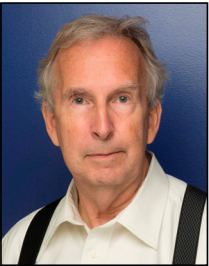


Spring 2024 (Published: March 2024)

U.S. Put-in-Place Construction Forecasts

Prepared by Alex Carrick, ConstructConnect® Chief Economist



Alex Carrick

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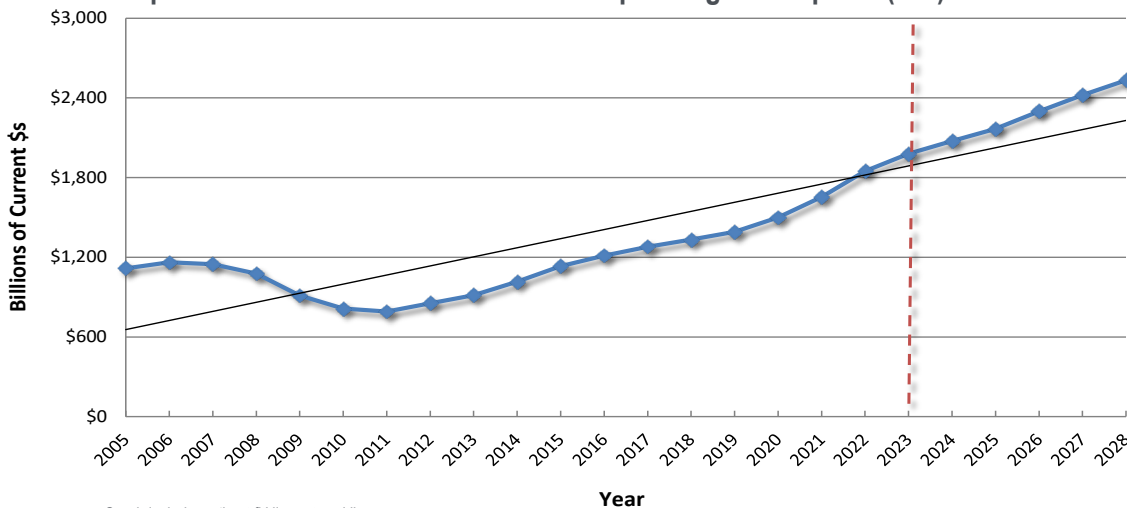
Quarterly U.S. Put-in-Place Construction Forecast Report, Spring 2024

Entering 2024, it was possible to refer to two events that would be occurring in the year ahead with seeming assurance: (1) that the Federal Reserve around the middle of the year would begin to lower interest rates; and (2) a Presidential election will be taking place in November, which might be a source of uncertainty concerning the investment plans of some companies.

In Q3 and Q4 of 2023, U.S. inflation-adjusted gross domestic product (GDP) rose by +4.9% and +3.2% (annualized) respectively. Annual average U.S. 'real' GDP growth since 2000 has been +2.1%. The exceptional strength of GDP performance in the second half of last year was great news, but with a catch. Along with a continuing super-tight labor market and year-over-year price inflation stuck near +3.0%, versus a more desirable +2.0%, it may cause the Fed to rethink its plans about easing. A May expectation date for lower yields might prove to be too optimistic.

Cont'd on page 2

Graph 1: U.S. Grand Total Construction Spending Put-in-place (PIP) Investment



Graph includes a 'best fit' linear trend line.

Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect.
Chart: ConstructConnect.

'Starts' versus Put-in-place (PIP) Statistics

'Starts' compile the total estimated dollar value of all projects on which ground is broken in any given month. By way of contrast, put-in-place capital spending statistics are analogous to work-in-progress payments as the building of structures proceeds to completion.

Consider a \$100 million mixed use complex for which ground is broken in June 2024. For the 'starts' series, the entire estimated value (\$100 million) will be entered in June 2024. In PIP numbers, it will be captured as spending of approximately \$25 million in 2024; \$60 million in 2025; and the final \$15 million in 2026.

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One chief characteristic of the current construction marketplace has been the emergence of an unprecedented number of mega-sized projects valued at a billion dollars or more each. There's been a surge of go-aheads for such work over the past two years, especially in the manufacturing and engineering type-of-structure categories, inspired by a desire to re-shore jobs to America from overseas, and government funding made available through the Infrastructure Investment and Jobs Act (IIJA), the Chips and Science Act, and the Inflation Reduction Act (IRA).

The already established groundbreakings on these giant projects translate to put-in-place capital spending for years to come. Needing acknowledgement, however, are the present circumstances where an inordinate number of big and small projects are being delayed or put on hold. A stretching out of material input delivery times, plus some cost escalation, while far less serious than a couple of years ago, can still be inhibiting factors. Also, there's an ongoing extreme shortage of available skilled trades people, with only one 'hire' arising from every two posted

'openings', despite hourly wages increasing at a year-over-year pace double the long-time norm.

Of aid to the economy as a whole, and a boon to companies seeking to raise money for acquisitions or expansion, is how well stock market indices are doing, rebounding from nasty trough levels in October 2022 to recently set new all-time highs. This contributes to a wealth effect, whereby individuals and firms feel more affluent and therefore, better positioned to spend and accept risk. Much of the froth on the equities front is being generated by what are termed the 'magnificent seven', the original FAAMG group of companies (Facebook/Meta, Apple, Amazon, Microsoft, Google/Alphabet) plus Tesla and Nvidia. Most are being applauded for advancing the adoption of Artificial Intelligence (AI), - i.e., machines 'learning' from existing repetitive behavioral patterns to streamline processes and lift productivity. It's easy to imagine how beneficial this will be for the construction sector in improving supply line logistics, carrying out almost instantaneous take-offs, scheduling day-to-day workflows, and reducing jobsite waste.

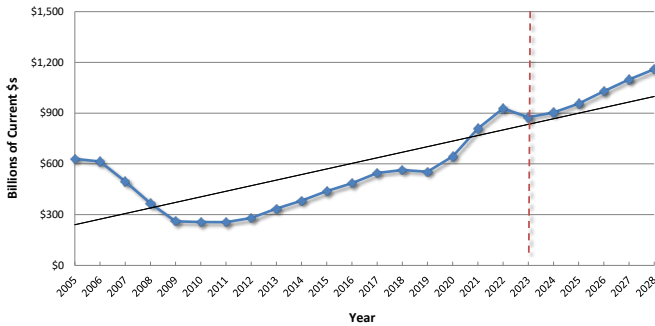
Table 1: U.S. Construction Spending (put-in-place investment)
(billions of "current" \$s)

Type of Construction:	Actuals		Forecasts				
	2022	2023	2024	2025	2026	2027	2028
Grand Total	1,848.7	1,978.7	2,074.8	2,168.0	2,298.9	2,421.7	2,533.1
(year vs previous year)	11.8%	7.0%	4.9%	4.5%	6.0%	5.3%	4.6%
Total Residential	927.4	875.3	903.4	956.3	1,029.5	1,099.0	1,159.9
	14.6%	-5.6%	3.2%	5.9%	7.7%	6.7%	5.5%
Total Non-residential	921.3	1,103.4	1,171.3	1,211.7	1,269.5	1,322.7	1,373.2
	9.1%	19.8%	6.2%	3.4%	4.8%	4.2%	3.8%
Total Commercial/for Lease	232.7	254.0	261.9	272.5	281.9	292.4	304.8
	12.8%	9.1%	3.1%	4.0%	3.4%	3.7%	4.2%
Lodging	19.7	23.6	24.8	27.0	29.3	31.5	33.7
	3.5%	19.3%	5.3%	9.1%	8.2%	7.5%	7.0%
Office	91.6	98.8	99.8	98.3	99.4	101.7	105.4
	1.9%	7.8%	1.0%	-1.5%	1.1%	2.3%	3.7%
Commercial (retail/warehouse)	121.4	131.6	137.3	147.2	153.3	159.3	165.7
	24.6%	8.5%	4.4%	7.2%	4.1%	3.9%	4.1%
Total Institutional	201.4	227.8	245.4	253.3	261.1	267.9	275.9
	3.6%	13.1%	7.7%	3.2%	3.1%	2.6%	3.0%
Health Care	54.8	62.9	64.9	68.4	72.0	75.6	79.7
	8.8%	14.9%	3.1%	5.4%	5.3%	4.9%	5.5%
Educational	102.1	115.8	126.0	129.1	131.9	133.3	134.9
	1.1%	13.4%	8.9%	2.4%	2.1%	1.1%	1.2%
Religious	2.9	3.4	3.4	3.4	3.5	3.5	3.6
	-4.8%	16.3%	-1.7%	1.9%	1.5%	1.4%	1.4%
Public Safety	11.6	13.2	16.1	15.7	15.4	15.5	15.9
	-9.8%	14.4%	21.4%	-2.1%	-2.4%	1.1%	2.5%
Amusement and Recreation	30.0	32.5	35.0	36.7	38.3	40.0	41.8
	10.7%	8.2%	7.9%	4.6%	4.6%	4.4%	4.4%
Total Engineering/Civil	372.5	426.1	478.2	513.7	547.2	577.3	601.7
(year vs previous year)	3.0%	14.4%	12.2%	7.4%	6.5%	5.5%	4.2%
Transportation	58.7	63.8	69.3	76.1	81.7	86.0	88.8
	-0.6%	8.7%	8.6%	9.8%	7.4%	5.2%	3.3%
Communication	24.3	24.9	26.5	28.1	29.7	31.3	33.0
	5.3%	2.3%	6.7%	6.0%	5.6%	5.4%	5.6%
Power	109.8	122.4	146.2	167.0	187.0	204.5	218.7
	-7.8%	11.4%	19.5%	14.3%	11.9%	9.4%	6.9%
Highway and Street	114.1	134.5	149.4	154.0	158.6	163.2	167.1
	10.4%	17.9%	11.0%	3.1%	3.0%	2.9%	2.4%
Water Supply & Waste Disposal	56.1	68.8	74.7	75.8	77.3	79.0	80.6
	14.2%	22.7%	8.5%	1.6%	2.0%	2.2%	2.1%
Conservation and Development	9.4	11.7	12.2	12.7	13.0	13.3	13.4
	19.3%	23.8%	4.5%	3.9%	2.4%	2.3%	1.1%
Total Industrial/Manufacturing	114.7	195.6	185.8	172.2	179.2	185.1	190.8
	39.8%	70.5%	-5.0%	-7.3%	4.1%	3.3%	3.0%

*"Current" means not adjusted for inflation.

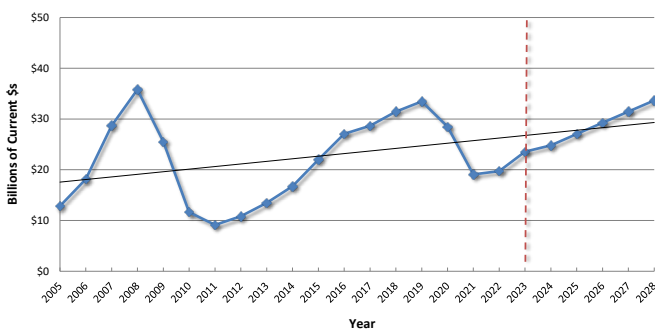
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Table: ConstructConnect.

Graph 2: U.S. Construction Spending: Residential Put-in-place (PIP) Investment



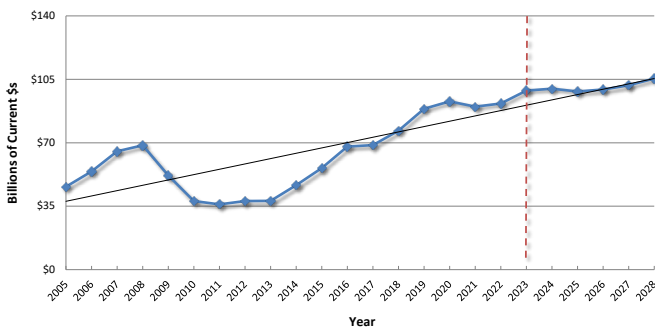
During the stretching out of the pandemic, the pendulum on single-family versus multi-family residential construction swung boldly towards the latter. Climbing interest rates and alarming home price increases made high-rise living more attractive. Now, though, the price advance has settled down, mortgage rates will soon be dropping, and 'rent' as a line item in the Consumer Price Index (CPI) is still bone-chilling at +6.1% y/y. The recovery in living space PIP spending will begin on the single-family side. There's an important population growth trend to note. Over the whole of the past three years, the South Region has accounted for more than the nation's total population gain (i.e., with minuses in the Northeast and Midwest and a small plus in the West).

Graph 3: U.S. Construction Spending: Lodging Put-in-place (PIP) Investment



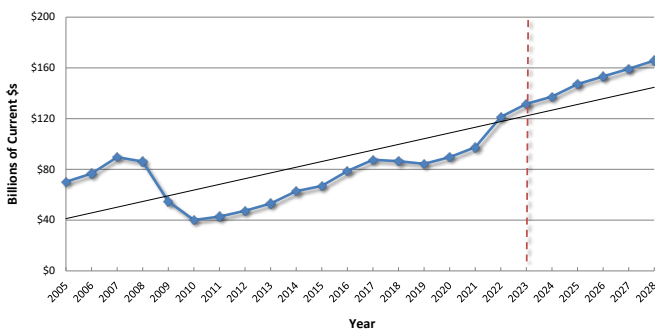
The societal and economic factors providing incentives to travel are numerous: pent-up demand from being housebound during the COVID years; an ultra-low unemployment rate and hearty wage bumps; gasoline and airline fares that are both cheaper by -6.4% y/y in the latest CPI results; and additions to inter-city bus and rail service arising from measures in various Washington fiscal packages. Nevertheless, there has been such a severe dip in this category of construction, that it will take quite a while to return to its previous peak levels of 2008 and 2019. Recovery is underway, but a factor slowing it down will be the dearth of mixed-use projects anchored by a commercial office tower or two. That kind of work remains largely moribund.

Graph 4: U.S. Construction Spending: Office Buildings Put-in-place (PIP) Investment



The hybrid working model, favoring time spent at home, or at least away from cubicles, is laying waste to office occupancy rates. There are some brave developers proceeding with, or promoting their plans for, tower construction, but most are more concerned with their share price levels and maintaining good relations with their banks. A variety of means to prop up prices is being employed when properties are sold, bundled within the term 'seller financing' (e.g., when a seller lends money to a buyer to facilitate a transaction). There is a risk of alienating investors and causing damage to some lending institutions. On a positive note, and with everything moving to the 'clouds' (i.e., really physical 'servers'), data centers within offices are having a robust run.

Graph 5: U.S. Construction Spending: Retail, Warehouse, Restaurant Put-in-place (PIP) Investment

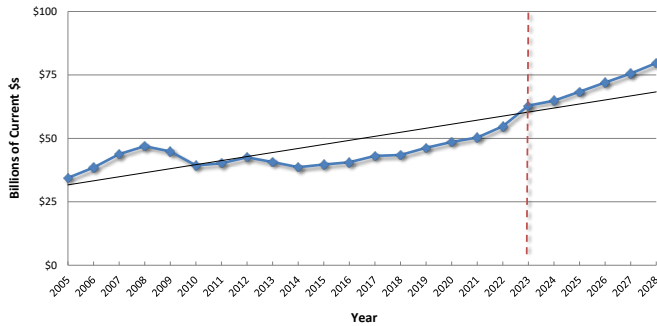


The retail sector has undergone an enormous shake-up over the past decade, with a major shift from in-store to Internet browsing. An early offshoot of the pandemic was that, partly due to government income supplements, consumer spending permanently moved onto a higher plain. As a share of total, non-store retail sales have risen to about one-fifth. Big online digital vendors, flush with cash, expanded their fulfillment footprints to the point of overbuilding; but that's likely to be a temporary phenomenon. A secret to understanding walk-through shopping activity lies in appreciating its entertainment value. Individuals and families like to intermingle; to see and be seen. As a sidebar, retail analysts are saying the hybrid work-from-home model favors shopping locally.

Graphs include a 'best fit' linear trend line.

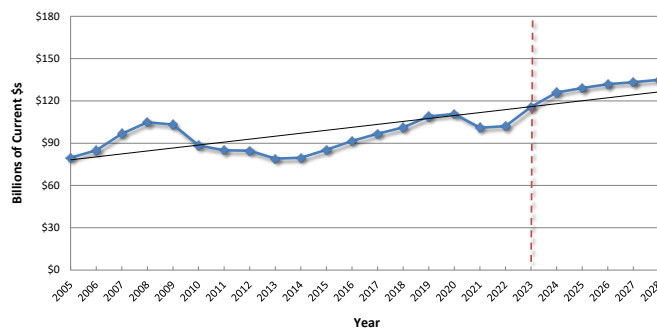
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

Graph 6: U.S. Construction Spending: Health Care Put-in-place (PIP) Investment



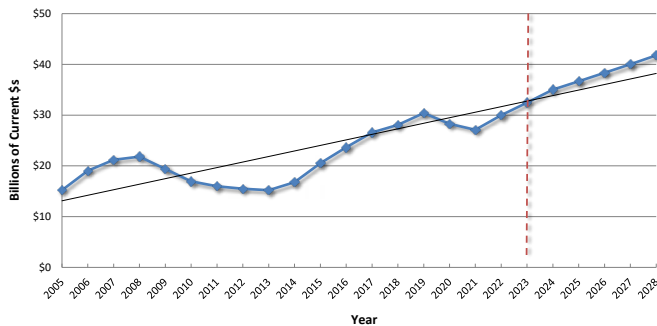
There's an aging population on the cusp of crying out for a boom in medical care construction. No surge has yet developed mainly due to financial reasons. Hospitals are expensive to build. There are several types of hospital ownership: privately-financed; government-backed; with a religious affiliation; and academic (teaching hospitals on campus). The current improvement in equity prices is having knock-on benefits for the investment portfolios of health care providers. A goal of lowering costs has driven a trend to outsourcing and leasing-back central utility plants (CUPs), which can be one-fifth of a new hospital's capital charge. Telehealth, medical clinics (partnerships of doctors), and nursing homes also play growing roles in the medical care mix.

Graph 7: U.S. Construction Spending: Educational Put-in-place (PIP) Investment



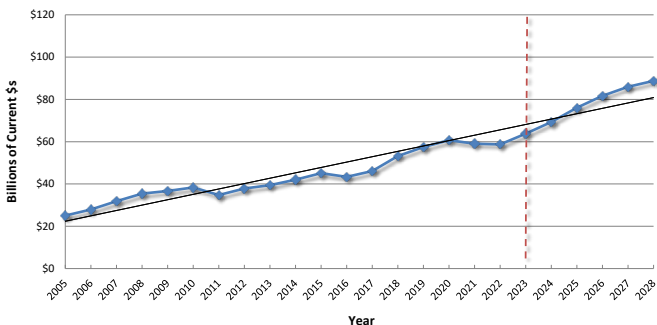
During the time of COVID, several factors including greater reliance on online courses, and deep cuts in foreign student enrolments, conspired to lower investment in educational facilities. But related construction work came storming back in 2023. The improvement in stock market activity is boosting endowment funds, which inserts more confidence into forward planning at the level of higher education. For K-12, solid revenue inflows to city and county governments from property taxes, made even mightier by home price appreciations, allow for upgrade-oriented and new capital spending programs. Important in this sector, as elsewhere, are the population changes occurring in the country. It's the South Region where the resident count is forging ahead most impressively, especially in Texas, Florida, North and South Carolina, and Georgia.

Graph 8: U.S. Construction Spending: Amusement and Recreation Put-in-place (PIP) Investment



Capital spending on amusement and recreation projects derives support from strong labor markets, which give potential theater goers, sports fans, country club members, and casino patrons the means, through good earnings growth, to partake of whatever strikes their fancy. On the sports circuit, there continue to be pro franchise owners in soccer, baseball, football, and hockey who wish to build new state-of-the-art facilities. Online apps, off-field entertainment, and spectacular scoreboards are employed to keep enthusiasm high. As for home entertainment, it's all about viewers and listeners wanting steady access to enjoyable streaming services, with product now being sourced globally. New video and recording studios are sprouting everywhere.

Graph 9: U.S. Construction Spending: Transportation Put-in-place (PIP) Investment

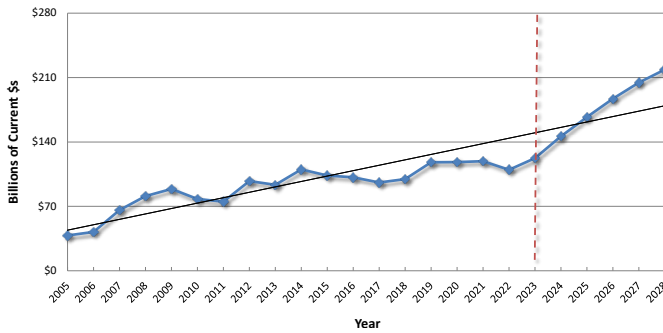


At the intersection of speedy urban growth and the desire for healthier and cleaner living environments lies the push, in nearly every major community in America, for more electrified and rapid mass transit. Government money is flowing into these projects, plus large allocations are being made for intra- and inter-city bus and rail transportation works. Not all such activity is public; there are also corporate players. Recent completion of the rail link between Miami and Orlando by Brightline, backed by a private equity firm, within reasonable time and budgeting constraints, has set a commendable standard. For its next headlining project, Brightline is planning a high-speed link between Las Vegas and Rancho Cucamonga in southern California.

Graphs include a 'best fit' linear trend line.

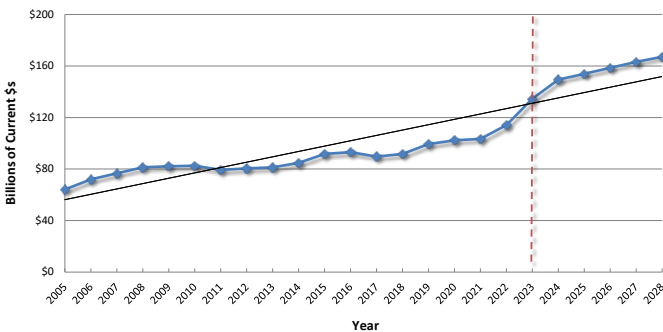
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

Graph 10: U.S. Construction Spending: Power Put-in-place (PIP) Investment



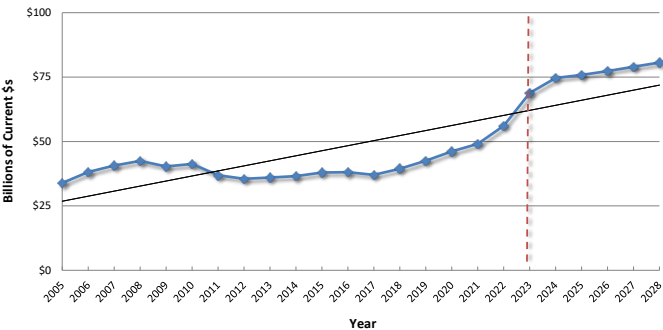
The PIP construction ‘power’ designation refers to more than electricity; it also encompasses the fossil fuel industry, which is far from being down for the count. The \$8 billion Willow oil development project was just launched in Alaska. By dollar volume, America’s largest goods export product in 2023 was oil, shipped from ports in Texas and Louisiana, and with China as a prime customer. But if zero carbon emission goals are to be met by mid-century, there will need to be sizable additions to capacity in electricity generation, transmission lines, and recharging stations. Wind and solar projects will take precedence, but nuclear may be staging a comeback. The only recently commissioned nuclear plant in the U.S. is in Georgia, but it’s interesting to know that thousands of workers were employed at the height of its construction. The concept of small modular reactors (SMRs), with various improved technologies, is coming into fashion.

Graph 11: U.S. Construction Spending: Highways and Streets Put-in-place (PIP) Investment



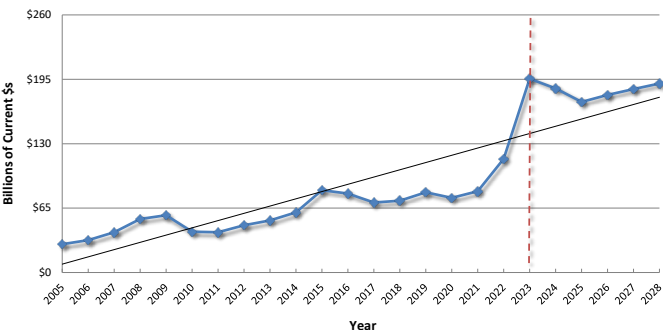
With government funding help, the ‘highway and street’ PIP investment curve has been given an uplifted trajectory. Beyond roadwork for suburban ‘sprawl’, another source of spending will be on access roads to remote resource sites. Geographically, improvements to the infrastructure (tunnels and bridges) along the key logistics route between New York and Washington are taking place. Also regionally, and with demography in mind, the latest annual statistics from the Census Bureau show the three leading states for population growth are South Carolina (+1.7% y/y), Florida (+1.6%), and Texas (also +1.6%). Those percent changes are versus a +0.5% advance nation-wide. Texas is booming. Moreover, it’s embracing a massive highway spending initiative.

Graph 12: U.S. Construction Spending: Water Supply, plus Sewage & Waste Disposal Put-in-place (PIP) Investment



The size of the market pertaining to supplies of potable water and waste management used to tie directly to all other forms of community building, but a new dimension has recently been added. Mention was made earlier in this report of the large number of super-sized projects that are now in the construction pipeline. Owners who are making these vast investments want to ensure that their projects are safe from the ravages of natural disasters which, with climate change, are becoming more prevalent; or at least that they can be brought back onstream quickly if they are forced to accept some storm-wrought downtime. Included here are contractors who specialize in storm sewers and other kinds of protective infrastructure, with the important goal of resiliency.

Graph 13: U.S. Construction Spending: Manufacturing Put-in-place (PIP) Investment



Washington’s objective of reshoring wide swaths of manufacturing activity, especially in vehicle battery production and computer chip fabrication, has met with much success. Manufacturing PIP construction dollars in 2023 were nearly three times higher than in each year from 2014 through 2021. During the forecast period, there will be some pulling back from recent peak, but the annual investment record will remain elevated. The degree to which this will translate into manufacturing jobs remains an open question. Manufacturers, in pursuit of productivity enhancements, have been zealous in adopting automation and robotics. Included among manufacturing are industrial projects in carbon capture and storage, and ammonia and hydrogen production. A pause has been placed on the awarding of liquefied natural gas exporting permits, which throws the prospects for new multi-billion-dollar coastline LNG facilities in doubt.

Graphs include a ‘best fit’ linear trend line.

Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

FLIP-SIDE CRUCIAL ASPECTS TO COMMODITY PRICE INCREASES

A factor warranting attention in the outlook will be the performance of commodity markets. A full-on commitment to electrification, through heightened demand for nickel (batteries), copper (transmission lines), lithium and a host of alloy minerals (to make steel and aluminum stronger and lighter) will

almost certainly lead to a next commodities super-cycle sometime before 2030.

For the construction industry, there are counter-balancing aspects to commodity price increases. Commodities are the base components going into every construction building material. An increase in a com-

modity's price will lift the cost of construction. On the flip side, though, it's also true that an increase in a commodity's price is an incentive for a resource owner to spend on an extraction capacity increase, and this is where mega-sized resource projects enter the picture.

CURRENT VS CONSTANT DOLLARS

After not being much of an issue for many years, the 'constant' versus 'current' dollar value of construction question has become important once again. The reason is because there were unusually large spikes in the costs of many building material inputs in 2021, continuing into 2022 in some instances; plus, wages have been kicking up as well. From Producer Price Index (PPI) readings, the worst of the material price advances is now in the past, with year-over-year declines more common. Nevertheless, it is important to understand how the 'real' or inflation-adjusted value of construction is calculated.

A price index or deflator is used to convert current dollars to constant dollars. A base period is chosen for a certain price level,

and it is assigned the value of 100.0. Then if prices increase by +5% over the next year, the index in year two moves to $1.05 \times 100.0 = 105.0$. If prices rise by +4% in the third year, the index will shift up to $1.04 \times 105.0 = 109.2$. If prices change by -4% instead, the index value in the third year will become $0.96 \times 105.0 = 100.8$.

Market volumes divided by an appropriate price index or deflator will yield dollars that are termed 'real' or 'constant' (i.e., in the sense that they have had inflation removed) relative to the chosen base period. In the next paragraph (and in Table 2 below), the price index adopted by Oxford Economics employs a base year of 2015 equal to 100.0.

The PIP construction dollar volumes set

out in this report, as calculated by Oxford Economics and ConstructConnect, are in 'current' dollars. The estimates of the year-over-previous-year pricing impacts, as provided by Oxford Economics, are +2.9% in 2020; +2.8% in 2021; a jaw-dropping +15.5% in 2022, and a still elevated +8.7% in 2023. There'll be a settling down to no change (0.0%) in 2024. From 2025 on, the figure will move narrowly from +1.8% to +2.3%.

This means that the 'real' performance of Grand Total put-in-place construction activity in 2020 was +4.8%; in 2021, +7.3%; in 2022, -3.2%; in 2023, -1.5%, and estimated for 2024, +4.9%. The annual real gains will then stay more than +2.0% but less than +5.0% from 2025 to 2028.

U.S. 'Constant' Dollar or 'Real' Put-in-Place Construction Spending

Year	Construction Output Price Index (2015 = 100.0)	Change in Price Index Y/Y	'Current' \$ PIP Construction Spending (\$ billions)	% Change Y/Y	'Constant' \$ PIP Construction Spending (2015 as base period)	'Real' Y/Y % Change in Total PIP Construction Spending
2015	100.0		\$1,132.1		\$1,132.1	
2016	103.6	3.6%	\$1,213.2	7.2%	\$1,171.0	3.4%
2017	107.0	3.3%	\$1,279.9	5.5%	\$1,196.0	2.1%
2018	110.3	3.1%	\$1,333.2	4.2%	\$1,208.3	1.0%
2019	115.7	4.9%	\$1,391.1	4.3%	\$1,201.9	-0.5%
2020	119.1	2.9%	\$1,499.6	7.8%	\$1,259.1	4.8%
2021	122.4	2.8%	\$1,653.4	10.3%	\$1,350.4	7.3%
2022	141.4	15.5%	\$1,848.7	11.8%	\$1,307.3	-3.2%
2023	153.7	8.7%	\$1,978.7	7.0%	\$1,287.3	-1.5%
2024	153.7	0.0%	\$2,074.8	4.9%	\$1,349.8	4.9%
2025	156.6	1.9%	\$2,168.0	4.5%	\$1,384.1	2.5%
2026	159.5	1.8%	\$2,298.9	6.0%	\$1,441.7	4.2%
2027	162.6	2.0%	\$2,421.7	5.3%	\$1,489.0	3.3%
2028	166.4	2.3%	\$2,533.1	4.6%	\$1,522.3	2.2%

Source of Price Index: Oxford Economics

Table: ConstructConnect

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