

Inflation and Construction: A Review of the Data

ISSUE

In 2023, several City of Saskatoon projects started feeling the pressures from increasing input prices on products and services used in the construction and maintenance of City-owned infrastructure. As a result, 2024 budgetary expenditure estimates for certain projects or services, such as road maintenance, have risen substantially, well-above their long-run averages. Given that result, how is construction inflation measured and what is the short-term outlook for construction project related prices? The data indicates that construction price inflation has moderated in the last quarter of 2023 and is expected to decelerate in 2024.

BACKGROUND

At its June 6, 2023, Meeting, the SPC on Transportation Committee received an update from Administration on the 2023 Asset Management Plan – Roadways and Sidewalks. After consideration of the report, the Committee resolved:

“That when these plans are brought forward to budget, a report be included that best quantifies the dynamics of inflation in the short and long-term for our local market.”

CURRENT STATUS

The most common measure of inflation is Statistics Canada’s Consumer Price Index (CPI). Often referred to as “headline inflation”, the CPI is reported monthly and garners attention of the media and policy makers as it is an important economic indicator. The Bank of Canada considers various measures of CPI when making its monetary policy decisions.¹ However, the CPI’s main limitation is that it measures price changes for a representative basket of consumer goods and services. It is largely unrelated to construction, and is therefore, not a good index to measure changes in construction prices faced by businesses and governments.²

As a result, Statistics Canada has several price indexes, grouped as producer price indexes, that provide various measures of price inflation for other parts of the economy, including construction projects.³ Some are related to input prices, such as raw materials and manufactured products, while others are for output prices, such as building construction. This report focuses on three main producer price indexes to help paint a picture of construction price inflation in Canada and Saskatoon:

¹ See <https://www.bankofcanada.ca/rates/price-indexes/cpi/> and https://www.statcan.gc.ca/en/statistical-programs/document/2301_D63_T9_V2. The Bank looks at CPI-Common, CPI-Median, and CPI-Trim, known as “core inflation” and removes the effects of changes in indirect taxes and extreme price movements in the more volatile components like food or energy prices.

² For reasons why see for example, <https://canada.constructconnect.com/canadata/forecaster#news> and <https://tradingeconomics.com/canada/producer-prices#:~:text=Producer%20Prices%20in%20Canada%20increased,source%3A%20Statistics%20Canada>, and <https://www150.statcan.gc.ca/n1/pub/62f0014m/62f0014m2022001-eng.htm>

³ For a complete listing please consult, https://www.statcan.gc.ca/en/subjects-start/prices_and_price_indexes/producer_price_indexes

- (1) The Raw Materials Price Index (RMPI),
- (2) The Industrial Product Price Index (IPPI), and
- (3) The (Non-Residential) Building Construction Price Index (BCPI).

The RMPI and IPPI are linked and reported together monthly by Statistics Canada at the Canadian level only.⁴ The RMPI measures the prices paid by Canadian manufacturers for key raw materials, like oil, stone, and logs. These input products are then manufactured into industrial products, whose price changes are measured by the IPPI. It reflects the prices that Canadian producers receive for products leaving the factory gate. These products include cement, asphalt, and lumber. The prices measured by the RMPI are inputs into the prices for the products measured by the IPPI. The historical price changes for selected IPPI products can be found in Appendix 1.

The Non-Residential component of the BCPI measures the price change over time in contractors' prices to construct a range of new non-residential buildings; specifically, commercial, industrial, and institutional buildings.⁵ This index is based on building construction prices in 11 Census Metropolitan Areas (CMAs) in the country, including Saskatoon. The BCPI is reported quarterly, and the headline number is a weighted average for the 11 CMAs, known as the composite.

The prices measured in this index “reflects the value of all materials, labour, equipment, overhead and profit to construct a new building. It excludes value added taxes and any costs for land, land assembly, building design, land development and real estate fees”.⁶ The BCPI also reports the price indices for building materials. The historical and current prices for these materials are found in Appendix 2.

While each of these indices have their limitations, they do provide the most complete package of publicly available data to assess price trends for construction projects. The data from these indices likely shows up in future contracts, meaning prices observed in 2022 may not be reflected in contract pricing until 2024, all things equal. Moreover, construction wage rates and supply chain pressures are also useful variables to consider but the analysis of them are beyond the scope of this report.

DISCUSSION/ANALYSIS

Tables 1 through 3, inclusive, show the price levels and rates of change for each of the three price indices described in the previous section.⁷ Tables 1 (RMPI) and 2 (IPPI) use a start date of September 2018 and concludes with the most recent data which is up to September 2023. Table 3 uses the start date of Quarter 3 2018 and ends at Quarter 3 2023 (which is equivalent to the end of September). All tables show the price levels (indexed values) and the rates of change (expressed as a percentage) over the five-year period (2018-2023) and year over year (effectively known as the inflation rate).

⁴ For example, see the September 2023 release here: <https://www150.statcan.gc.ca/n1/daily-quotidien/231019/dq231019b-eng.htm>

⁵ The BCPI also tracks prices for residential building construction, but that component is ignored in this report.

⁶ For more details, see <https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=2317>

⁷ In the tables. Y/Y change means year over year change, which is also known as the annual inflation rate.

As Table 1 shows, the aggregate RMPI has risen by 41% since September 2018, averaging about 8% per year. However, on a year-over-year basis, the index has moderated, growing by 2.4%. Among the selected commodities, conventional crude oil saw the largest price increases at 45% over the period. Year over year, crude oil and sand, gravel, and clay have risen by about 10% each.

Table 1: Raw Materials Price Index Aggregates and Selected Categories (January 2020 = 100)					
Sources: Statistics Canada Table 18-10-0268-01					
Products and Product Groups	Sep-18	Sep-22	Sep-23	Change (Sep-18 to Sep-23)	Change (Y/ Y)
Total RMPI	104.8	143.7	147.2	40.5%	2.4%
RMPI excluding crude energy	96.3	129.8	135.9	41.1%	4.7%
Conventional crude oil	117.5	155.3	170.6	45.2%	9.9%
Crushed stone	93.8	121.1	128.6	37.1%	6.2%
Sand, gravel, clay	101.2	111.5	122.5	21.0%	9.9%
Logs, pulpwood and other forestry products	105.9	144.1	134.3	26.8%	-6.8%
Metal ores and concentrates	95.7	122.4	133.2	39.2%	8.8%

As shown in Table 2, the IPPI rose by 25.7% over the five-year period with an average annual growth rate of 5.1%. Year over year, the IPPI has moderated considerably growing by 0.6%, largely due to declining energy and wood prices relative to 2022. Between September 2018 and September 2022, the price for asphalt products rose by 42%, but year over year has fallen by almost 14%. Conversely, prices for cement products rose by almost 8% year over year, and by 24% since September 2018.

Table 2: Industrial Product Price Index Aggregates and Selected Categories (January 20 = 100)					
Sources: Statistics Canada Tables 18-10-0265-01 and 18-10-0267-01					
Products and Product Groups	Sep-18	Sep-22	Sep-23	Change (Sep-18 to Sep-23)	Change (Y/ Y)
Total IPPI	101	126.3	127	25.7%	0.6%
Energy	113.1	155.1	153.8	36.0%	-0.8%
Asphalt	109.5	155.5	133.9	22.3%	-13.9%
Cement, etc	97.9	112.5	121.3	23.9%	7.8%
Fabricated metal, etc	99.9	143.8	141.9	42.0%	-1.3%
Lumber and wood	103.9	142.7	127.5	22.7%	-10.7%

* Change (Y/Y) means the year over year percent change, or Sep 2023 over Sep 2022.

Table 3 shows data for the Non-Residential BCPI, both nationally and for the Saskatoon CMA. Price levels and rates of change are shown for the non-residential aggregate and the building components. Nationally, aggregate prices rose by 35% from 2018 to 2023, averaging 7% per year, while Saskatoon saw a 21% price increase, averaging about 4% per year. Saskatoon's year-over-year rate exceeded the five-year annual average by 0.7 percentage points.

Industrial buildings in both jurisdictions saw the largest price increases among the three building types, rising 42% nationally and 27% locally over the five-year period. The main drivers behind these construction price increases were structural steel framing (+63%) and wood (+50%) in the Saskatoon CMA. Year over year, concrete prices were the driving force, as this cost component rose by 8% in the Saskatoon CMA.

Table 3: Non-Residential Building Construction Price Index (2017 = 100)					
Source: Statistics Canada Table 18-10-0276-01					
Composite CMA	Q3 2018	Q3 2022	Q3 2023	Change 2018Q3 - 2023Q3	Change (Y/ Y)
Non-Residential Aggregate	104.7	133.3	141.2	34.9%	5.9%
Commercial buildings	104.8	133.6	141.8	35.3%	6.1%
Industrial buildings	105.3	140.8	149.8	42.3%	6.4%
Institutional buildings	104.1	127.1	133.1	27.9%	4.7%
Saskatoon CMA	Q3 2018	Q3 2022	Q3 2023	Change 2018Q3 - 2023Q3	Change (Y/ Y)
Non-Residential Aggregate	102.9	118.9	124.5	21.0%	4.7%
Commercial buildings	103.2	119	124.6	20.7%	4.7%
Industrial buildings	103.8	124.7	131.6	26.8%	5.5%
Institutional buildings	102.4	117.3	121.6	18.8%	3.7%

* Change (Y/Y) means the year over year percent change, or Q3 2023 over Q3 2022.

The data in Tables 1-3, and the accompanying appendices, show the post pandemic volatility, and sharp rise in many of the producer price indices and sub-indices. Since late 2020, inflation accelerated rapidly for many of the products and materials (e.g., energy related, concrete, and metal) measured by each of these price indexes. To further illustrate this, additional time series analysis for the IPPI and the Non-Residential BCPI, including a short run forecast for each is contained in the Appendices 1 and 2, respectively. Given the high underlying volatility in these product groups, predicting future price changes has a high degree of uncertainty.

The product-specific time series charts in Appendix 1 decompose construction related product groups, such as energy products, wood and lumber products, and concrete and metal products over a 10-year period. Similarly, Appendix 2 does the same for the materials components of the Non-Residential BCPI and reviews the price level changes for concrete, steel framing, wood, and utilities.

FINANCIAL IMPLICATIONS

The information in this report and its accompanying Appendices does not generate any new budgetary or financial implications. However, rising input prices for construction materials can have budgetary and financial implications on City projects and services. All else equal, rapid and/or unexpected price inflation reduces the City's purchasing power as it can buy fewer quantities of goods and services at approved price levels.

NEXT STEPS

The Administration will continue to monitor and analyze the product prices reported in these three price indices. Future reporting on them and other related data may accompany fiscal updates and budget reports as produced by the Chief Financial Officer from time to time.

APPENDICES

1. Time Series Analysis of the IPPI, Selected Products
2. Time Series Analysis of the Non-Residential BCPI for Canada and Saskatoon

Report Approval

Written by: Mike Jordan, Chief Public Policy and Government Relations Officer

Reviewed by: Terry Schmidt, General Manager, Transportation and Construction

Clae Hack, Chief Financial Officer

Approved by: Jeff Jorgenson, City Manager

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