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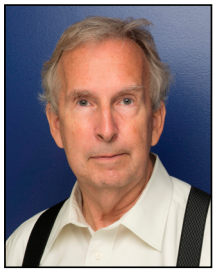
Summer 2023 (Published: May 2023)

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, Summer 2023

In large measure, the U.S. economy has kept chugging along nicely through the Spring of 2023, with relatively solid jobs growth continuing and the unemployment rate remaining inordinately low. There is, however, a sense of a next phase coming that will lead to uncomfortable circumstances, and some indicators are beginning to point in a downbeat direction. The major layoffs announced in the technology sector are beginning to spread, with retail being next affected. In construction, sales by building material suppliers have turned negative year over year in a fashion reminiscent of the 2008-2009 recession.

In 2022, an unprecedented take-off in construction material costs was part of the economy-wide supply shortage that sent overall inflation soaring and prompted the Federal Reserve to take remedial action

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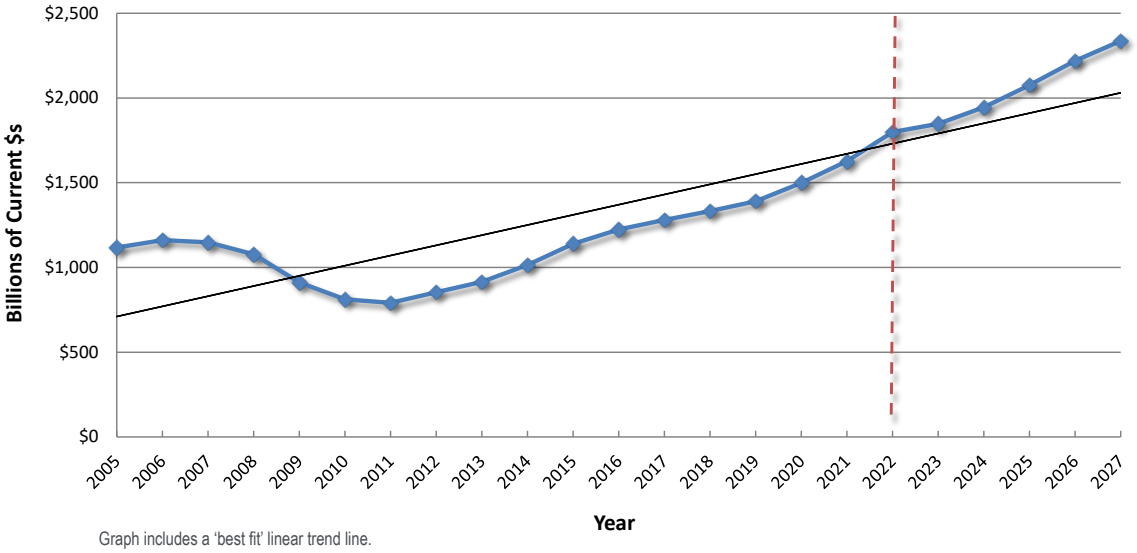
Graph 1: U.S. Grand Total Construction Spending Put-in-place (PIP) Investment



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 $60 million office tower for which ground is broken in June 2023. For the 'starts' series, the entire estimated value ($60 million) will be entered in June 2023. In PIP numbers, it will be captured as spending of approximately $15 million in 2023; $25 million in 2024; and the final $20 million in 2025.

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through graduated interest rate hikes. The input cost pressure has now eased, and there has been some relaxation in the upwards advance of the CPI. Restraining it further, however, will prove to be a sticky problem, since outsized wage increases, that often extend for several years, have become the norm. A quick loosening in monetary policy is no longer assured.

Also, the failure of three American banks has put a little scare into the stewards of the financial system. The banking community, wishing there to be no doubt about its rock-solid capitalization, has lifted loan loss provisions and tightened standards for borrowing. A reduced access to lending diminishes the prospects for GDP growth. Another unwelcome addition to the uncertainty mix at present is the as yet unresolved matter of extending the U.S. debt ceiling, although it bears saying that this is a problem that has crept up with regularity over the years, and has always been resolved, often at the last moment.

A chief characteristic of the U.S. nonresidential construction marketplace lately has been the proliferation of projects, termed 'megas', that carry estimated values of a billion dollars or more each. The primary drivers of such work have been: (1) stepped-up fossil fuel replacement and decarbonization efforts (e.g., EV and battery plants; renewable electric power; hydrogen and ammonia production); (2) bringing jobs home from overseas (computer chipmaking plants); (3) stimulus measures provided by government; and (4) the favorable price differential that has materialized in natural gas at home versus Europe and Asia (LNG exporting facilities). Given that work on these projects extends forward over protracted periods of time, they will provide a base for put-in-place construction activity deep into this report's forecast range.

Table 1: U.S. Construction Spending (put-in-place investment)

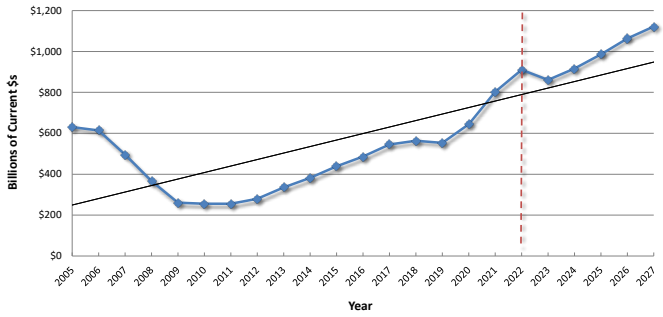
(billions of "current" $s)

	Actuals		Forecasts				
Type of Construction:	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Grand Total	1,626.5	1,798.9	1,848.5	1,945.1	2,076.4	2,219.6	2,336.8
(year vs previous year)	8.5%	10.6%	2.8%	5.2%	6.8%	6.9%	5.3%
Total Residential	802.9	910.4	860.8	916.5	985.6	1,063.5	1,122.1
	24.6%	13.4%	-5.4%	6.5%	7.5%	7.9%	5.5%
Total Non-residential	823.5	888.5	987.6	1,028.6	1,090.8	1,156.1	1,214.7
	-3.7%	7.9%	11.2%	4.2%	6.0%	6.0%	5.1%
Total Commercial/for Lease	199.4	222.0	236.3	243.9	256.4	272.2	287.4
	-5.5%	11.3%	6.5%	3.2%	5.1%	6.2%	5.6%
Lodging	18.2	18.6	20.9	23.5	25.8	29.0	32.4
	-36.0%	2.2%	12.3%	12.4%	9.7%	12.5%	11.5%
Office	86.6	87.8	87.9	88.7	91.6	97.5	102.8
	-6.7%	1.3%	0.1%	0.9%	3.3%	6.3%	5.5%
Commercial (retail/warehouse)	94.6	115.6	127.5	131.7	138.9	145.7	152.2
	5.4%	22.2%	10.3%	3.2%	5.5%	4.9%	4.5%
Total Institutional	187.2	193.1	208.2	213.4	221.4	228.4	237.1
	-10.3%	3.1%	7.8%	2.5%	3.7%	3.2%	3.8%
Health Care	48.5	52.7	57.2	58.3	60.2	63.2	67.5
	-0.3%	8.8%	8.5%	1.9%	3.3%	4.9%	6.9%
Educational	98.4	99.2	107.4	110.0	113.3	115.3	117.6
	-11.1%	0.8%	8.3%	2.3%	3.0%	1.7%	2.0%
Religious	2.9	2.9	3.0	3.0	3.1	3.2	3.3
	-15.8%	-1.3%	3.5%	0.7%	4.2%	2.9%	3.0%
Public Safety	12.2	11.2	11.4	12.0	12.9	13.2	13.5
	-31.2%	-7.7%	1.7%	5.5%	7.2%	1.9%	2.3%
Amusement and Recreation	25.3	27.1	29.2	30.1	31.8	33.6	35.2
	-10.7%	7.0%	7.8%	3.4%	5.5%	5.6%	4.9%
Total Engineering/Civil	358.0	365.6	394.2	423.9	461.1	494.7	523.3
(year vs previous year)	-0.6%	2.1%	7.8%	7.5%	8.8%	7.3%	5.8%
Transportation	56.7	56.8	61.4	66.8	73.7	79.7	84.7
	-6.7%	0.2%	8.1%	8.7%	10.3%	8.3%	6.2%
Communication	24.7	24.3	25.2	26.3	27.8	29.1	30.7
	3.4%	-1.4%	3.7%	4.0%	5.7%	4.8%	5.7%
Power	120.8	110.4	120.8	137.9	158.7	177.6	195.0
	2.3%	-8.7%	9.5%	14.1%	15.1%	11.9%	9.8%
Highway and Street	100.7	109.8	119.4	123.9	129.4	134.4	137.4
	-1.6%	9.1%	8.7%	3.8%	4.4%	3.9%	2.2%
Water Supply & Waste Disposal	47.2	55.0	56.8	57.8	59.9	61.7	63.0
	2.3%	16.5%	3.3%	1.9%	3.6%	3.0%	2.1%
Conservation and Development	7.9	9.3	10.5	11.3	11.7	12.2	12.5
	-11.4%	17.5%	12.8%	7.7%	4.2%	3.8%	2.3%
Total Industrial/Manufacturing	78.9	107.9	148.9	147.4	151.9	160.7	166.9
	4.6%	36.8%	38.0%	-1.0%	3.0%	5.8%	3.9%

"Current" means not adjusted for inflation.

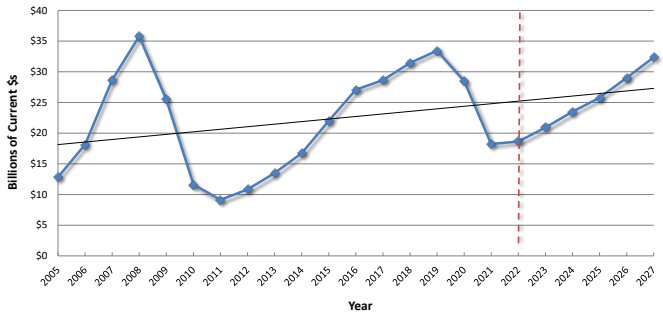
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Table: ConstructConnect.

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



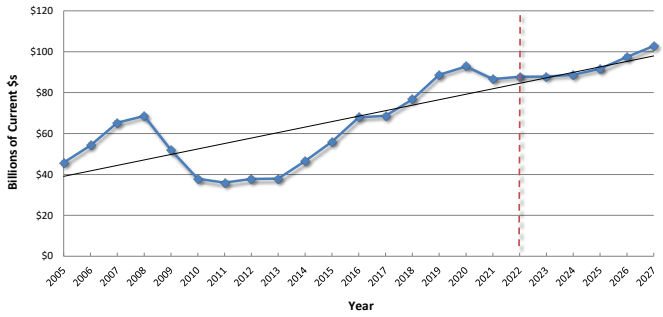
The time period from 2020 to the present has provided a case study of how sensitive new homebuilding is to interest rates. Even as the coronavirus pandemic moved into full swing, housing starts kept rising as mortgage rates fell to historic lows. In early 2022, with the Federal Reserve becoming hawkish on interest rates, the starts pendulum began to swing the other way. Worsening affordability tapped the brakes on groundbreakings. After 2023's dry spell, however, favorable price corrections and pent-up demand, especially among first-time buyers, will see residential put-in-place construction move along a climbing path. Also, the dominance of singles among total units is being eroded by an increasing preference for multi-family structures.

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



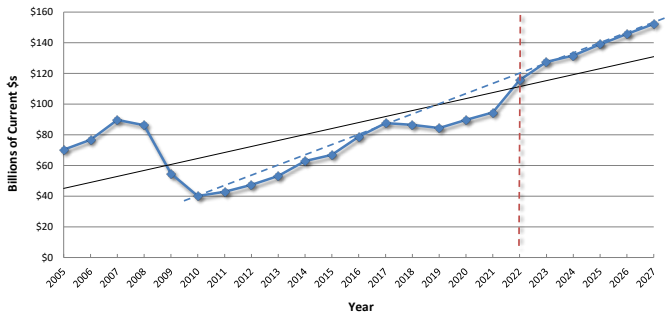
It appears, from Graph 3, that put-in-place construction spending on lodgings has only one direction to turn after the steep plummets in 2020 and 2021. The low point was probably marked in 2021; 2022's PIP figure was a sideways crawl. Mask mandates have vanished and for many people, the wanderlust bug has flared up again, more virulently than in the past due to three prior years spent rarely venturing far from home. One inhibiting factor for travel-related hotel and motel building will be a scarcity of the kinds of big mixed-use projects (i.e., office, retail, condo, and hotel space combined in one development) that used to sprout in downtown cores. Seeking the financing for a complex with a significant office space component will be a hard sell.

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



The top commercial real estate consulting firms are saying that office vacancy rates in America's largest cities are now sitting at exaggerated levels never seen before. As high a ratio as one-third of prime markets have empty space that accounts for 20% or more of total inventory. The work-from-home phenomenon is morphing into a hybrid approach, but there may never be a return to what used to prevail. Accountants and rating agencies are nursing migraines while considering how to recalculate commercial property values. Under these circumstances, it's difficult to generate optimism concerning PIP office space construction, with one exception. The universal love affair with working from the 'clouds' points to a never-ending desire for data centers.

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

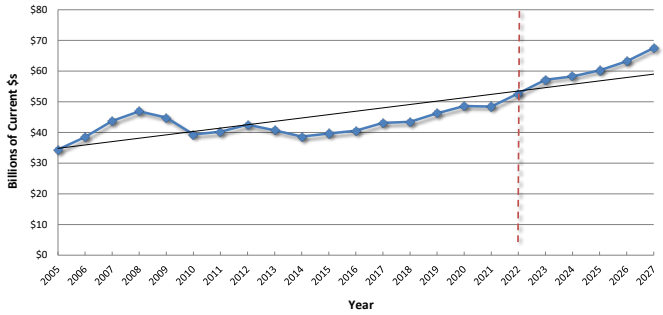


Although it had been underway before the arrival of the coronavirus, one of the great social disruptions that occurred during the pandemic was the move away from trips to the mall and other physical sales locations in favor of making purchases from home over the internet. To the extent that this cut into the construction of 'bricks and mortar' retail sites, it promoted the establishment of huge fulfilment and distribution centers. Recently, additional impetus for warehousing construction has come from manufacturers wishing to keep more inventory on site, to circumvent supply shortages. Graph 5 shows a trend line covering the whole period. A dotted line has also been added illustrating a straight progression in PIP investment, 2010 through 2017.

Graphs include a 'best fit' linear trend line.

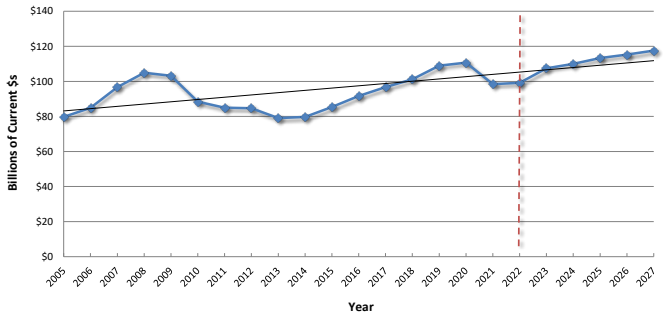
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

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



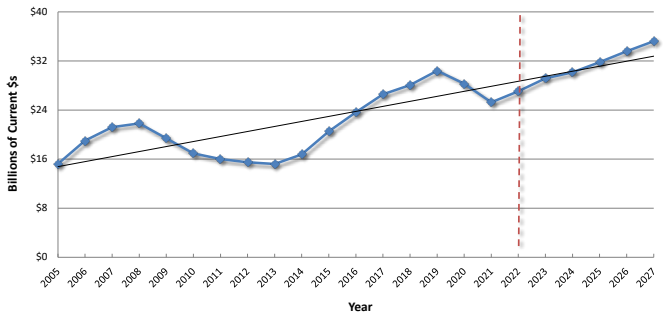
There's a fifth key influence lengthening the impressive tally of mega-sized projects that was mentioned earlier, demography and the aging nature of the population. The 1960s and 1970s were rocked by a youth culture that sprang from the post World War II baby boomer birth wave. All those still-alive individuals are now aged in their mid-50s or older. After a fallow period in 2021 and early 2022, when the sole focus of health care was directed towards COVID mitigation, and notwithstanding the growing appeal and acceptance of telehealth, new major hospital construction has become prevalent again. Capital spending that was delayed is being untethered. Plus, the need to provide more medical aid for the elderly can only increase.

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



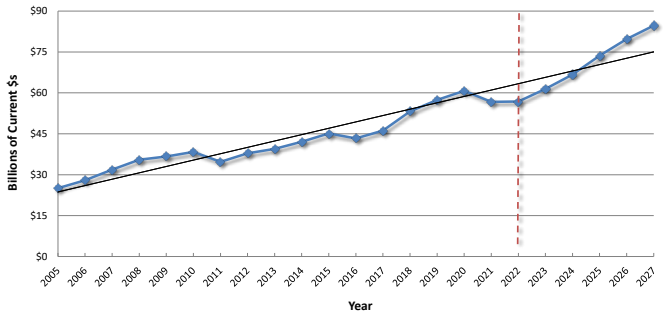
A slowing birth rate feeding into the lower grades, a reduced number of foreign student enrolments, and explosive growth in the number of courses offered online were among the factors contributing to the break in the upwards progression of capital spending on school facilities in 2021. The effectiveness of learning only from home, however, without the personal interaction that comes from being in a schoolyard or on campus, has been found a little wanting. Also, a whole new world of career choices has opened up in electric battery engineering, space tourism, selling in the metaverse, the discipline of logistics, and in all the sciences. There will have to be an increasing number of lecture halls and laboratories to handle the teaching task.

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



The early dark days of COVID drove a stake through the nation's capacity for fun. But those times are now receding and spending on all manner of enjoyment, fueled by year-over-year wage increases double what they were in the 00s and 10s, has picked up dramatically. Owners of major league sports teams are once again promoting enhancements to existing stadiums or putting forward plans for new venues with high-tech wizardry to improve the fan experience. A list of the 15 most prominent such projects compiled by ConstructConnect's research team sums to $20 billion. Plus, there is the domestic sound and movie stage work that has been blossoming within the context of a world-wide entertainment growth phenomenon tied to streaming services.

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

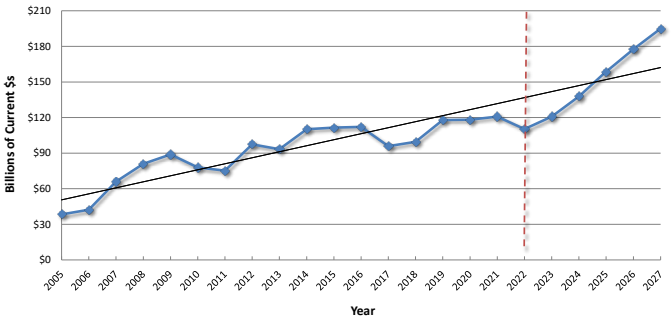


The pause button was pushed on many transport projects when domestic and international travel was restricted in 2020-2022 and commuting to work in many sectors was discouraged. The bindings have since come off and carriers of human and cargo traffic are up against capacity limits once again. Public sector money is flowing into what are viewed as environmentally friendly rapid transit jobs. Also, there was a lesson learned from the severe delivery bottlenecks that first arose in 2021 and sent transportation costs soaring. For the economy to function at its best, railroad, airport and harbor infrastructure must be upgraded and augmented. Recognition has struck home that capital spending neglect in this area is shockingly counter-productive.

Graphs include a 'best fit' linear trend line.

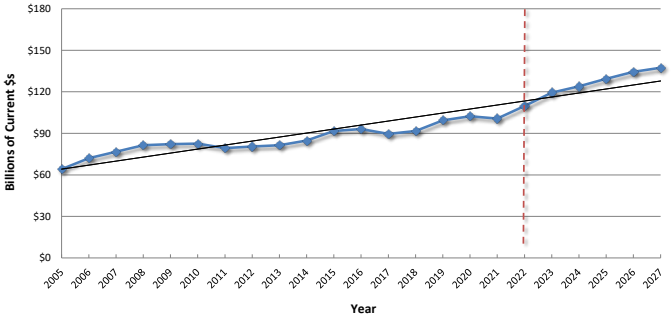
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

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



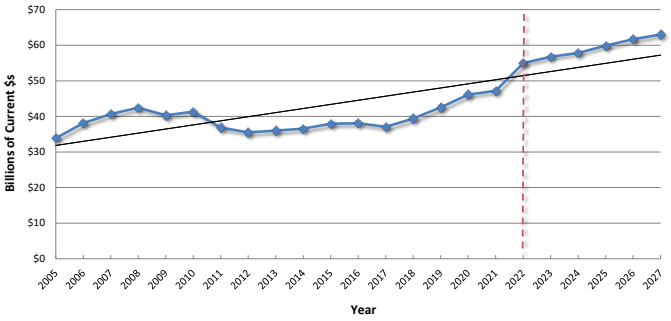
There is consensus among heavy-duty thinkers that achieving a goal of net zero carbon emissions (NZE) worldwide in the next decades will require far more usage of electricity in everyday corporate and family life. Washington is pushing forward a full slate of incentive measures to ensure that additions to the power grid will derive from the renewables wind, solar and perhaps even nuclear. An implication of NZE is not receiving due consideration. A next demand super-cycle for the commodities that will, hopefully, make NZE achievable is almost guaranteed. But approvals for new mining projects are not forthcoming. Due to regulatory issues, it currently takes an unacceptably-long time frame for a mining development to go from proposal to output.

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



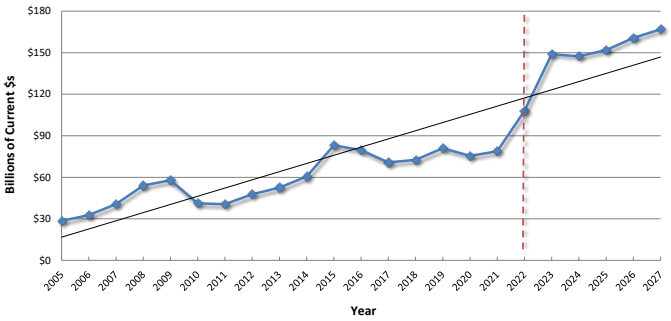
Nearly 10% of U.S. total residential building permits issued last year originated in the two Texas cities of Dallas-Ft Worth and Houston combined. They each exceeded 75,000 units. They are also two cities with continuing urban sprawl. The Texas construction scene is currently booming. Among an astonishingly long list of 'megas' in the state are highway projects. Roadwork is a mainstay of engineering construction and it received monetary backing in the Infrastructure Investment and Jobs Act (IIJA). Also included in this category are bridges and tunnels. Capital spending for the former is mainly prioritizing safety improvements, as many structures have fallen into disrepair. As for tunnels, the NY-NJ Hudson River connection is on everyone's radar.

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



Years of underfunding water cleanup efforts and effluent management, leading to some headline-making crises in certain U.S. cities (e.g., Flint, Michigan and Jackson, Mississippi), are now being addressed as indicted by the ascending slope of the curve in Graph 12. A traditional pattern of capital spending in this area would track single-family suburban construction. But there's a lot more going on. With severe weather swings spreading havoc, greater resiliency in bringing crucial infrastructure back online after natural disasters has become essential. There's a reason for contractors in this business to follow what's happening in mega projects. Airports, subways, and new highways are among the sites requiring more than just old storm sewer layouts.

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



A strengthening of Buy America rules and enactment of the CHIPS Act are among the steps being taken to bolster crucial aspects of the U.S. manufacturing sector, and they're having a positive impact. Bolstered by large projects in the auto sector, semiconductor chipmaking, and petrochemicals, industrial starts calculated by ConstructConnect rocketed to a dollar volume in 2022 that was way above previous annual perches. As for PIP manufacturing construction dollars, through March of this year they were ahead by almost 60% versus the same time period last year. A note of caution about mega projects is warranted, though. Without extensive up-front planning, they are susceptible to significant cost overruns and delayed completion dates.

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 commodity'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 recently large spikes in the costs of many building material inputs; plus, wages have been kicking up as well. From Producer Price Index (PPI) readings, the worst of the material price advances appear to be over. 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 x 100.0 = 105.0. If prices rise by +4% in the third year, the index will shift up to 1.04 x 105.0 = 109.2. If prices change by -4% instead, the index value in the third year will become 0.96 x 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; +3.3% in 2021; and a stunning +19.2% in 2022. In 2023, the increment retreats to +5.2% and in each year from 2024 to 2027, the change will be around +2.0% or less.

This means that the 'real' performance of Grand Total put-in-place construction activity in 2020 was +4.8%; in 2021, +5.0%; in 2022, -7.2%; and predicted for 2023, -2.3%. The annual real gains will then return close to +5.0% from 2024 through 2026 inclusive, with 2027 at +3.2%.

Table 2 - 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		$1,140.2		$1,140.2	
2016	103.6	3.6%	$1,223.7	7.3%	$1,181.2	3.6%
2017	107.2	3.5%	$1,279.9	4.6%	$1,193.6	1.1%
2018	111.0	3.5%	$1,333.2	4.2%	$1,201.3	0.6%
2019	116.7	5.1%	$1,391.1	4.3%	$1,191.5	-0.8%
2020	120.1	2.9%	$1,499.6	7.8%	$1,248.3	4.8%
2021	124.1	3.3%	$1,626.5	8.5%	$1,310.6	5.0%
2022	147.9	19.2%	$1,798.9	10.6%	$1,216.1	-7.2%
2023	155.6	5.2%	$1,848.5	2.8%	$1,187.8	-2.3%
2024	156.6	0.6%	$1,945.1	5.2%	$1,242.5	4.6%
2025	159.5	1.9%	$2,076.4	6.8%	$1,301.6	4.8%
2026	162.4	1.8%	$2,219.6	6.9%	$1,366.8	5.0%
2027	165.6	2.0%	$2,336.8	5.3%	$1,410.7	3.2%

Both terms 'constant' and 'real' mean after adjustment by a price index.

Source of Price Index: Oxford Economics / Table: ConstructConnect.