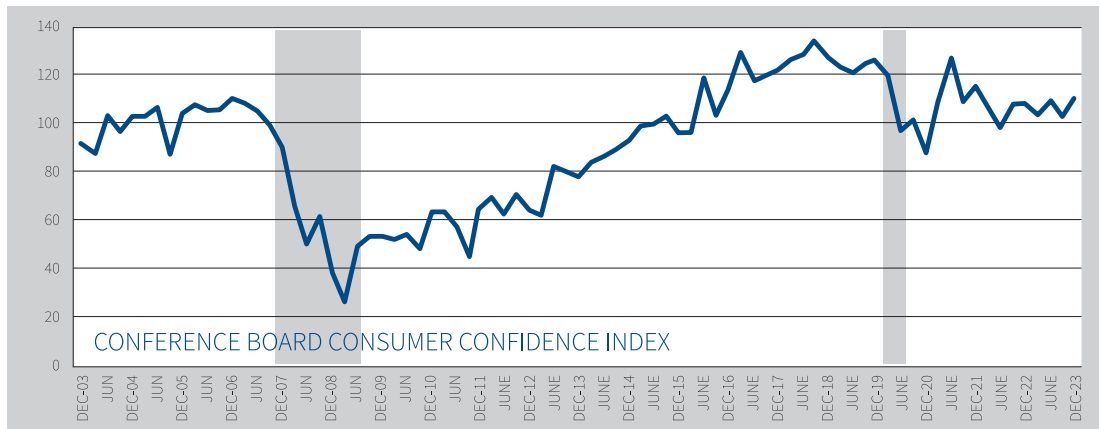
EXECUTIVE SUMMARY

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 in order 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 14 years



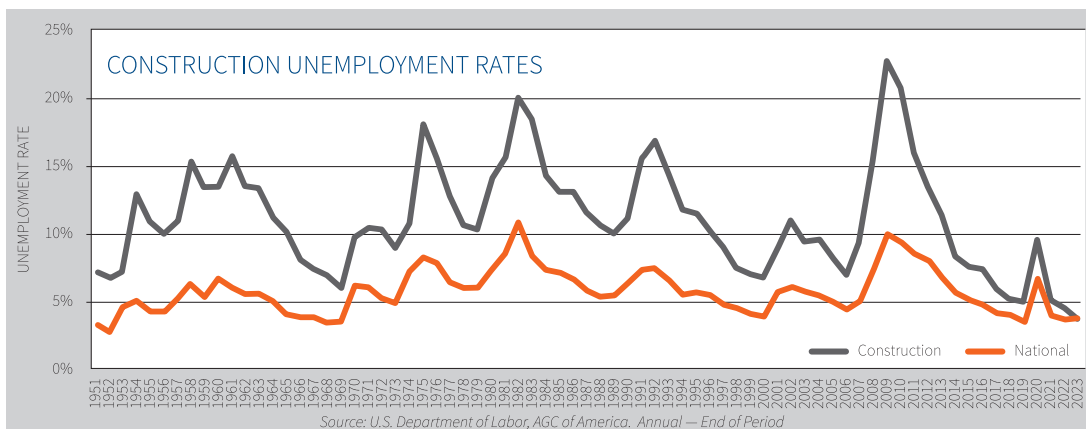
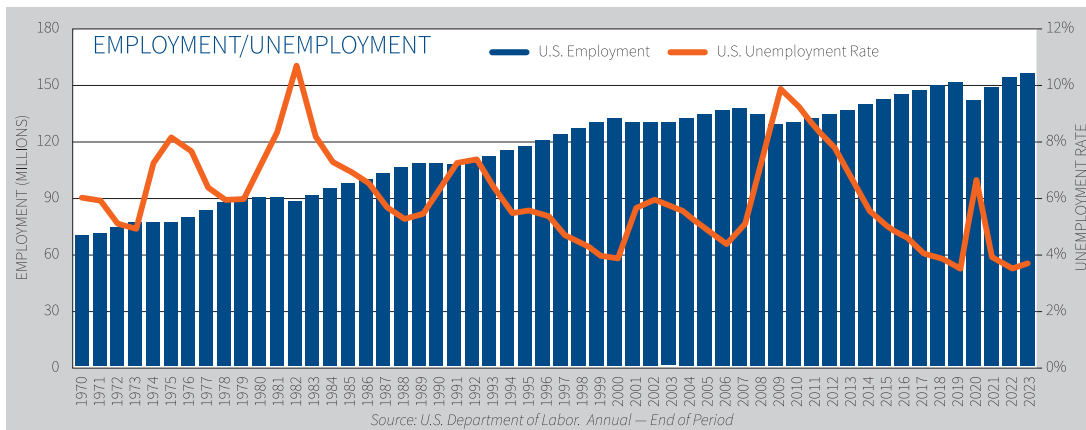
CCI is calculated based on a survey of 5,000 U.S. households; it is interpreted by the Conference Board, which extracts data from the survey to forecast future spending by consumers. In general, a 5% swing in either direction is needed to influence a change in decision-making.

EXECUTIVE SUMMARY

NCSA members are impacted by changes to interest rates; they influence their ability to access funds that support business growth and their customers' ability to invest in projects. Meanwhile, the Fed is influenced by CPI, CCI, and unemployment rates. While CPI hasn't changed significantly since Spring 2023, it has dropped significantly since the spike in 2022. CCI remains fairly steady since 2021. At the time of publication, the U.S. Department of Labor was reporting healthy unemployment data. This adds up to uncertainty when it comes to what lies ahead for interest rates.

The low unemployment rate reflects contrast for NCSA members struggling to attract, onboard, and retain employees at nearly every level. The low unemployment rate makes it tough, especially when adjacent industries are reaching into our member companies to recruit their top talent. NCSA members that provide traditional AV systems, physical security, alarms, and life safety at low margin are especially vulnerable, as we are seeing dramatic compensation differences with the building automation and control, MSPs, IT VARs, solutions providers, and bundled services providers. The higher billed rates have afforded adjacent industry competitors to drive up labor costs in businesses that have not prepared for increases.

NCSA is stepping 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. Without question, talent management will be a top priority to address in finding growth opportunities for members



EXECUTIVE SUMMARY

RESIDENTIAL CONSTRUCTION

DOWN 1%

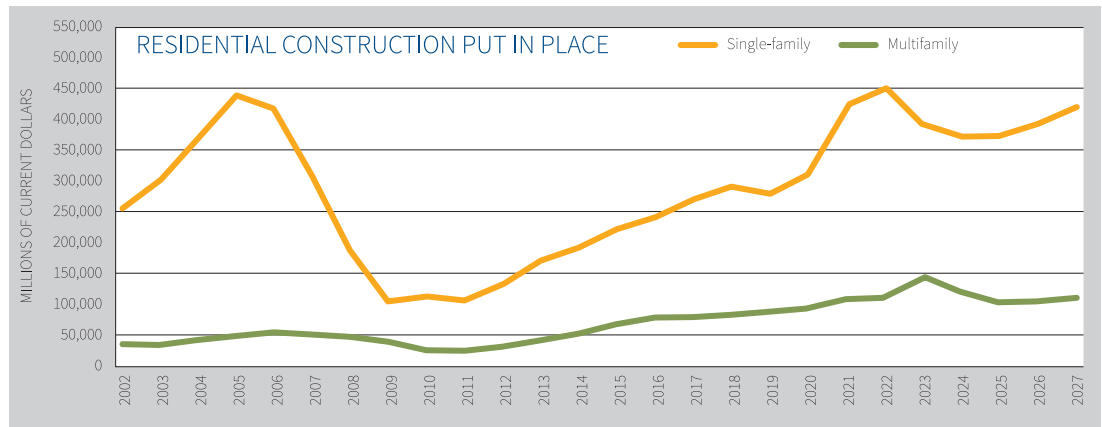
\$902 Billion

2023/2022 Comparison

Trends:

- Within the last year, builders shifted to constructing more affordable and smaller homes with fewer upgrades on larger lots further into the suburbs and exurbs.
- Affordability remains a major concern; the cost of buying a home is higher than renting in most markets, supporting a large wave of multifamily units in development.
- Improvements investment will remain challenged into 2025 and 2026 due to volatility in demand for single-family and multifamily homes.

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 educational 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, additional pressure is placed 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 an 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 Q3 of 2023 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 a 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

UP 10%

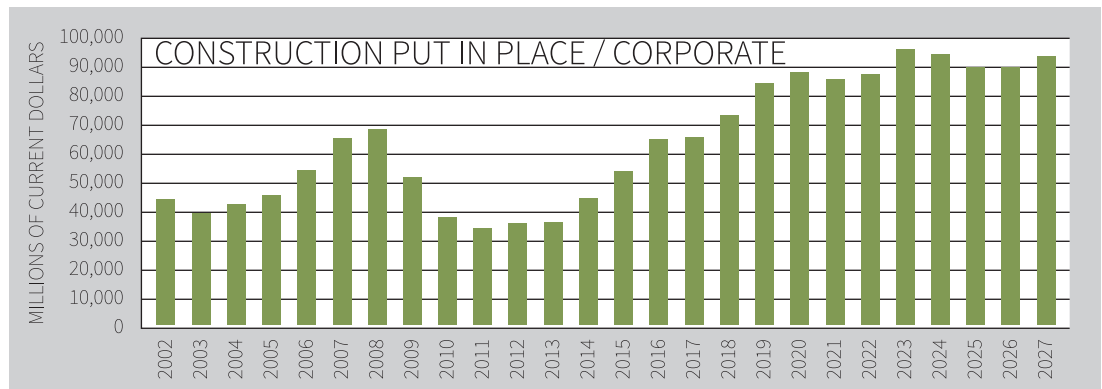
\$97 Billion

2023/2022 Comparison

Trends:

- U.S. office vacancies are nearly 20%, the highest levels since the late 1970s. Occupancy levels are worse.
- New construction and renovation projects continue to be challenged due to inflationary pressures on materials and labor, tight lending, high interest rates, and increases in insurance premiums.
- Sublease activity remains at historically high levels, and contract flexibility is being used by owners to attract interest.
- Tenants have generally downsized square footage but upgraded or maintained presence in the newest Class-A space available.

Key drivers include office vacancy rates and unemployment rates.



CORPORATE CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	65,335	66,083	73,758	85,363	89,315	86,497	88,152	96,833	95,173	90,794	90,722	94,355
% Change From Year Prior	21.2%	1.1%	11.6%	15.7%	4.6%	-3.2%	1.9%	9.8%	-1.7%	-4.6%	-0.1%	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
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 Total	736	1,857.2	526.1	1,628.7	565.9	5,313.8
2023 Summer Outlook	808.2	2,043.9	591.5	1,803.8	609.1	5,856.4
2023 Winter Outlook	870.3	2,175.8	627.9	1,896.1	646.5	6,216.7
% of Total Construction	0.90%	2.25%	0.65%	1.96%	0.67%	6.42%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

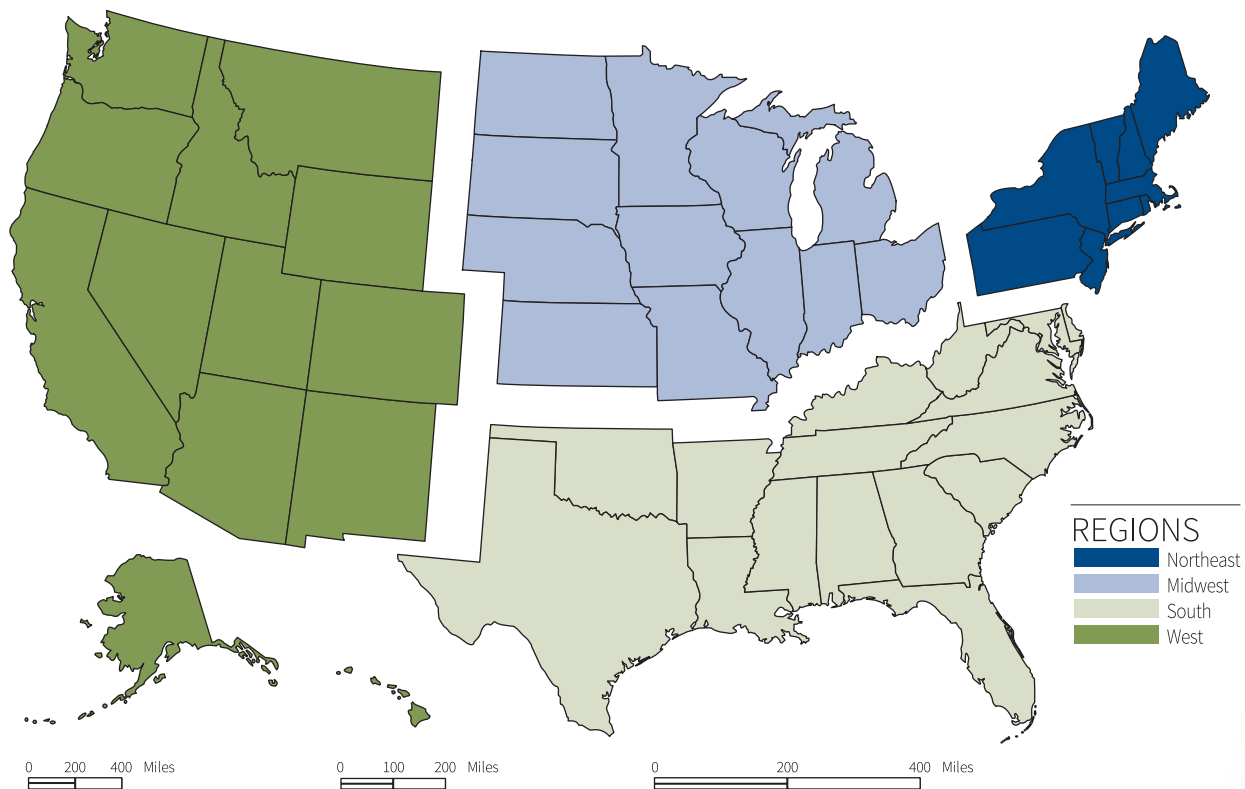
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Corporate VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	173.1	432.7	124.9	377.1	128.6	1,236.3
Midwest Region	128	320	92.3	278.8	95.1	914.2
South Region	344.4	861	248.5	750.3	255.8	2,460
West Region	224.9	562.1	162.2	489.9	167	1,606.1



VERTICAL MARKET OUTLOOKS Education

EDUCATION

UP 18%

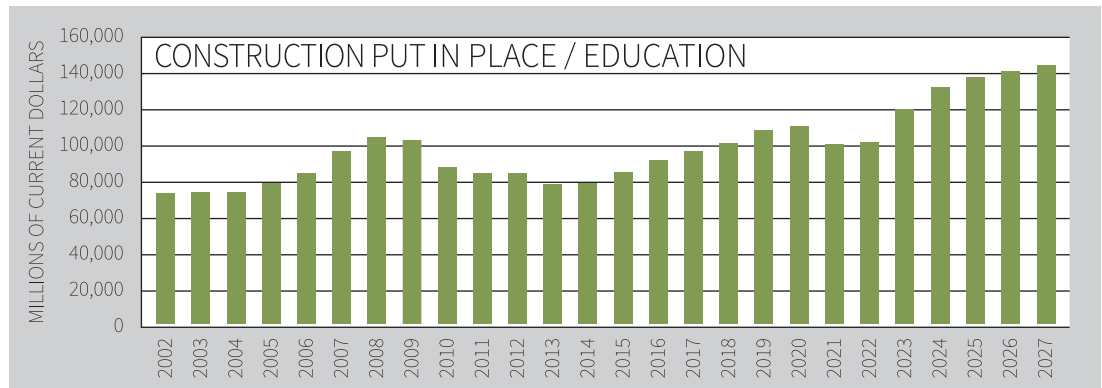
\$120 Billion

2023/2022 Comparison

Trends:

- Online and hybrid enrollment are outpacing in-person learning across higher-education facilities, especially for community colleges.
- Federal funding in schools eligible for tax credits through the IRA are making significant investments toward sustainability and clean energy systems.
- Local bond measures will be the primary driver for increasing K-12 construction activities over the forecast period.
- Much of the recent federal investment highlights the needs of aging educational buildings.

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

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	91,629	96,685	101,210	108,952	110,692	100,988	102,086	120,274	132,179	138,332	141,191	143,889
% Change From Year Prior	7.4%	5.5%	4.7%	7.6%	1.6%	-8.8%	1.1%	17.8%	9.9%	4.7%	2.1%	1.9%

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
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	3,511.0	1,507.2	7,092.8
2022 Total	648.2	1,109.6	303	3,494.5	1,490.1	7,045.4
2023 Summer Outlook	679	1,180.5	362.6	3,853.9	1,639.6	7,715.6
2023 Winter Outlook	753.4	1,333.6	398.3	4,321.2	1,853.2	8,659.8
% of Total Construction	0.63%	1.11%	0.33%	3.59%	1.54%	7.2%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

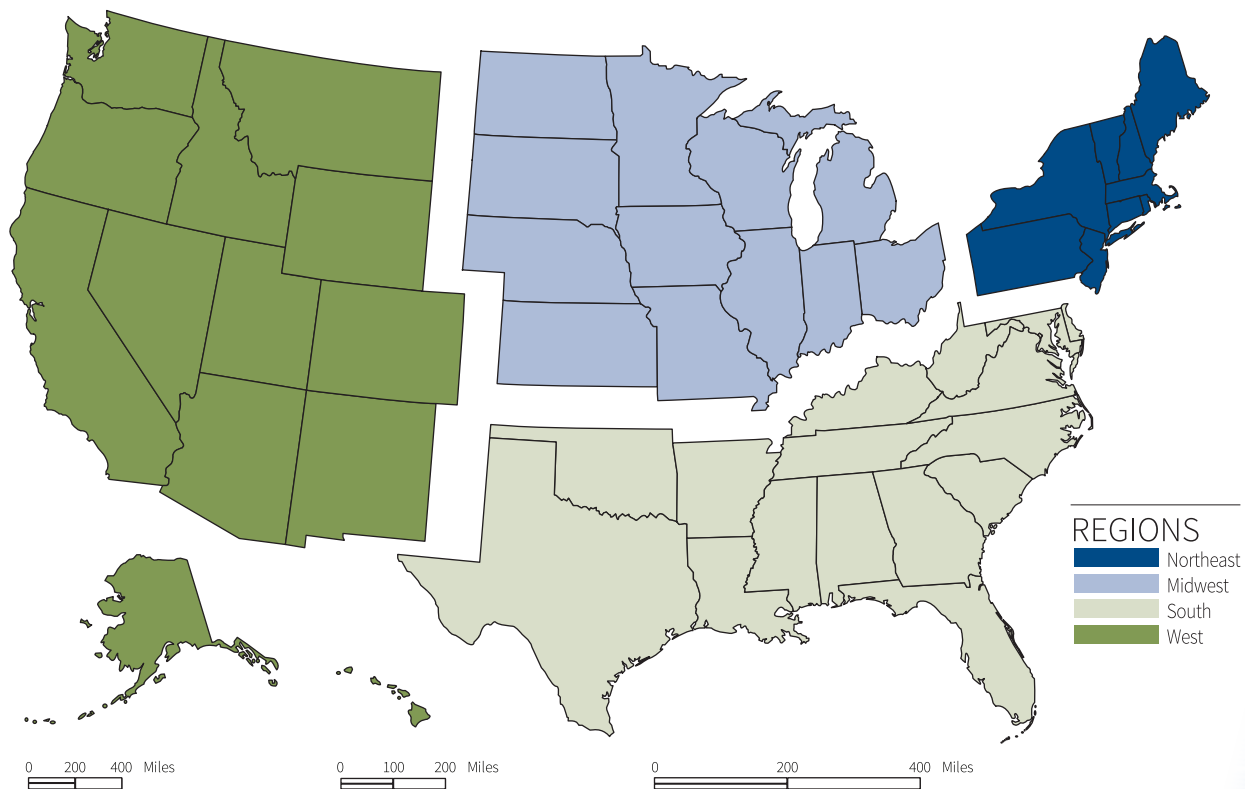
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Education VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	144.7	256.2	76.5	830.2	356	1,663.7
Midwest Region	139.8	247.4	73.9	801.6	343.8	1,606.4
South Region	275.3	487.2	145.5	1,578.8	677.1	3,163.8
West Region	193.6	342.8	102.4	1,110.7	476.3	2,225.8



VERTICAL MARKET OUTLOOKS Government

GOVERNMENT

UP 19%

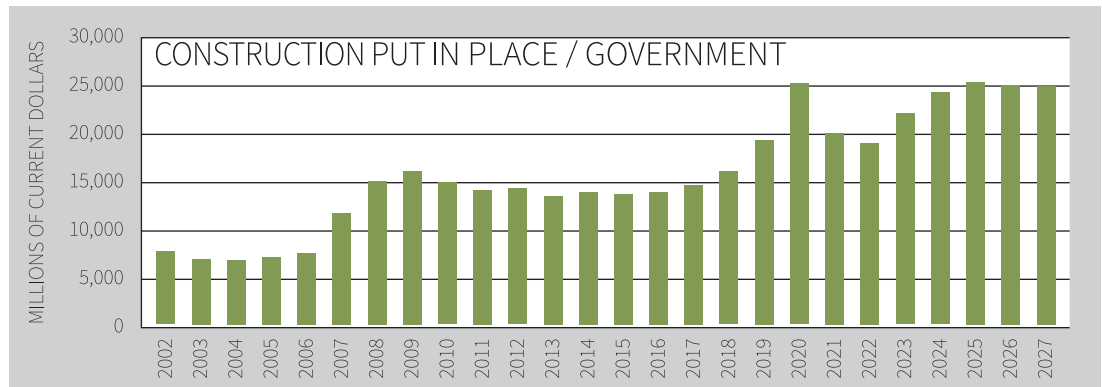
\$22 Billion

2023/2022 Comparison

Trends:

- Expanded 2024 budgets for the Department of Homeland Security (DHS), Customs and Border Protection (CBP), and Immigration and Customs Enforcement (ICE) total nearly \$90 billion in combined increases and support the addition of more than 2,000 employees.
- Recently reported crime data indicates a significant decrease in violent crime rates, nearing the lowest levels in 50 years.
- A 2023 inspection from the Department of Justice and Office of Inspector General found that the Bureau of Prisons' buildings needed approximately \$2 billion in improvements and maintenance.

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



GOVERNMENT CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Millions of Current Dollars	14,046	14,705	16,169	19,442	25,358	20,272	19,224	22,270	24,481	25,553	25,194	25,051	
% Change From Year Prior		1.4%	4.7%	10%	20.2%	30.4%	-20.1%	-5.2%	15.8%	9.9%	4.4%	-1.4%	-0.6%

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
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 Total	50.9	334	180.6	612.2	216.9	1,394.6
2023 Summer Outlook	52.1	345.7	188.1	636.5	224.2	1,446.6
2023 Winter Outlook	61	395.5	215.9	721.8	253.8	1,648
% of Total Construction	0.27%	1.78%	0.97%	3.24%	1.14%	7.4%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

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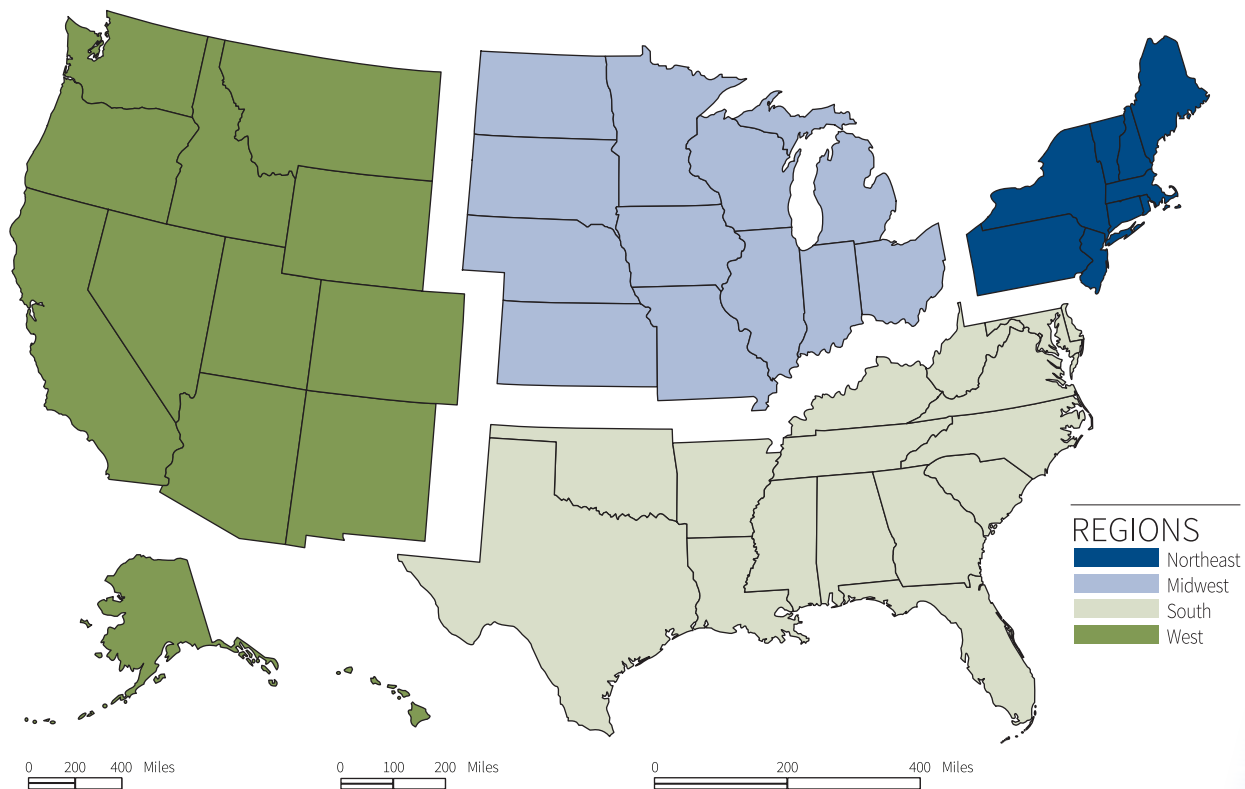
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Government VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	11.6	75.1	41	137	48.2	312.9
Midwest Region	12.3	79.5	43.4	145.2	51	331.4
South Region	22.1	143.6	78.4	262.1	92.2	598.4
West Region	15	97.3	53.1	177.5	62.4	405.3



VERTICAL MARKET OUTLOOKS Healthcare

HEALTHCARE

UP 15%

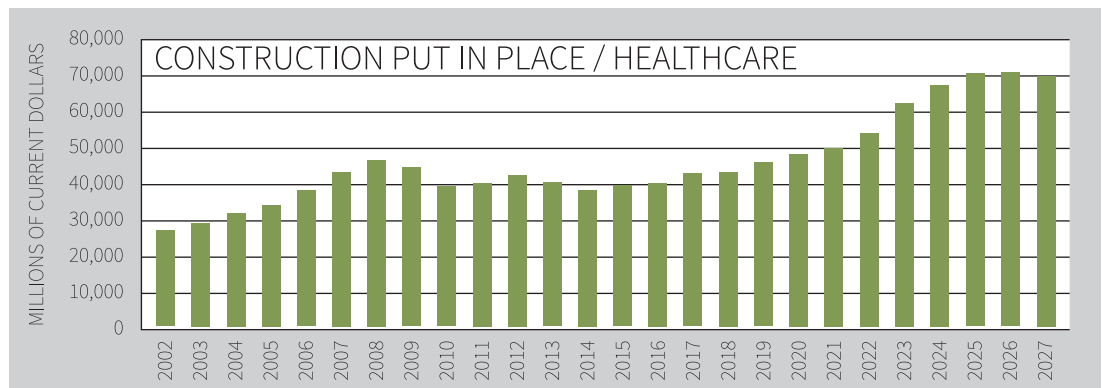
\$63 Billion

2023/2022 Comparison

Trends:

- Labor constraints and increased operational costs across all healthcare facilities are likely to impact owners' strategic decisions over the next two to three years.
- Health care systems are expected to receive more than \$64 billion in funding through the Inflation Reduction Act (IRA).
- Renewable energy updates and other renovations around sustainability initiatives will bring increased awareness to capacity and maintenance needs across older facilities.

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



HEALTHCARE CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	40,574	43,120	43,450	46,263	48,599	50,327	54,757	62,817	67,815	70,747	71,088	70,293
% Change From Year Prior	2.3%	6.3%	0.8%	6.5%	5%	3.6%	8.8%	14.7%	8%	4.3%	0.5%	-1.1%

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
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 Total	144.1	1,012.7	240.8	1,699.2	696	3,792.8
2023 Summer Outlook	155.8	1,115.8	256.8	1,915.7	766.3	4,210.4
2023 Winter Outlook	166.2	1,235.1	277	2,107.7	831.1	4,617.1
% of Total Construction	0.26%	1.97%	0.44%	3.36%	1.32%	7.35%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

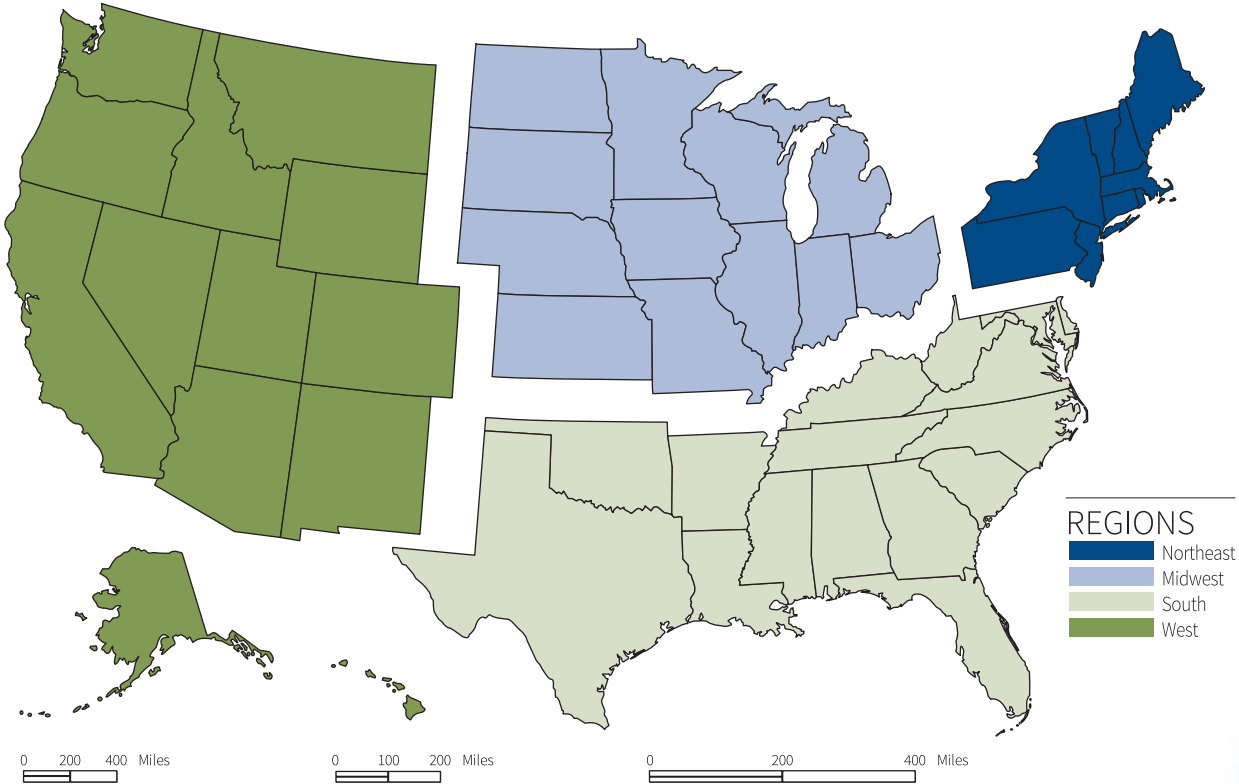
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Healthcare VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	34	252.5	56.6	430.9	169.9	943.8
Midwest Region	32.2	239.6	53.7	408.9	161.2	895.8
South Region	64.8	481.3	107.9	821.3	323.8	1,799.1
West Region	35.2	261.7	58.7	446.6	176.1	978.4



VERTICAL MARKET OUTLOOKS Houses of Worship

HOUSES OF WORSHIP

UP 20%

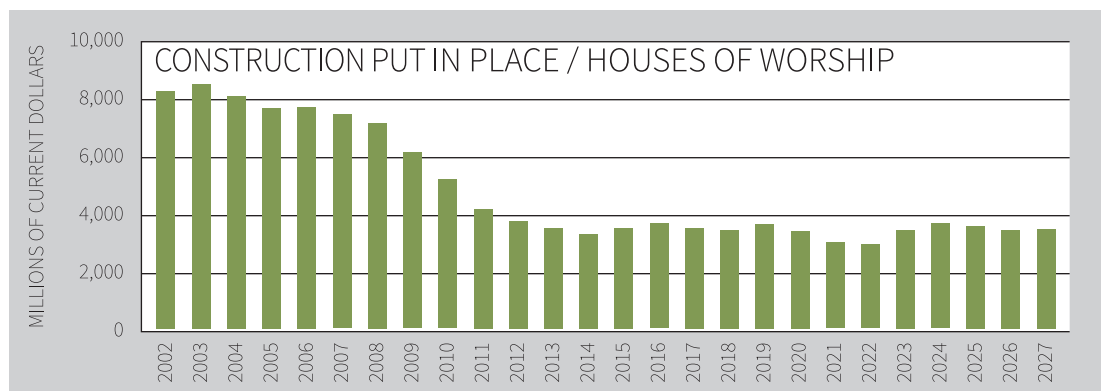
\$4 Billion

2023/2022 Comparison

Trends:

- In-person church attendance was down 10% in 2023 and is expected to continue to decline into 2024.
- Successful adoption of digital platforms is becoming increasingly important to remain competitive and to sustain or build connectivity with membership.
- Disposable incomes were up slightly in 2023 and are the main driver for donations, which ultimately supported increased construction spending.

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



HOUSES OF WORSHIP CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	3,752	3,586	3,499	3,730	3,472	3,096	2,946	3,524	3,712	3,628	3,538	3,524
% Change From Year Prior	4.3%	-4.4%	-2.4%	6.6%	-6.9%	-10.8%	-4.8%	19.6%	5.4%	-2.3%	-2.5%	-0.4%

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
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 Total	23.7	28	22.3	73.9	46.1	194
2023 Summer Outlook	26.7	30.5	24.8	81.7	52.4	216.1
2023 Winter Outlook	31.7	35.3	28.7	95.6	62.4	253.7
% of Total Construction	0.9%	1%	0.81%	2.71%	1.77%	7.2%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

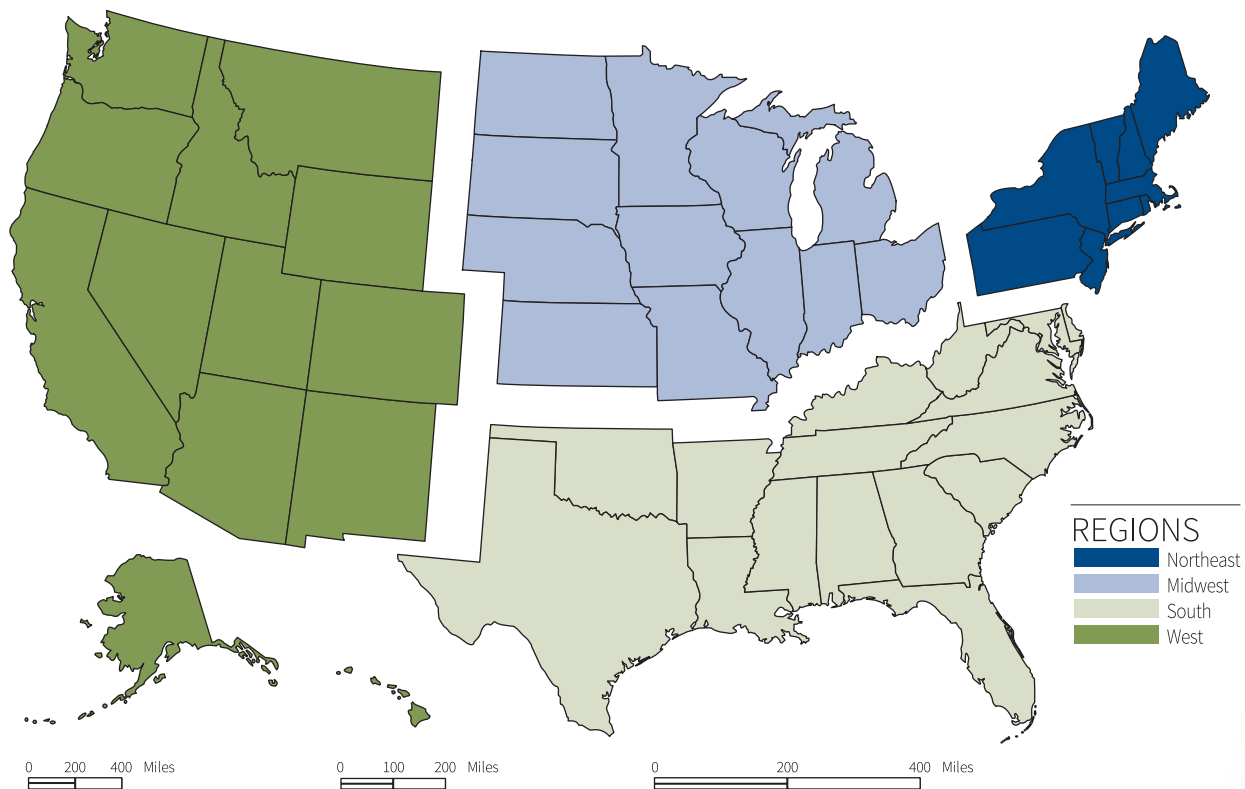
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Houses of Worship VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	2.7	3	2.4	8.1	5.3	21.6
Midwest Region	7.4	8.2	6.7	22.2	14.5	58.9
South Region	16.9	18.8	15.3	50.9	33.2	135
West Region	4.8	5.3	4.3	14.4	9.4	38.2



VERTICAL MARKET OUTLOOKS Lodging

LODGING

UP 23%

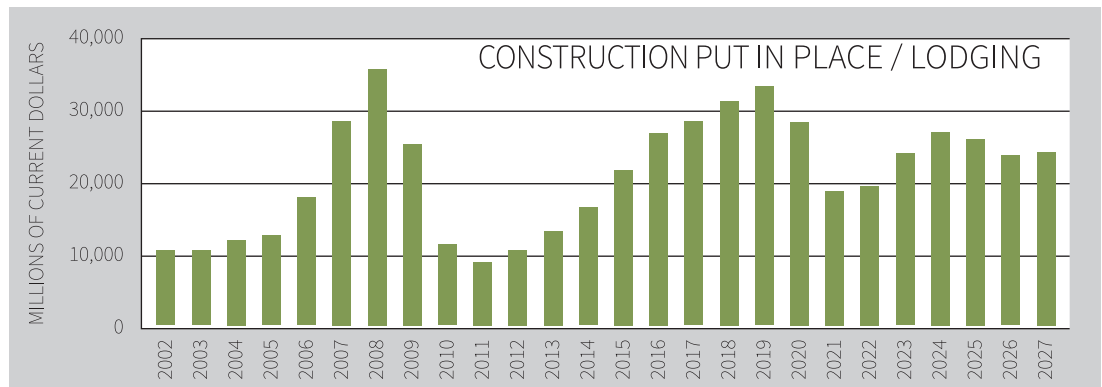
\$24 Billion

2023/2022 Comparison

Trends:

- Demand for guestrooms in major cities and tourist destinations increased last year as group travel for conferences and tradeshows recovered.
- Large owners and chains account for more than half of all projects in the development pipeline and will lead growth in construction spending through 2025.
- Owners reported an increase in “bleisure travel,” where working professionals add leisure to one or both ends of business travel.

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



LODGING CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	27,077	28,660	31,464	33,461	28,483	19,082	19,745	24,280	27,204	26,260	23,925	24,476
% Change From Year Prior	23%	5.8%	9.8%	6.3%	-14.9%	-33%	3.5%	23%	12%	-3.5%	-8.9%	2.3%

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
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 Total	88.6	198.4	52	468.3	253.5	1,060.8
2023 Summer Outlook	107	245	67.4	584.5	317	1,320.8
2023 Winter Outlook	113	262.8	73.5	623.9	339.9	1,413.1
% of Total Construction	0.47%	1.08%	0.3%	2.57%	1.4%	5.82%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

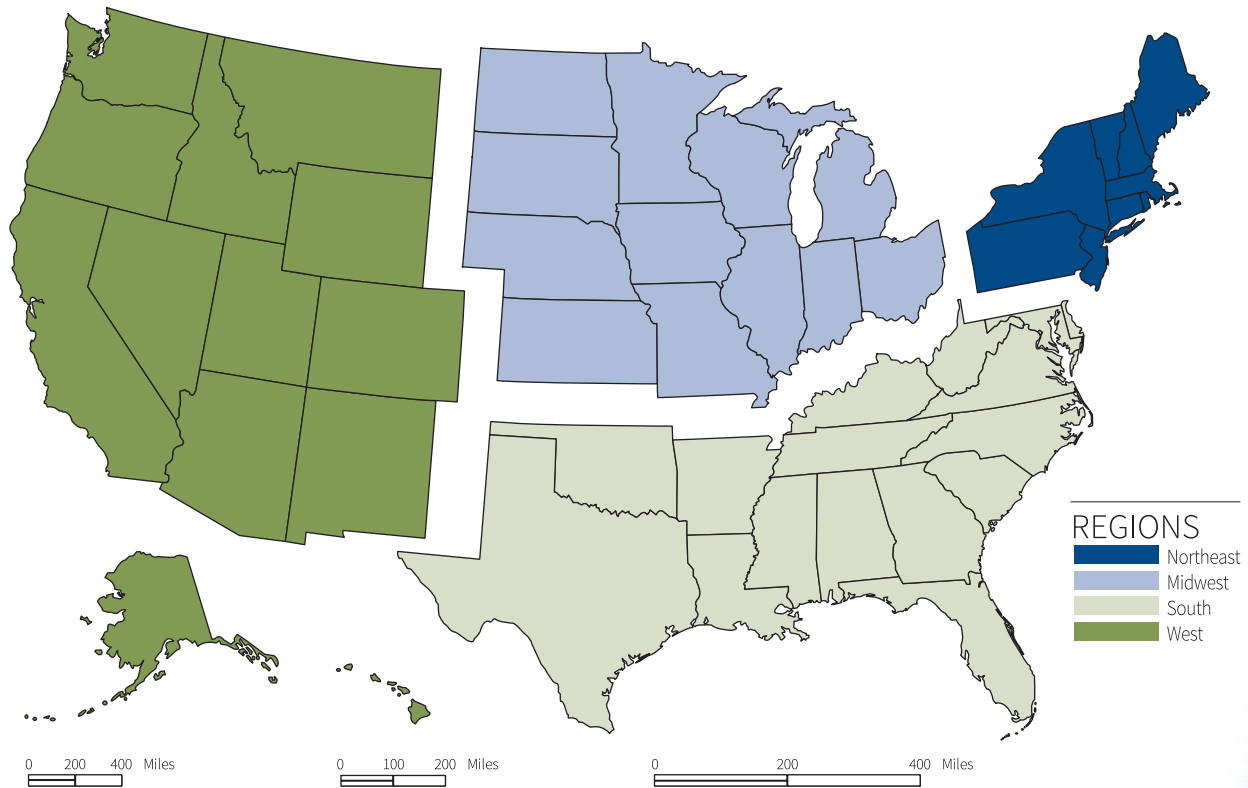
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Lodging VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	16.8	39	10.9	92.7	50.5	209.9
Midwest Region	12.2	28.4	8	67.5	36.8	152.9
South Region	45.8	106.4	29.8	252.6	137.6	572.1
West Region	38.3	88.9	24.9	211.1	115	478.2



VERTICAL MARKET OUTLOOKS Manufacturing

MANUFACTURING

UP 78%

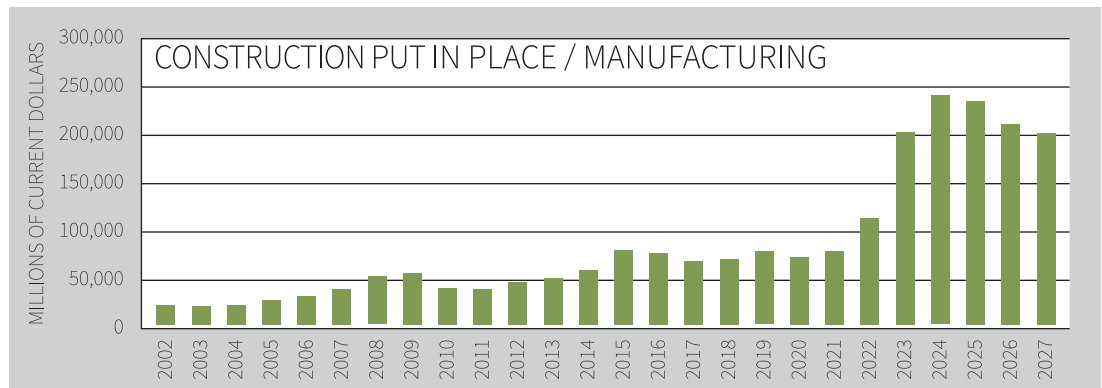
\$204 Billion

2023/2022 Comparison

Trends:

- The IIJA, CHIPS and Science Act, and IRA combined to spur record private-sector investment in manufacturing, exceeding \$200 billion in construction in 2023, or nearly triple the annual spending levels recorded in the 2010s.
- The government's infusion of grants, loans, and tax incentives focuses on U.S. manufacturing capabilities in semiconductors, electric vehicles and batteries, clean energy products and technologies, biomanufacturing, and all the various components and materials that support these products and systems.
- Semiconductor manufacturing is the largest industry, accounting for approximately one-third of all planned investment.

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



MANUFACTURING CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	79,633	70,682	72,508	80,978	75,425	82,030	114,706	203,730	240,683	235,265	212,234	202,045
% Change From Year Prior	-4.2%	-11.2%	2.6%	11.7%	-6.9%	8.8%	39.8%	77.6%	18.1%	-2.3%	-9.8%	-4.8%

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
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 Total	41.6	422.5	1,907	1,650.7	595.6	4,617.3
2023 Summer Outlook	69.5	639.7	2,857.8	2,489.3	897	6,953.3
2023 Winter Outlook	96.3	904.9	3,994.9	3,417.3	1,212.9	9,626.3
% of Total Construction	0.05%	0.44%	1.96%	1.68%	0.6%	4.73%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

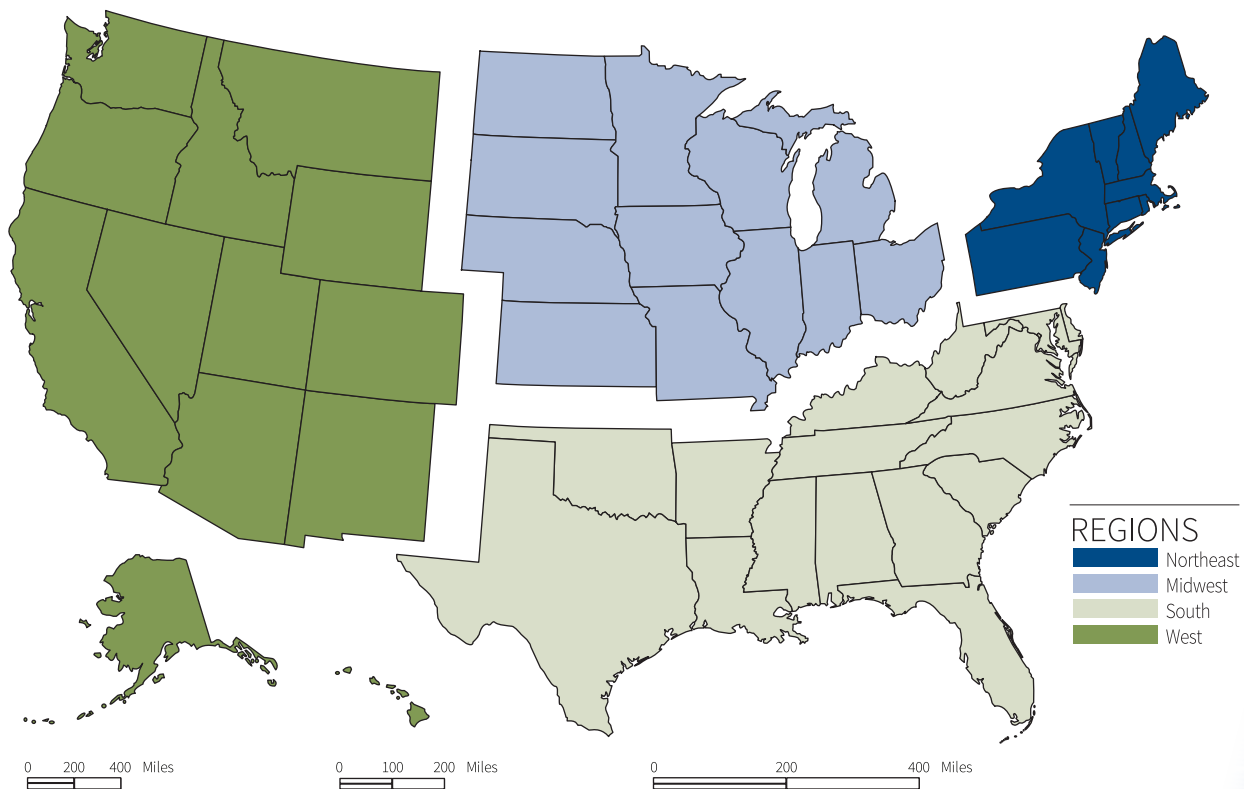
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Manufacturing VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	6.7	63.1	278.4	238.1	84.5	670.8
Midwest Region	18.9	177.9	785.4	671.8	238.5	1,892.5
South Region	47.4	445.5	1,966.6	1,682.3	597.1	4,738.9
West Region	23.2	218.5	964.5	825	292.8	2,324.1



VERTICAL MARKET OUTLOOKS Retail

RETAIL

UP 9%

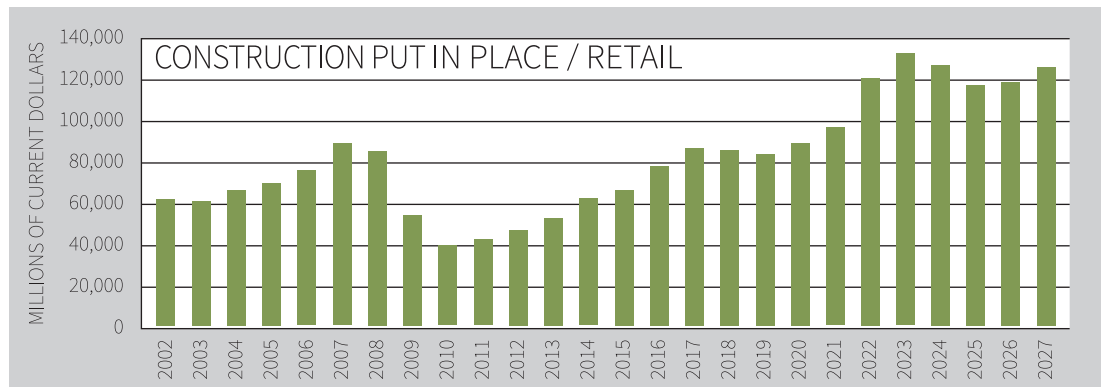
\$133 Billion

2023/2022 Comparison

Trends:

- Consumer retail spending remained strong in 2023 while commercial property valuations continued to slide due to rising rates, limited access to capital, store closures, and bankruptcies.
- Even with industry consolidation and closures, retail is experiencing a shortage of available space, with national vacancy rates at just over 4% in late 2023.
- Anticipate some slowdown in 2024 retail construction as multifamily and mixed-use development begins to waver.

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



RETAIL CONSTRUCTION

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Millions of Current Dollars	78,696	87,626	86,422	84,345	89,714	97,394	121,349	132,733	127,437	117,819	119,251	126,559
% Change From Year Prior	17.5%	11.3%	-1.4%	-2.4%	6.4%	8.6%	24.6%	9.4%	-4%	-7.5%	1.2%	6.1%

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
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 Total	139.3	813.2	417.8	1,644.4	1,478.2	4,492.9
2023 Summer Outlook	152.9	975.5	500.9	1,911.4	1,732.2	5,272.9
2023 Winter Outlook	155.1	1,017.7	536	1,942.8	1,790.4	5,442
% of Total Construction	0.12%	0.77%	0.4%	1.46%	1.35%	4.1%

2020 through 2022 Totals – total electronic systems construction put in place in their respective years

2023 Summer Outlook – outlook of total 2023 electronic systems construction put in place based on actual data from 2023 Q1 and Q2 and forecasted for the remainder of 2023

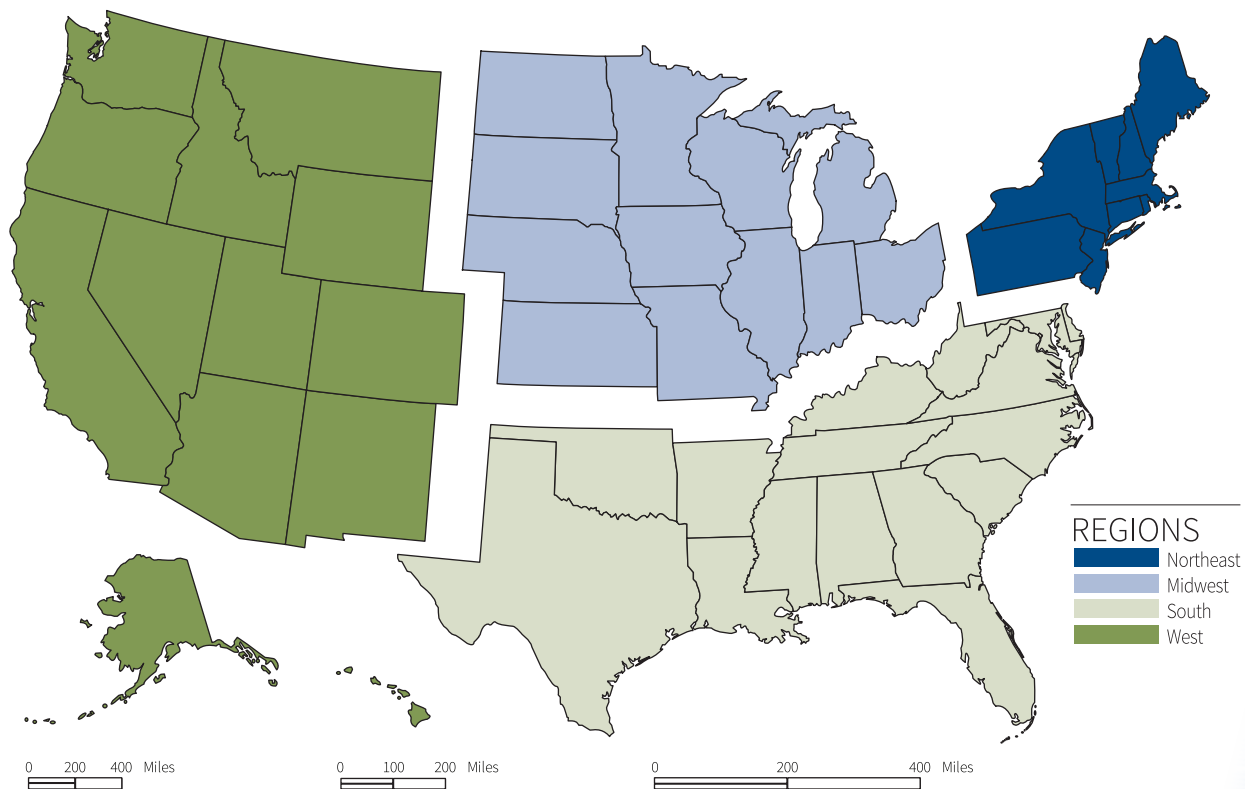
2023 Winter Outlook – outlook of total 2023 electronic systems construction put in place based on actual data through November and forecasted for the remainder of 2023

% of total construction – percentage of 2023 dollars spent on electronic systems in relation to the total dollars spent on construction in each vertical market

Retail VERTICAL MARKET OUTLOOKS

REGIONAL 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
Northeast Region	20.3	133	70	253.8	233.9	711
Midwest Region	28	184	96.9	351.3	323.8	984.1
South Region	72.2	473.5	249.4	904	833.1	2,532.2
West Region	34.6	227.2	119.7	433.7	399.7	1,214.8



CONSTRUCTION OUTLOOK SUMMARIES

SYSTEMS OUTLOOK in Millions of Current Dollars (December 2023/24 Forecast)

	Acoustics, Audio, AV				Phone Systems, Data Networks, IT				Building Automation & Control			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Corporate	574.9	694.9	736	870.3	1,629	1,743.6	1,857.2	2,175.8	467.1	492.8	526.1	627.9
Education	591.3	656.1	648.2	753.4	1,256.5	1,117.1	1,109.6	1,333.6	369.5	301.4	303	398.3
Government	40.8	51.2	50.9	61	312.6	321.1	334	395.5	163.1	170.8	180.6	215.9
Healthcare	137.5	118.3	144.1	166.2	876.4	955.4	1,012.7	1,235.1	189	218.4	240.8	277
Houses of Worship	20.6	23.4	23.7	31.7	26.8	27.9	28	35.3	26.8	24.9	22.3	28.7
Lodging	129.4	87.2	88.6	113	266.4	198.9	198.4	262.8	68.5	54.5	52	73.5
Manufacturing	42.3	35.9	41.6	96.3	287.8	314.2	422.5	904.9	1,354.3	1,463.5	1,907	3,994.9
Retail	122.7	110.2	139.3	155.1	556.4	651.9	813.2	1,017.7	261.8	330.6	417.8	536
Total	1,659.5	1,777.2	1,872.2	2,247	5,211.6	5,330.2	5,775.6	7,360.7	2,900.1	3,056.8	8,649.6	6,152.2

	Life Safety: Fire & Security				Lighting, Digital Signage				All Systems			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Corporate	1,533.1	1,566.7	1,628.7	1,896.1	586.9	555.9	565.9	646.5	4,791	5,053.9	5,313.8	6,216.7
Education	3,621.6	3,511	3,494.5	4,321.2	1,552.1	1,507.2	1,490.1	1,853.2	7,390.9	7,092.8	7,045.4	8,659.8
Government	618.4	608.1	612.2	721.8	224.2	215.2	216.9	253.8	1,359	1,366.5	1,394.6	1,648
Healthcare	1,580.9	1,656	1,699.2	2,107.7	653	691.5	696	831.1	3,436.7	3,639.5	3,792.8	4,617.1
Houses of Worship	80.3	77.7	73.9	95.6	51.5	49.2	46.1	62.4	206	203.1	194	253.7
Lodging	669.7	485	468.3	623.9	388.1	264.3	253.5	339.9	1,522.1	1,089.9	1,060.8	1,413.1
Manufacturing	1,235.8	1,301.9	1,650.7	3,417.3	465.5	475.9	595.6	1,212.9	3,385.6	3,591.4	4,617.3	9,626.3
Retail	1,227.3	1,359	1,644.4	1,942.8	1,104.6	1,221.2	1,478.2	1,790.4	3,272.8	3,672.8	4,492.9	5,442.0
Total	10,567	10,565.2	11,272	15,126.5	5,025.9	4,980.5	5,342.3	6,990.2	25,364.1	25,710	27,911.6	37,876.6

CONSTRUCTION OUTLOOK / U.S. in Millions of Current Dollars (December 2023/24 Forecast)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Corporate	65,335	66,083	73,758	85,363	89,315	86,497	88,152	96,833	95,173	90,794	90,722	94,355
Education	91,629	96,685	101,210	108,952	110,692	100,988	102,086	120,274	132,179	138,332	141,191	143,889
Government	14,046	14,705	16,169	19,442	25,358	20,272	19,224	22,270	24,481	25,553	25,194	25,051
Healthcare	40,574	43,120	43,450	46,263	48,599	50,327	54,757	62,817	67,815	70,747	71,088	70,293
Houses of Worship	3,752	3,586	3,499	3,730	3,472	3,096	2,946	3,524	3,712	3,628	3,538	3,524
Lodging	27,077	28,660	31,464	33,461	28,483	19,082	19,745	24,280	27,204	26,260	23,925	24,476
Manufacturing	79,633	70,682	72,508	80,978	75,425	82,030	114,706	203,730	240,683	235,265	212,234	202,045
Retail	78,696	87,626	86,422	84,345	89,714	97,394	121,349	132,733	127,437	117,819	119,251	126,559
Target Commercial Buildings	400,742	411,148	428,480	462,534	471,058	459,685	522,965	666,462	718,684	708,399	687,142	690,193
Total Commercial Buildings	486,615	503,985	530,357	568,513	579,781	564,913	631,818	785,454	849,230	848,516	831,962	837,373
Total Residential Buildings	485,964	545,754	563,877	553,442	644,257	808,968	927,439	902,492	846,909	823,783	852,325	896,857
Total Nonbuilding Structures	251,090	230,104	238,951	269,085	275,533	279,495	289,419	339,934	373,797	387,996	398,093	405,487
Total Construction Put in Place	1,223,669	1,279,843	1,333,185	1,391,040	1,499,571	1,653,376	1,848,676	2,027,879	2,069,935	2,060,296	2,082,381	2,139,717

CONSTRUCTION OUTLOOK / U.S. % Change From Year Prior (December 2023/24 Forecast)

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Corporate	21.2%	1.1%	11.6%	15.7%	4.6%	-3.2%	1.9%	9.8%	-1.7%	-4.6%	-0.1%	4%
Education	7.4%	5.5%	4.7%	7.6%	1.6%	-8.8%	1.1%	17.8%	9.9%	4.7%	2.1%	1.9%
Government	1.4%	4.7%	10%	20.2%	30.4%	-20.1%	-5.2%	15.8%	9.9%	4.4%	-1.4%	-0.6%
Healthcare	2.3%	6.3%	0.8%	6.5%	5%	3.6%	8.8%	14.7%	8%	4.3%	0.5%	-1.1%
Houses of Worship	4.3%	-4.4%	-2.4%	6.6%	-6.9%	-10.8%	-4.8%	19.6%	5.4%	-2.3%	-2.5%	-0.4%
Lodging	23%	5.8%	9.8%	6.3%	-14.9%	-33%	3.5%	23%	12%	-3.5%	-8.9%	2.3%
Manufacturing	-4.2%	-11.2%	2.6%	11.7%	-6.9%	8.8%	39.8%	77.6%	18.1%	-2.3%	-9.8%	-4.8%
Retail	17.5%	11.3%	-1.4%	-2.4%	6.4%	8.6%	24.6%	9.4%	-4%	-7.5%	1.2%	6.1%
Target Commercial Buildings	8.8%	2.6%	4.2%	7.9%	1.8%	-2.4%	13.8%	27.4%	7.8%	-1.4%	-3%	0.4%
Total Commercial Buildings	7.5%	3.6%	5.2%	7.2%	2%	-2.6%	11.8%	24.3%	8.1%	-0.1%	-2%	0.7%
Total Residential Buildings	10.8%	12.3%	3.3%	-1.9%	16.4%	25.6%	14.6%	-2.7%	-6.2%	-2.7%	3.5%	5.2%
Total Nonbuilding Structures	0.9%	-8.4%	3.8%	12.6%	2.4%	1.4%	3.6%	17.5%	10%	3.8%	2.6%	1.9%
Total Construction Put in Place	7.3%	4.6%	4.2%	4.3%	7.8%	10.3%	11.8%	9.7%	2.1%	-0.5%	1.1%	2.8%

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

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Corporate	8,637	8,670	9,754	10,882	11,176	9,920	10,683	11,491	11,069	10,763	11,278	11,836
Education	6,645	7,729	7,678	6,744	6,843	7,762	8,151	8,380	8,736	9,116	9,523	9,933
Government	1,904	2,236	2,306	2,812	2,924	2,708	2,942	3,205	3,307	3,447	3,623	3,740
Healthcare	4,823	5,168	5,252	5,319	5,756	6,311	6,796	6,762	7,496	7,905	8,504	8,903
Houses of Worship	413	386	382	444	415	318	312	337	348	362	372	382
Lodging	2,558	2,547	2,753	2,749	2,567	2,625	3,396	3,397	3,339	3,429	3,518	3,733
Manufacturing	17,916	16,221	20,116	23,189	20,883	22,021	26,074	29,388	33,239	35,175	35,408	37,015
Retail	13,357	13,472	14,002	16,072	15,003	15,346	19,851	19,619	19,187	18,727	19,250	20,000
Target Commercial Buildings	56,252	56,429	62,243	68,212	65,567	67,010	78,207	82,579	86,722	88,925	91,476	95,543
Total Commercial Buildings	71,713	72,204	79,736	86,062	84,839	87,040	100,469	107,345	112,346	115,821	119,877	124,732
Total Residential Buildings	109,990	118,559	123,435	124,986	130,263	168,472	182,627	159,308	155,987	156,958	163,197	171,480
Total Nonbuilding Structures	83,136	85,994	81,197	78,920	66,093	76,109	95,144	99,248	106,288	114,139	120,388	124,524
Total Construction Put in Place	264,839	276,757	284,369	289,967	281,195	331,621	378,239	365,902	374,621	386,918	403,462	420,736

CONSTRUCTION OUTLOOK / CANADA % Change From Year Prior

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Corporate	0.4%	12.5%	11.6%	2.7%	-11.2%	7.7%	7.6%	-3.7%	-2.8%	4.8%	4.9%
Education	16.3%	-0.7%	-12.2%	1.5%	13.4%	5%	2.8%	4.3%	4.4%	4.5%	4.3%
Government	17.4%	3.1%	21.9%	4%	-7.4%	8.7%	8.9%	3.2%	4.2%	5.1%	3.2%
Healthcare	7.1%	1.6%	1.3%	8.2%	9.6%	7.7%	-0.5%	10.8%	5.5%	7.6%	4.7%
Houses of Worship	-6.6%	-1.1%	16.4%	-6.5%	-23.5%	-1.7%	7.8%	3.3%	4.1%	2.6%	2.9%
Lodging	-0.4%	8.1%	-0.2%	-6.6%	2.3%	29.4%	0%	-1.7%	2.7%	2.6%	6.1%
Manufacturing	-9.5%	24%	15.3%	-9.9%	5.4%	18.4%	12.7%	13.1%	5.8%	0.7%	4.5%
Retail	0.9%	3.9%	14.8%	-6.7%	2.3%	29.4%	-1.2%	-2.2%	-2.4%	2.8%	3.9%
Target Commercial Buildings	0.3%	10.3%	9.6%	-3.9%	2.2%	16.7%	5.6%	5%	2.5%	2.9%	4.4%
Total Commercial Buildings	0.7%	10.4%	7.9%	-1.4%	2.6%	15.4%	6.8%	4.7%	3.1%	3.5%	4.1%
Total Residential Buildings	7.8%	4.1%	1.3%	4.2%	29.3%	8.4%	-12.8%	-2.1%	0.6%	4%	5.1%
Total Nonbuilding Structures	3.4%	-5.6%	-2.8%	-16.3%	15.2%	25%	4.3%	7.1%	7.4%	5.5%	3.4%
Total Construction Put in Place	4.5%	2.8%	2%	-3%	17.9%	14.1%	-3.3%	2.4%	3.3%	4.3%	4.3%

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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