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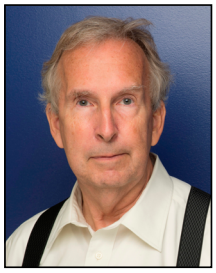
Winter 2023-2024 (Published: December 2023)

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, Winter 2023-2024

There are four major themes currently governing the U.S. construction scene: (1) massive investments underway and planned to achieve energy transition away from fossil fuels towards renewables so as to greatly reduce carbon emissions by 2050; (2) an extreme shortage of skilled and willing workers that doesn't just apply for construction, but extends across many other sectors in the economy; (3) a burst of infrastructure spending backed largely by government dollars and now carrying even more responsibly than in the past to protect new projects from the increasingly harmful effects of natural disasters; and (4) as an offshoot of all the foregoing, a proliferation of mega projects (i.e., those carrying an estimated value of a billion dollars or more each), the likes of which has not been seen in many decades.

While those four provide the main musical refrain, there are several

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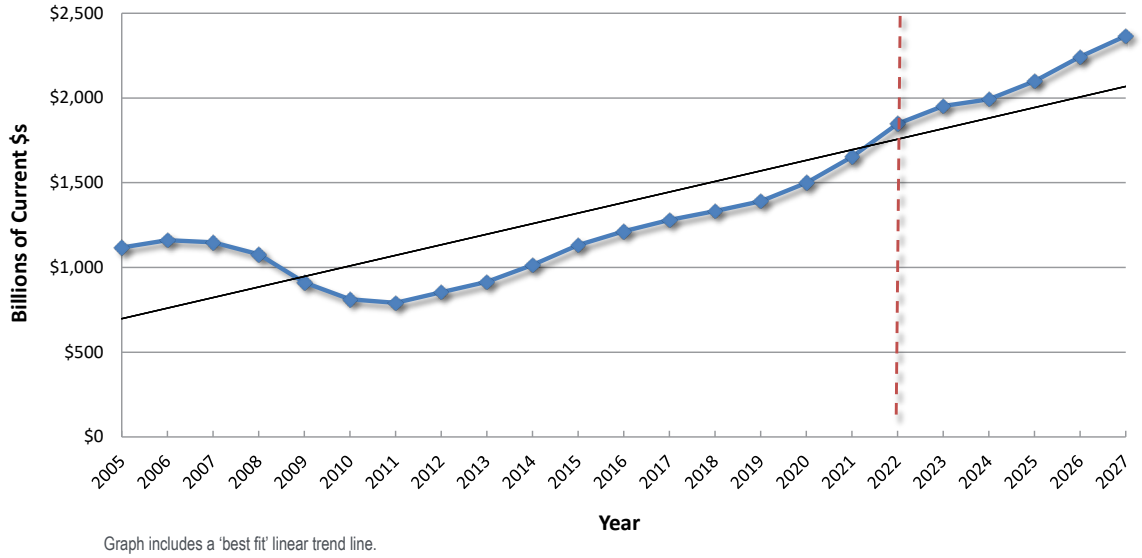
Graph 1: U.S. Grand Total Construction Spending: Put-in-place (PIP) Investment



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 $100 million mixed use complex for which ground is broken in June 2023. For the 'starts' series, the entire estimated value ($100 million) will be entered in June 2023. In PIP numbers, it will be captured as spending of approximately $25 million in 2023; $60 million in 2024; and the final $15 million in 2025.

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sub-scores. The Federal Reserve has moved interest rates higher for longer than originally expected, which is achieving success at beating back inflation, but does carry the risk of slowing the economy to a perhaps excessive degree. Where this may show up most alarmingly is in the office building corner of commercial real estate. High vacancy rates are lingering, inducing a slide in leasing and rental income, and endangering loans made by some smaller and regional banks. Also, labor dissatisfaction with working conditions and wages, post-pandemic, is leading to incentive plans and pay hikes that will make further inflation moderation harder to realize.

U.S. 'real' (i.e., after adjusting for inflation) gross domestic product growth (GDP) is expected to downshift from about +2.0% (i.e., in line with its long-term annual average) in 2023, to a flat performance in 2024, followed by a return to around +2.0% in 2025. Not a great deal of help is being provided by the residential construction sector at the moment. Prospective homebuyers know they will find more inexpensive opportunities once the Fed begins to ease interest rates at the end of Q1 or Q2 of next year. The consumer, as a key player in GDP growth, will be challenged to maintain his or her standard of living, and that may entail the taking on of more debt, which could become inhibiting over the medium to longer term.

Governing bodies are facing a similar dilemma. While the 2008-2009 recession was fought with enormous monetary stimulus (i.e., the 'quantitative easing' that was in business section headlines every day), Washington's response to the 2020 COVID downturn was to launch an unprecedented program of fiscal stimulus. (There was little taste for negative interest rates.) Income supplement and financial aid packages, such as the IIJA, IRA, and Chips and Science bill have been fulfilling their mandates. But is there reason to worry that measures available to governing authorities to fix the next major economic crisis — and history has shown that there will, eventually, be one — may have been exhausted?

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

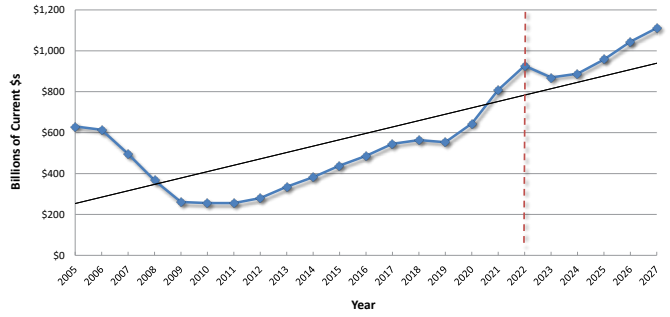
(billions of "current" $s)

	Actuals		Forecasts				
Type of Construction:	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Grand Total	1,653.4	1,848.7	1,952.7	1,992.6	2,098.8	2,243.4	2,366.2
(year vs previous year)	10.3%	11.8%	5.6%	2.0%	5.3%	6.9%	5.5%
Total Residential	809.0	927.4	869.6	887.6	957.3	1,044.5	1,111.3
	25.6%	14.6%	-6.2%	2.1%	7.9%	9.1%	6.4%
Total Non-residential	844.4	921.3	1,083.1	1,105.0	1,141.5	1,198.9	1,254.9
	-1.3%	9.1%	17.6%	2.0%	3.3%	5.0%	4.7%
Total Commercial/for Lease	206.4	232.7	252.5	252.6	256.9	268.5	283.3
	-2.2%	12.8%	8.5%	0.0%	1.7%	4.5%	5.5%
Lodging	19.1	19.7	23.7	25.3	27.1	29.1	32.4
	-33.0%	3.5%	19.9%	6.7%	7.5%	7.1%	11.5%
Office	89.9	91.6	97.7	91.7	89.9	94.6	100.3
	-3.2%	1.9%	6.6%	-6.1%	-2.0%	5.2%	6.1%
Commercial (retail/warehouse)	97.4	121.4	131.1	135.6	139.9	144.9	150.5
	8.6%	24.6%	8.0%	3.4%	3.2%	3.6%	3.9%
Total Institutional	194.3	201.4	223.2	229.9	234.6	240.4	247.7
	-6.9%	3.6%	10.8%	3.0%	2.1%	2.5%	3.0%
Health Care	50.3	54.8	61.9	63.2	64.9	67.6	71.0
	3.5%	8.8%	13.0%	2.2%	2.7%	4.1%	5.1%
Educational	101.0	102.1	113.2	116.5	118.3	119.7	121.6
	-8.8%	1.1%	10.9%	2.9%	1.5%	1.2%	1.6%
Religious	3.1	2.9	3.2	3.1	3.1	3.2	3.3
	-10.8%	-4.8%	8.2%	-1.4%	-0.1%	1.6%	2.6%
Public Safety	12.8	11.6	12.8	14.2	14.6	14.8	15.0
	-27.4%	-9.8%	10.5%	10.8%	2.8%	1.4%	1.8%
Amusement and Recreation	27.1	30.0	32.1	32.8	33.7	35.1	36.7
	-4.2%	10.7%	6.9%	2.3%	2.7%	4.2%	4.5%
Total Engineering/Civil	361.7	372.5	418.8	447.3	479.7	512.8	540.8
(year vs previous year)	0.4%	3.0%	12.4%	6.8%	7.3%	6.9%	5.5%
Transportation	59.1	58.7	63.6	68.3	75.2	81.3	86.3
	-2.7%	-0.6%	8.3%	7.4%	10.1%	8.1%	6.2%
Communication	23.1	24.3	24.9	26.6	27.9	29.5	31.2
	-3.3%	5.3%	2.6%	6.6%	5.1%	5.4%	5.9%
Power	119.1	109.8	121.0	137.5	158.4	176.9	192.4
	0.8%	-7.8%	10.2%	13.6%	15.2%	11.7%	8.8%
Highway and Street	103.4	114.1	130.4	133.5	136.2	140.2	143.9
	1.0%	10.4%	14.3%	2.4%	1.9%	3.0%	2.6%
Water Supply & Waste Disposal	49.1	56.1	67.4	69.7	69.8	72.3	74.1
	6.4%	14.2%	20.2%	3.4%	0.2%	3.5%	2.5%
Conservation and Development	7.9	9.4	11.4	11.6	12.2	12.7	12.9
	-11.2%	19.3%	20.9%	1.9%	5.0%	3.8%	2.1%
Total Industrial/Manufacturing	82.0	114.7	188.7	175.3	170.3	177.2	183.1
	8.8%	39.8%	64.5%	-7.1%	-2.9%	4.1%	3.3%

"Current" means not adjusted for inflation.

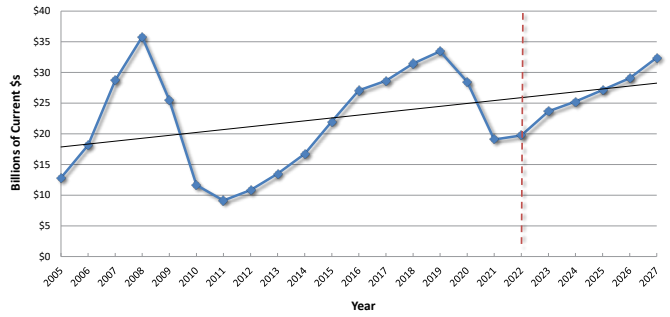
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Table: ConstructConnect.

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



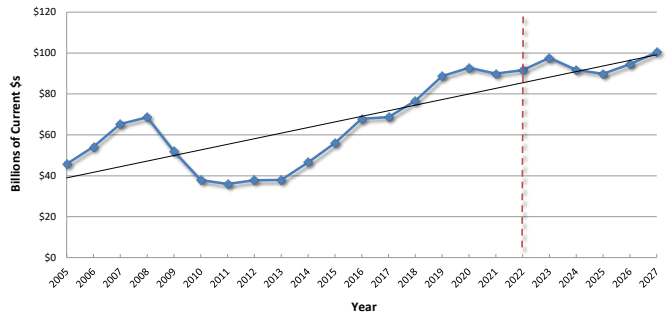
U.S. residential construction has taken several steps backwards with the bump-ups in interest rates, plus mortgage rates, initiated by the Fed. Homebuilding is near, if not at, the top of the list among sectors that are most sensitive to monetary policy. The recent downturn in new home groundbreakings began in the single-family market but has now shifted in dramatic fashion to multi-family structures. Presently, it's a wait and see game for prospective purchasers. Why commit to ultra-steep carrying costs when relief is almost sure to come by mid-2024? When the ramparts come down on restrictive interest rates, pent-up demand, family formations, and obsolescence of existing properties will drive steady gains in residential PIP dollars.

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



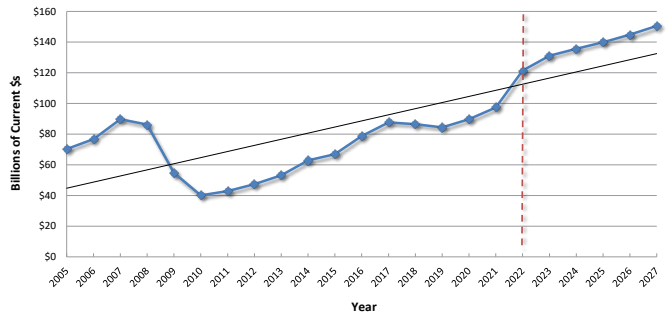
Spending on lodging properties in the U.S. has the most clearly defined cyclical pattern among all the type-of-structure categories. It reached a peak in 2019 that nearly matched its summit in 2008. With the arrival of the coronavirus in early 2020, a significant tumble was inevitable. Tourism and business travel were nearly full-stop curtailed. Occupancy rates in hotels/motels fell as low as 10%. But that was then. Travel as an industry, domestically and internationally, has one of the happiest growth prospects extant. Nearly everyone loves to go somewhere, with one catch – if they can afford it. With a mild recession maybe in the offing, the pickup in PIP spending on lodging will experience a slight hiccup in 2024, before hitting a more fulsome stride once again.

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



A further round of long-term office leases will be allowed to lapse in 2024, signaling no end to elevated vacancy rates. Banking sources for commercial high-rise development aren't taking phone calls. Hedge and pension funds may be more risk inclined, but it's no sure thing that all workers will return to their cubicles. New office construction will become necessary as deterioration in the quality of existing space continues. Also, there's a sub-set with enormous potential. The world is moving 'to the clouds', implying a huge dependence on servers in data centers. With the proliferation of AI, virtual reality, cryptocurrency, cybersecurity, and blockchain accounting, demand for data center construction would seem to have few limitations.

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

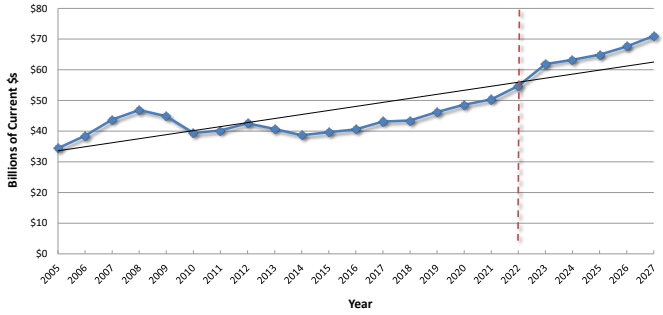


The 'retail, warehouse, restaurant' category of PIP construction has picked up the pace in the past two years versus 2018 through 2021. Those four years were transformative, when so much shopping gravitated to the Internet, with an extra shot in the arm coming from pandemic-era stay-at-home directives. Shopping in physical locations, however, still holds appeal through providing an extra measure of entertainment. Retail analysts are expecting a new trend whereby holographic images of golden-age celebrities will be welcoming greeters at storefront doors. Warehouse work on fulfilment centers has tailed off of late; but as an answer to supply chain shortages, it has been boosted by the movement away from razor-thin inventory management.

Graphs include a 'best fit' linear trend line.

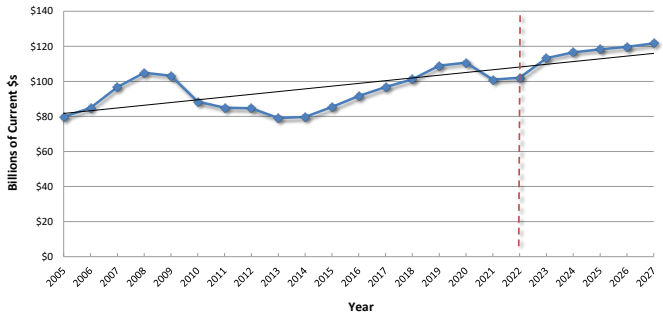
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

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



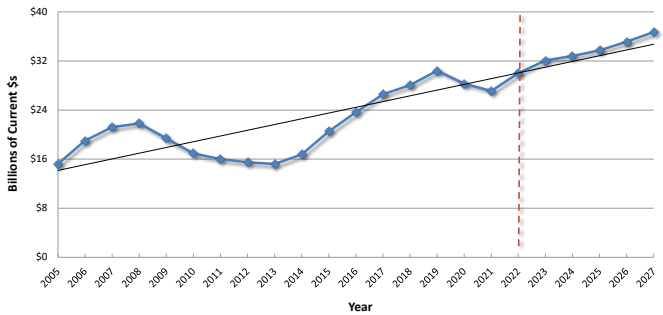
By necessity, telehealth came into more favor beginning in 2020 as hospital beds were allocated on a priority basis to COVID patients. For an aging population, however, access to medical advice by digital means will only be a stepping-stone along the way to more hands-on treatment in medical clinics, hospitals, and nursing homes. Financing the construction of such facilities, under a variety of ownership models — i.e., government bodies, religious organizations, private providers, doctor partnerships, and academic institutions (e.g., teaching hospitals) — will benefit from falling interest rates. Other cost reduction measures are being tried — e.g., the outsourcing and leasing of CUPs (central utility plants) and an embrace of modular building components.

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



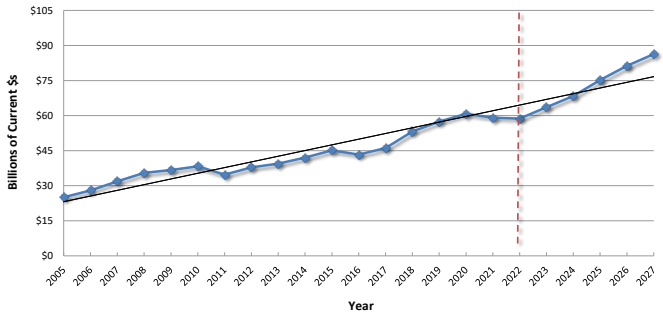
Several factors combined to reduce construction spending on education facilities in 2021 and 2022. The feeder stream into lower grades was weakened by slower population growth and a decline in annual births. Enrolments in higher education by the large foreign student cohort fell sharply in line with worldwide travel restrictions. And online courses exerted a gravitational pull that drew students away from campus attendance. But PIP spending levels have come storming back. Dramatic house price increases, if anything, have lifted school-supporting revenues from property taxes. Additionally, a proliferation of new job opportunities (e.g., in the metaverse; battery engineering; logistics as a discipline; etc.) has underlined the need for more lecture halls.

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



PIP construction spending on 'amusement and recreation' projects has been making a nice recovery since 2021. As a subcategory, it was certainly a provider of solid growth pre-pandemic, from 2013 to 2019. Major sports league franchises are always searching for new ways to expand fan attendance and improve viewing experiences. Plus, there are residential and commercial development opportunities to be seized in stadium and arena neighborhoods. Near capacity employment and good earnings increases are supportive of fun spending at other venues such as casinos and social (e.g., golf or ski) clubs. Not to be overlooked is the explosive take-off in streaming entertainment, to be satisfied by the building of new movie and TV studios.

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

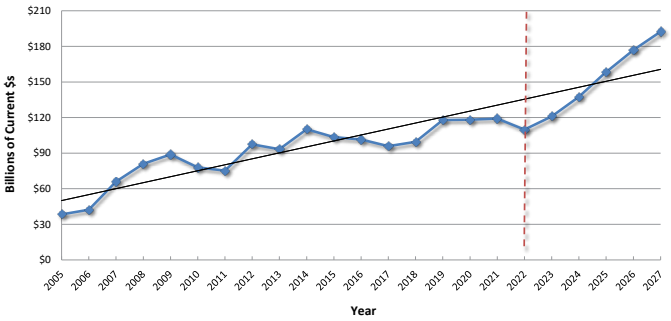


From municipalities across America, there's a long wish list of rapid transit projects, made more appealing by carbon reduction goals, and rendered more viable by funds offered in various infrastructure stimulus bills passed in Washington. Long-term, one striking feature of commuter enablement projects is how, at each station, they foster the building of mixed-use community hubs (e.g., high-rise residences, retail, offices, libraries, theaters, hotels). There's also a big push underway to expand service at airports and along rail lines. For the latter, private sector money has been forthcoming lately, as shown by the link between Miami and Orlando and the proposed high-speed line between Las Vegas and southern California, both sponsored by Brightline.

Graphs include a 'best fit' linear trend line.

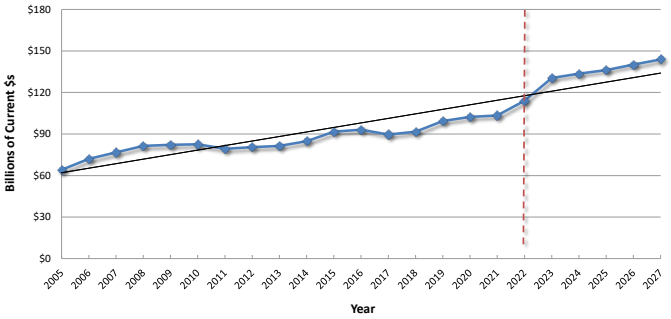
Source of actuals: U.S. Census Bureau/Forecasts: Oxford Economics and ConstructConnect/Charts: ConstructConnect.

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



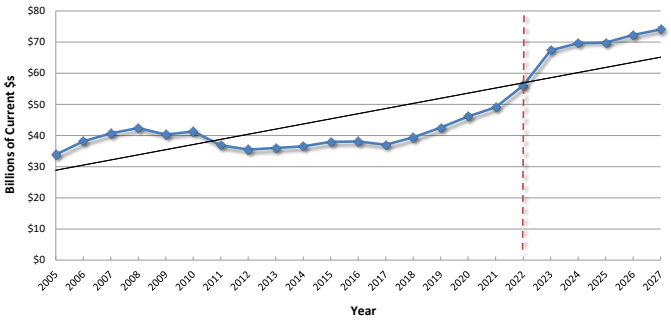
The recent record of mega project groundbreakings in the U.S. has included oil and natural gas extraction and pipeline projects (Alaska and Texas) and the laying of electric power transmission cables from generation source to customers (New York, New Mexico, and Wyoming). While the fossil fuel industry is far from being sidelined yet (think LNG projects), a great deal of the new energy capital spending emphasis is on renewables such as solar and wind farms, with updated and on a smaller-scale nuclear technology being promoted as well. For CO2 reduction goals to be met, there must be a widespread shift in vehicle buying towards BEVs, and that's only likely with a tremendous increase in the number of battery recharging stations from coast to coast.

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



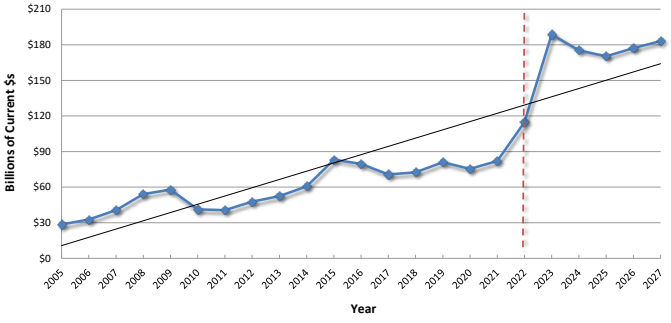
The 'highway and street (and bridge)' designation has the straightest line among all the PIP type-of-structure curves, with a gradually rising tendency historically. Since 2021, it has bent upwards to another degree of steepness, thanks to special allotments of public sector funds. Traditionally, a fuel tax has helped finance much of highway and street construction. In a twist of fate, if and when the government is successful in overseeing a massive vehicle buying shift to electric propulsion systems, a methodology will need to be found to recover per-gallon tax revenue losses from the abandonment of internal combustion locomotion. Roadwork is closely tied to suburban home building; plus, it is usually crucial in gaining access to remote resource sites.

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



In 2023, even as residential PIP construction has stumbled, 'water supply and waste disposal' work has accelerated. One primary driver has been an inescapable need to fix potable-water shortcomings in some communities, and problems with no-longer acceptable lead piping. From 2024 on, there will be continuing demand uplift as the homebuilding sector perks up along with yield declines. Also, there's a sidebar kind of work that is gaining a bigger profile, — 'protective', or as it's often referred to, 'resilient' infrastructure. The billions of dollars being spent on mega projects warrant 'insurance' that they will be spared crippling damage from severe weather events, and/or that they can be brought back on stream rapidly (e.g., vastly better storm sewers).

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



'Manufacturing' has grown to become the largest sub-category among nonresidential PIP construction dollars. Featured among what might be considered assembly-line operations are new EV and battery plants; and, just as significant, computer chipmaking sites. The latter have received a big boost from incentives contained within the CHIPS and Science Act. The current administration in Washington has been quite vocal, and financially generous, in striving to return overseas manufacturing jobs to American soil. Additionally, there's an energy-related sub-component of industrial PIP construction that is sowing a great many ultra large undertakings: LNG export terminals; hydrogen and ammonia plants; carbon capture and storage facilities; etc.

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 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 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; +2.8% in 2021; and an unprecedented +15.5% in 2022. In 2023, the increment stays elevated, at +7.4%, but in 2024, it retreats to -0.6%. From 2025 on, the annual change will be moderate, at +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, +7.3%; in 2022, -3.2%; and estimated for 2023, -1.7%. The annual real gains will then fluctuate in a range of +2.7% to +5.0% from 2024 to 2027.

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		$1,132.1		$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	110.1	2.9%	$1,333.2	4.2%	$1,210.7	1.2%
2019	115.5	4.9%	$1,391.1	4.3%	$1,204.2	-0.5%
2020	118.9	2.9%	$1,499.6	7.8%	$1,261.6	4.8%
2021	122.2	2.8%	$1,653.4	10.3%	$1,353.1	7.3%
2022	141.1	15.5%	$1,848.7	11.8%	$1,309.9	-3.2%
2023	151.6	7.4%	$1,952.7	5.6%	$1,288.2	-1.7%
2024	150.7	-0.6%	$1,992.6	2.0%	$1,322.5	2.7%
2025	153.5	1.9%	$2,098.8	5.3%	$1,367.0	3.4%
2026	156.3	1.8%	$2,243.4	6.9%	$1,435.3	5.0%
2027	159.4	2.0%	$2,366.2	5.5%	$1,484.2	3.4%

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

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