

National Highway Construction Cost Index 2023 Q4

June 6, 2024

NHCCI Outlook

For the fourth quarter of calendar year 2023 (2023 Q4), the Office of Transportation Policy Studies at the Federal Highway Administration (FHWA) calculated a 0.5 percent decrease in the National Highway Construction Cost Index (NHCCI) compared to 2023 Q3. A similar slowdown occurred in 2022 Q4, where the NHCCI increased only 0.1 percent compared to the previous quarter. There is a historically negative seasonal effect during Q4 and Q1 that may be contributing to the slight deflation observed this quarter. While this is a welcome respite from the recent persistent inflation, the negative seasonal effect of Q4 should be noted, which suggests the period of high inflation may not be over, but it may be slowing down compared to the rates observed in 2021 and 2022. When compared to indicators of general inflation such as the Consumer Price Index (CPI) and Producer Price Index (PPI), which respectively showed a 0.1 percent increase and 1.6 percent decrease, the NHCCI appears more in line with inflation across all sectors this quarter. The PPIs for Asphalt and Crude petroleum (domestic) showed a 6.7 and 4.6 percent decrease during 2023 Q4, respectively, continuing their recent volatility. Other construction related PPI showed a range of changes, with construction materials showing a 1.7 percent decrease, while paving mixtures and blocks, concrete products, concrete pavers, and fabricated structural metal showing modest increases between 0.6 and 1.1 percent. Fabricated structural metal for bridges showed a larger increase of 3.4 percent. The wide range of changes in highway related cost indexes combined with the large decline in asphalt and crude petroleum, key drivers of highway costs, suggest that while some of the supply chain challenges introduced during COVID-19 persist, several may be easing.

NHCCI Component Contributions

Analyzing the component contributions to the change in the NHCCI from the previous quarter reveals inconsequential contributions from most components, with the decline in the NHCCI almost entirely driven by traffic control (see table 1). While asphalt contributed to a 0.04 percentage points decrease in the NHCCI and grading/excavation contributed to a 0.03 percentage points increase, traffic control contributed to 0.45 percentage points out of the 0.50 percent decrease in the NHCCI. While a PPI for traffic control is not available for comparison, the related employment in construction cost index showed a 0.9 percent increase, continuing its relatively stable historic trend of between 0.5 and 1.5 percent quarterly inflation. However, it should be noted that all of the NHCCI components include not only the material input prices but also the cost of labor, shipping, overhead, and profit, so any changes in labor costs are partially reflected in each component.

Table 1. Component Contributions to Changes in NHCCI from Previous Quarter (2023 Q2)

NHCCI Component	Percentage Points Contribution
Asphalt	-0.04%
Base stone	-0.01%
Bridge	-0.02%
Concrete	0.01%
Drainage	0.00%
Electrical	0.00%
Grading/excavation	0.03%
Traffic control	-0.45%
Utilities, erosion control, clearing, painting, and equipment	0.00%

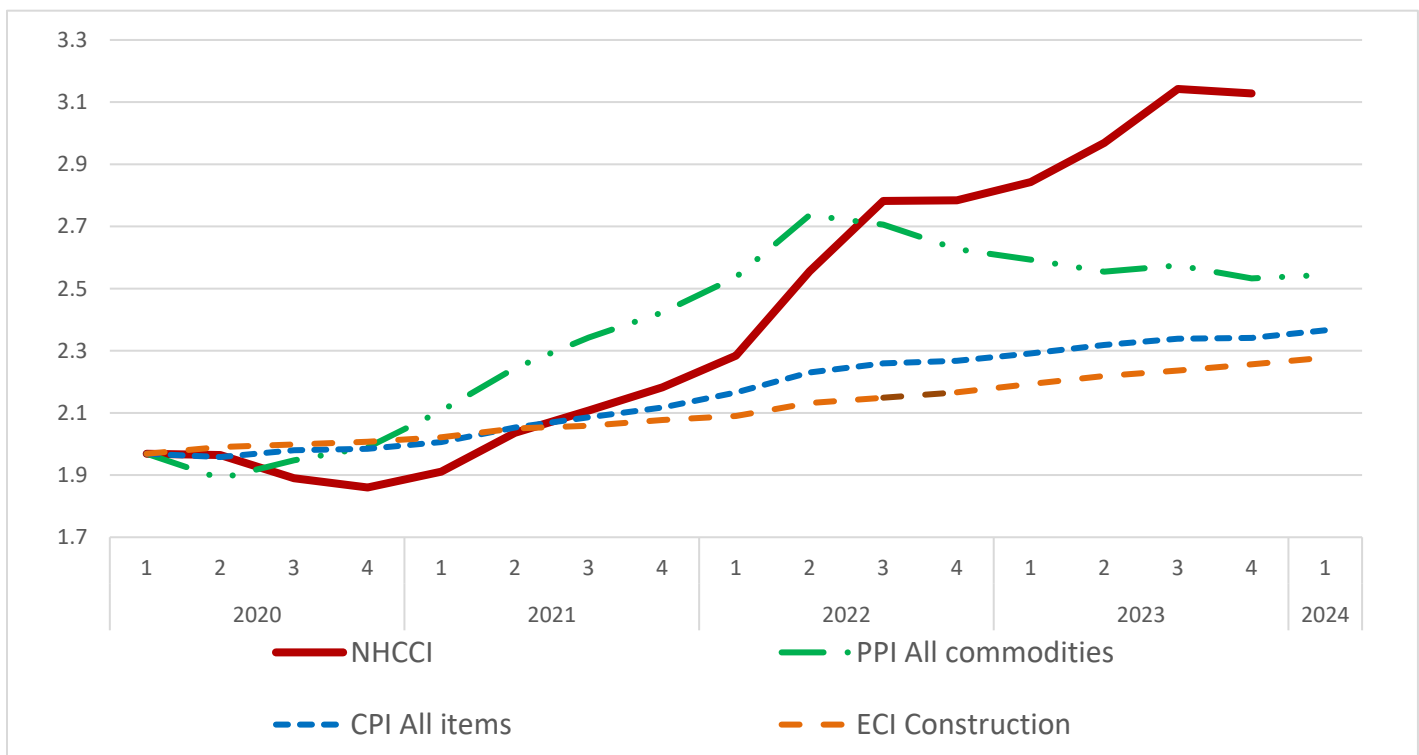
Source: FHWA

NHCCI Performance and Related Economic Indices

The 2023 Q4 decrease in the NHCCI, in addition to changes in other construction-related indexes, provide context for understanding the potential impact on the purchasing power of highway investments. The NHCCI decreased by 0.5 percent, while the PPI decreased by 1.6 percent, the CPI increased by 0.1 percent, and the Employment Cost Index (ECI) for construction increased by 0.9 percent.

As shown in figure 1, while the 2023 Q4 changes move all four indices towards each other, it remains to be seen if the trends in each index will converge or continue the divergence observed since mid-2022. Compared to 2022 Q4 the NHCCI saw a year-over-year (YoY) increase of 12.4 percent, while during the same time the PPI decreased by 3.6 percent, the CPI increased by 3.2 percent, and the ECI for construction increased by 4.2 percent.

Figure 1. Comparison of NHCCI with PPI, CPI, and ECI (rebased to NHCCI 2020 Q1).



Source: FHWA and BLS Data

Adjusting to Post-Covid Expectations

Examining the YoY growth trends in the NHCCI and related indices, as shown in table 2, reveals that inflation appears to be declining although it is still higher than historical levels. The 12.4 percent YoY increase in the NHCCI for 2023 Q4 is similar to what was observed in 2018 Q4, although this is still higher than the all-time average of 6.0 percent. Notably, the YoY for NHCCI appears to peak in 2022 Q3, while related indices peak at similar or slightly earlier times, with the PPI for all commodities peaking around 2022 Q1, CPI in 2022 Q2, PPI for Asphalt in 2021 Q4, PPI for Fabricated Structural Metal in 2022 Q1, and PPI for Paving Mixtures and Blocks in 2022 Q3. While the economy recalibrating itself after the COVID health emergency contributed to rising costs, inflation expectations can also contribute to persistent inflation across all sectors, so it remains to be seen what the new “normal inflation” will look like.

Table 2. Year-Over-Year Growth Rate in Percent

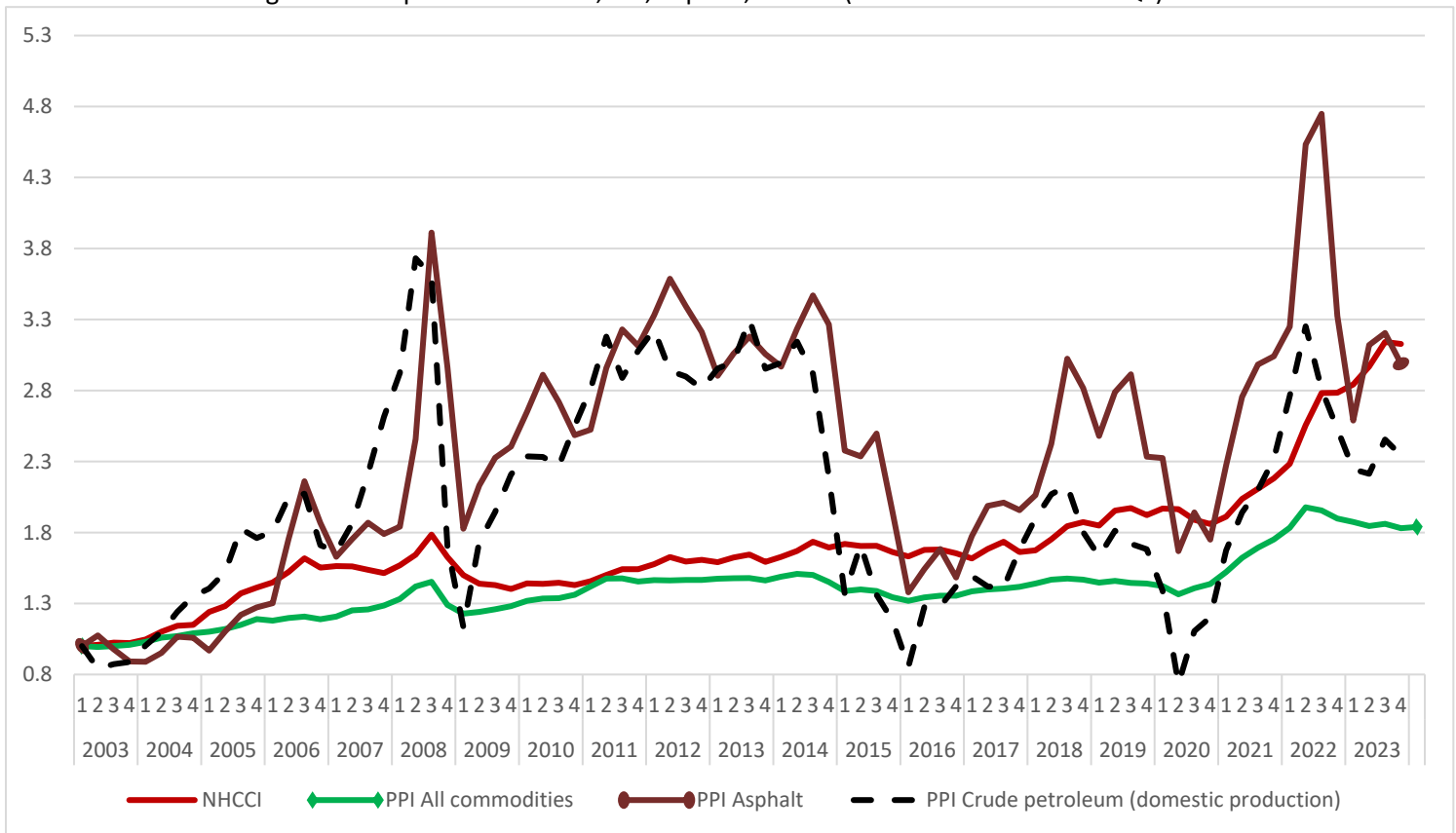
Year	Qtr.	NHCCI	PPI All commodities	CPI All items	PPI Asphalt	PPI Fabricated structural metal	PPI Paving mixtures and blocks
2018	1	3.6%	4.0%	2.2%	16.3%	5.9%	3.5%
	2	4.0%	4.9%	2.7%	22.1%	11.0%	4.7%
	3	6.4%	5.0%	2.6%	50.4%	13.4%	8.7%
	4	12.7%	3.5%	2.2%	43.9%	13.0%	10.4%
2019	1	10.4%	0.4%	1.6%	20.3%	9.8%	5.7%
	2	11.6%	-0.6%	1.8%	14.9%	1.6%	5.4%
	3	6.9%	-2.1%	1.8%	-3.6%	1.1%	1.9%
	4	2.6%	-1.9%	2.0%	-17.1%	-2.3%	-1.1%
2020	1	6.5%	-1.7%	2.1%	-6.3%	-2.8%	1.0%
	2	0.5%	-6.4%	0.4%	-40.1%	-2.9%	-3.7%
	3	-4.2%	-2.6%	1.2%	-33.4%	-2.5%	-5.7%
	4	-3.3%	-0.2%	1.2%	-25.0%	-0.9%	-3.7%
2021	1	-2.9%	7.0%	1.9%	-2.2%	4.0%	0.1%
	2	3.6%	18.8%	4.8%	65.0%	20.5%	1.8%
	3	11.5%	20.3%	5.3%	53.7%	37.0%	5.7%
	4	17.3%	21.8%	6.7%	73.8%	45.4%	7.2%
2022	1	19.5%	20.4%	8.0%	42.9%	48.4%	8.5%
	2	25.5%	21.9%	8.6%	64.6%	38.9%	17.3%
	3	32.0%	15.5%	8.3%	59.2%	20.1%	22.3%
	4	27.6%	8.4%	7.1%	9.4%	10.8%	18.9%
2023	1	24.5%	2.2%	5.8%	-20.3%	3.5%	14.0%
	2	16.2%	-6.6%	4.0%	-31.2%	-3.5%	5.5%
	3	13.0%	-4.8%	3.5%	-32.5%	-2.6%	-1.5%
	4	12.4%	-3.6%	3.2%	-10.1%	1.0%	0.9%

NHCCI, Asphalt, and Oil

The timing of YoY increases and decreases of the PPI for Asphalt roughly align with the increases and decrease of the PPI for All Commodities. Figure 2 shows how the quarterly changes in the PPI for Asphalt show high volatility. Of note, the divergence in the NHCCI and PPI for All Commodities began around 2022 Q2, while the PPI for Asphalt was peaking during 2022 Q2 and Q3 amidst a period of extreme volatility. This volatility, in addition to the actual increase in price, creates uncertainty, which can heavily impact the price of long-term construction projects and may partially explain some of the divergence in the NHCCI and PPI for All Commodities.

Figure 2 also shows that the PPI for Crude Petroleum (domestic production) largely aligns with movements in the PPI for Asphalt going back to 2003. The NHCCI Component Contribution analysis repeatedly shows Asphalt as one of the primary cost drivers for both increases and decreases in the NHCCI over time, which may partially explain the recent changes in NHCCI compared to more general inflation as represented by the PPI for All Commodities.

Figure 2. Comparison of NHCCI, PPI, Asphalt, and Oil (rebased to NHCCI 2003 Q1)



Analysis of Construction-Related PPI

The PPI data in table 3 reveal mixed trends across different materials. For instance, asphalt and crude petroleum experienced relatively large decreases of 6.7 and 4.6 percent, respectively, from 2023 Q3 to 2023 Q4. In contrast, related PPIs exhibited relatively mild movements between negative 1.7 and positive 3.4 percent.

Table 3. Quarter to Quarter Growth Rate in Percent

Indexes	2020	2021				2022				2023			
	4	1	2	3	4	1	2	3	4	1	2	3	4
NHCCI	-1.6%	2.7%	6.5%	3.5%	3.5%	4.7%	11.9%	8.9%	0.1%	2.1%	4.4%	5.8%	-0.5%
PPI All Commodities	2.1%	5.9%	6.6%	4.4%	3.4%	4.7%	7.9%	-1.1%	-2.9%	-1.3%	-1.5%	0.8%	-1.6%
PPI Construction Materials	1.9%	8.0%	14.5%	3.3%	4.5%	5.0%	1.1%	-2.0%	-3.4%	-0.1%	1.9%	-0.8%	-1.7%
PPI Paving Mixtures and Blocks	-0.2%	9.9%	-5.8%	2.3%	1.1%	11.3%	1.8%	6.7%	-1.6%	6.7%	-5.8%	-0.4%	0.7%
PPI Concrete Products	-0.2%	1.4%	2.3%	2.3%	1.7%	3.5%	3.8%	4.2%	2.3%	3.4%	1.8%	1.6%	1.1%
PPI Fabricated Structural Metal	-1.0%	5.5%	14.8%	14.2%	5.1%	7.7%	7.4%	-1.2%	-3.1%	0.7%	0.1%	-0.3%	0.6%
PPI Asphalt	-9.8%	29.9%	21.1%	8.3%	1.9%	6.9%	39.5%	4.8%	-30.0%	-22.2%	20.5%	2.7%	-6.7%
PPI Concrete Pavers	0.7%	1.0%	3.0%	0.7%	1.6%	6.0%	5.1%	2.0%	1.3%	4.7%	1.3%	0.0%	1.1%
PPI Fabricated Structural Metal for Bridges	-4.0%	19.4%	8.6%	7.6%	3.2%	14.2%	3.1%	-2.9%	3.7%	-2.7%	0.4%	-3.1%	3.4%
PPI Crude petroleum (domestic)	8.7%	39.3%	15.9%	8.1%	10.5%	19.1%	17.7%	-13.7%	-9.9%	-11.2%	-1.4%	10.9%	-4.6%

Source: FHWA and BLS Data

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