



City of Edmonton



Edmonton

Municipal Price Index Backgrounder

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1. Understanding Inflation

Inflation is defined as the rise in the level of prices of goods and services in an economy over a period of time and is measured as an annual percentage increase in the Consumer Price Index (CPI). In essence, inflation means that every unit of currency buys a smaller amount of goods and services over time. An upward trend in inflation causes a decline in the purchasing power of money. For example, if an item costs \$100.00 in period 1 and period-to-period inflation is 2 per cent, that same item will cost \$102.00 in period 2, \$104.04 in period 3 and so forth.

Since 1991, the Bank of Canada has employed an inflation control target that aims to maintain annual consumer inflation at 2 per cent—the midpoint of a control range of 1 to 3 per cent. This inflation-targeting approach to monetary policy guides the Bank of Canada in maintaining a stable price environment over the medium term. As a result, consumer inflation as measured by the CPI has been, on average, stable at the national level.

The City of Edmonton's cost of municipal service provision also faces inflation. Due to price increases, the City requires more money in its operating budget to purchase the same mix of goods and services over time. However, because the City purchases a considerably different range of goods and services than the average Canadian consumer, the CPI is not an adequate measure of the inflation the City's operating budget experiences. Moreover, municipal costs tend to experience a higher level of inflation than average consumer costs do. Thus, a Municipal Price Index (MPI) was developed to measure the price increases the City of Edmonton's operating budget faces.

The development of the MPI necessitated the formation of steering and working committees. The steering committee included senior managers from the Financial and Corporate Services Department, who provided direction and assigned resources to the project. The working committee, made up of representatives from most sections of the Financial and Corporate Services Department, provided direction on the composition of expenditure categories, weights and inflation factors. The City of Edmonton's MPI was also created in accordance with a previous corporate strategy document, *The Way We Finance*, with both projects developed in close alignment.

The MPI is not a prescriptive tool that mandates operating budget expenditures to increase by a designated amount each year. Rather, the MPI is a tool that helps better inform the City's budgetary process of external economic conditions that the City will face.

2. CPI versus MPI

The CPI is a measure of the price changes experienced by Canadians. Produced by Statistics Canada, the CPI is calculated by comparing the cost of a fixed basket of goods and services bought by an average Canadian consumer over time. Since the basket consists of goods and services of equivalent quality or quantity, the index reflects only the price change. The CPI is the most widely used calculation of inflation for Canada, the provinces and municipalities.

The goods and services included in the CPI are grouped if they have similar end-uses, or are deemed substitutes for one another. These groups of products are joined together at different levels, and the highest level of grouping is called a major component. The major components that comprise the CPI basket of goods and services are the following: food; shelter; household operations, furnishings and equipment; clothing and footwear; transportation; health and personal care; recreation, education and reading; and alcoholic beverages and tobacco products¹.

Major components of the CPI basket are weighted in relation to spending trends by Canadian consumers. For example, the proportion of the total basket that each major component accounts for is based on the proportion of total consumer expenditures made on those goods and services. These proportions signify the relative importance, or weight, of a grouping of products in the basket.

The content of the CPI basket is reviewed and updated by Statistics Canada every two years to ensure that the basket of goods and services included in the CPI remains relevant. The weights of each major component are updated to reflect the spending patterns obtained from the Survey of Household Spending from a more recent period. Figure 1 shows the major CPI components and their respective weights for Alberta, based on consumer spending in 2017².

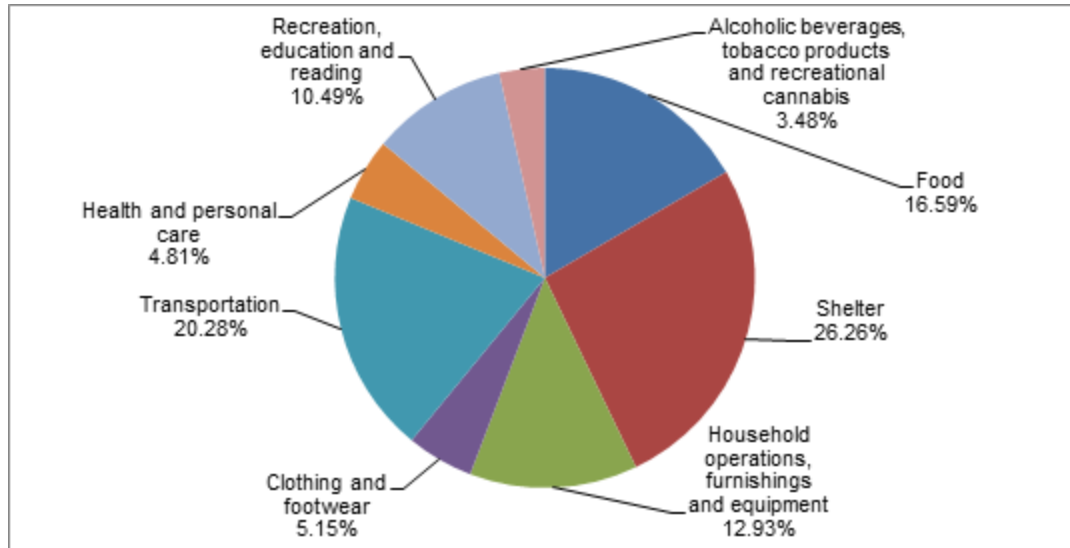
The weight attributed to each major component determines the impact that a specific price change will have on the overall consumer budget. In the 2017 basket, the weight assigned to shelter was 26.26 per cent, whereas the weight assigned to clothing and footwear was 5.15 per cent. This means that a 10 per cent increase in the price of shelter will have a much greater impact on the average consumer budget than a 10 per cent increase in the price of clothing and footwear. In an absence of weights, all goods and services would be given an

¹ Statistics Canada. 1996. *Your Guide to the Consumer Price Index*. Catalogue no. 62-557-XPB.

² The 2017 basket is the most recent update to the CPI basket and was published on March 3, 2019.

equivalent degree of importance, which does not accurately represent the average consumer's expenditure basket.

Figure 1. 2017 CPI Weights of Major Components - Alberta³



Source: Statistics Canada

The CPI is a useful indicator of inflation because it is consistent, well known, published by a reputable independent organization and available free of charge. It is for these reasons that many municipal governments use the CPI to measure their inflation. However, the expenditure profiles of municipal governments are much different than the expenditure profile of an average Canadian consumer.

The average consumer spends money on food, housing, clothing, utilities and transportation, among other things. Municipal governments, on the other hand, build roads and pools, buy trees and buses and employ planners and firefighters. The CPI does not reflect the purchasing patterns of municipal governments and thus is not an accurate indicator of the inflationary pressures they face. To account for their unique expenditure profiles, several municipalities have opted to develop their own MPI.

³ Source: Statistics Canada, Table 18-10-0007-01 - Basket Weights of the Consumer Price Index.

3. Background to the MPI

The concept of an MPI originated in 1978 when *American City and County* began publishing what they call a Municipal Cost Index (MCI). The MCI is designed to estimate the inflation rate of the costs of municipal service provision. The MCI is a composite index—a weighted average of more detailed price indices—consisting of the Consumer Price Index, the Producer Price Index and the U.S. Department of Commerce’s composite Construction Cost Indices⁴.

Using the *American City and County* price index as a foundation, several Canadian municipalities have developed their own MPIs. By tailoring an MPI to match a municipal government’s expenditure profile, a municipal government is better able to monitor and react to its unique inflationary circumstances. Calgary, Ottawa, Halifax, Waterloo, Strathcona County and St. Albert have all developed an MPI.

The City of Edmonton decided to develop an MPI as part of the administration’s performance measurement program, *The Way We Finance*. An MPI can be used by the City of Edmonton in the following ways:

1. To measure the increase in overall municipal expenditures attributed to inflation.
2. To allow managers to more closely monitor the increase in spending by expenditure category, thus making inflationary price increases or decreases more visible.
3. To provide an indication of the historical, current and future direction of prices relative to municipal expenditures.
4. To explain increased expenditures attributed to inflation when submitting annual budgets.

⁴ American City and County: americancityandcounty.com

4. Methodology

Of all the Municipal Price Indices (MPIs) surveyed, the City of Calgary maintains an MPI most applicable to Edmonton. In several cases, other municipal governments have adopted Calgary's methodology when developing their own MPIs. Following the methodology employed by the City of Calgary, constructing the MPI consists of two parts: 1) determining the weights of expenditure categories within the City's operating budget and 2) determining the appropriate inflation factor for each expenditure category. Once the index has been collated with these data, municipal inflation can be calculated by summing every product of weight and inflation factor.

4.1 Expenditure Categories and Weights

The City of Edmonton's 2009 operating budget was analyzed to determine expenditure categories and their respective weights in the development of the MPI. Items in the budget with similar inflationary pressures were grouped into broad expenditure categories. A total of 17 expenditure categories were created. The weight of each category was assigned based on the percentage of the 2009 operating budget allocated to that category.

When the MPI was first developed, it was recommended that expenditure category weights be updated every five years. If the expenditure category weights are adjusted too frequently, year-to-year inflation rates become incomparable to one another.

The expenditure category weights were updated while compiling the 2018 MPI to reflect the City's 2017 operating budget. The expenditure category weights were updated previously while compiling the 2014 MPI. The decision to update the weights prior to 2019 was due to a significant shift in the weighting of expenditure categories, particularly around Wages and Salaries and Debt Service which warranted an update. Table 1 shows the updated weights for each expenditure category based on the 2017 operating budget.

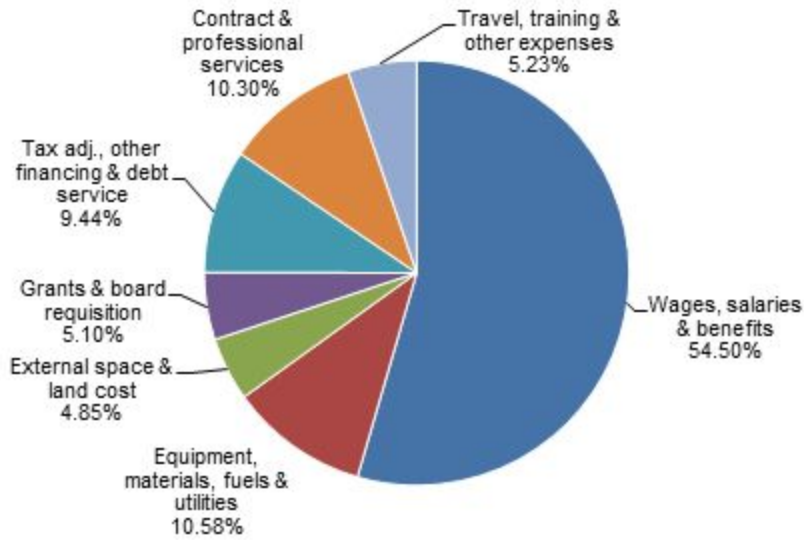
Table 1. Expenditure Categories and Weights⁵

| Expenditure Category | Weight |
|----------------------------------|--------|
| Wages & Salaries | 45.58% |
| Employee Benefits | 8.93% |
| Equipment (Vehicles & Computers) | 3.23% |
| Fuel | 1.39% |
| Materials | 3.52% |
| Natural Gas | 0.38% |
| Utilities Total | 2.05% |
| External Space | 1.52% |
| Grants & Board Requisition | 5.10% |
| Land Cost | 3.33% |
| Tax Adjustments & Concessions | 0.49% |
| Other Expenses | 4.79% |
| Other Financing | 0.24% |
| Travel & Training | 0.44% |
| Contract Services | 9.13% |
| Professional Services | 1.17% |
| Debt Service Total | 8.71% |
| Total | 100.0% |

The most heavily weighted expenditure categories—the categories that comprise the largest share of the 2017 operating budget—are wages and salaries (45.58%), contract services (9.13%) and employee benefits (8.93%).

For illustrative purposes, Figure 2 further aggregates the 17 expenditure categories into seven broader categories. As can be seen, over half of the City's annual operating budget is allocated to wages, salaries and employee benefits.

⁵ The following items in the 2017 budget were not included in any MPI expenditure category because they do not represent budget components that undergo typical price inflation: 1) interdepartmental services, 2) amortization, 3) pay-as-you-go levy and 4) transfers to reserves.

Figure 2. Expenditure Categories and Weights

4.2 Inflation Factors

The next step in constructing the Municipal Price Index (MPI) is to assign an appropriate inflation factor to each expenditure category, following the assignment of a weight to that category. The inflation factors assigned to each expenditure category are based on internal City of Edmonton sources, as well as several external sources. It is recommended that inflation factors be updated annually⁶. Doing so will ensure each year's MPI calculation is congruent with the inflationary pressures facing the operating budget for that year.

It is important to match an appropriate inflation factor to each expenditure category. For example, the Conference Board of Canada's crude oil price forecast is an appropriate inflation factor for the Fuel expenditure category. Because the costs of crude oil and fuel will likely move in the same direction at approximately the same magnitude, this inflation factor was determined to be a good fit for the Fuel expenditure category. In other cases, where a suitable fit could not be identified, the CPI was used as a default inflation factor. A table of each expenditure category, as well as the data source and publisher for each inflation factor, is listed in Appendix 1.

For some expenditure categories, contracts that dictate the rate of inflation are in place. For these expenditure categories, inflation is determined by a contractual obligation to increase spending, irrespective of market forces. By far, the largest expenditure category is wages and salaries, which accounts for 45.6% of the City's operating budget. Wage and salary

⁶ Inflation factors should be updated during the month of February of each calendar year.

increases for City of Edmonton employees are based on actual labour settlements that extend into the future. For bargaining units where a settlement was not available, the Alberta industrial composite wage inflation rate is used.

4.3 Calculating Municipal Inflation

The calculation for the Municipal Price Index (MPI) is based on the average of expected price changes for each expenditure category, weighted by their respective proportion of the operating budget spent on that category. The weights for each expenditure category indicate the importance of an item or group of items in the municipality's operating budget. Using weights to construct the MPI prevents over- or understating the influence of a given item in the municipal basket of goods and services. An MPI can, therefore, be calculated using the following equation⁷:

$$MPI = X_1(W_1/W) + X_2(W_2/W) + \dots + X_n(W_n/W) \quad [2]$$

Where:

MPI = Municipal price index

X_n = Price change for expenditure category n

W_n = Total expense of expenditure category n in the operating budget

W = Total expense of the City's operating budget

W_n/W = Weight of expenditure category n in the City's operating budget

Equation [2] can be rewritten as:

$$MPI = \sum_{i=1 \dots n} X_n(W_n/W) \quad [3]$$

Equation [3] produces a single inflation rate, which is the rate of cost increases facing the City of Edmonton's operating budget for the year being examined.

5. Critical Factors for Success

5.1 Use External Sources for Inflation Where Possible

Critics of the MPI argue that it can be a self-serving tool, particularly if used to justify tax increases. To alleviate this criticism, the MPI should be calculated by an independent body. The Canadian Federation of Municipalities is currently lobbying Statistics Canada to calculate and maintain MPIs for Canadian municipalities. So far, however, municipalities have been

⁷ Walters, Patrick. 2009. The City of Calgary Corporate Inflation Rate – 2003–2008: As measured by a municipal price index. Corporate Economics. The City of Calgary.

calculating these indices on their own. To mitigate the criticism that the MPI is a self-serving municipal indicator, it must be both transparent and, where possible, use external sources.

5.2 Continue to Refine the Calculation

The inflation factors should be routinely reviewed and new values should be assigned when existing ones are deemed inappropriate. Additionally, all expenditure categories should be regularly reassessed to ensure that an appropriate level of homogeneity exists within each category. This approach ensures that the correct inflation factors—ones that accurately reflect inflationary pressures—are assigned to each expenditure category.

6. Application of the Municipal Price Index

The MPI is a powerful tool that measures the inflationary pressures that municipal operational expenditures face. The MPI can be used by the City of Edmonton in the following ways:

- to enable managers to more closely monitor the increase in spending by expenditure category, thus making inflationary price increases or decreases more visible;
- to provide an indication of historical, current and future direction of prices relative to municipal expenditures; and
- to explain increased expenditures attributed to inflation when submitting annual operating budgets.

7. Appendix 1 - Sources for MPI Inflation Factors

| Expenditure Category | Inflation Factors | Source/Publisher |
|----------------------------------|--|--|
| Wages & Salaries ⁸ | Wages & Salary Settlements; Wage Inflation Forecast, Alberta: Industrial Composite | City of Edmonton - Employee Services Conference Board of Canada |
| Employee Benefits ⁹ | Labour Settlements; Wage Inflation Forecast, Alberta: Industrial Composite | City of Edmonton - Employee Services Conference Board of Canada |
| Equipment (Vehicles & Computers) | Industry Product Price Index: Manufacturing | Conference Board of Canada |
| Fuel | Raw Materials Price Index: Crude Oil Forecasting | Conference Board of Canada |
| Materials | Industry Product Price Index: Manufacturing | Conference Board of Canada |
| Natural Gas | Raw Materials Price Index: Natural Gas Forecast | Conference Board of Canada |
| Utilities Total | Electricity Power Price Index | Conference Board of Canada |
| External Space | CPI Forecast | Conference Board of Canada |
| Grants & Board Requisition | CPI Forecast | Conference Board of Canada |
| Land Cost | CPI Forecast | Conference Board of Canada |
| Tax Adjustments & Concessions | CPI Forecast | Conference Board of Canada |
| Other Expenses | CPI Forecast | Conference Board of Canada |
| Other Financing | Prime Lending Rate | Conference Board of Canada |
| Travel & Training | CPI Forecast | Conference Board of Canada |
| Contract Services | Wage Inflation Forecast, Alberta: Industrial Composite | Conference Board of Canada |
| Professional Services | Wage Inflation Forecast, Alberta: Industrial Composite | Conference Board of Canada |
| Debt Service Total | Prime Lending Rate | Conference Board of Canada |

⁸ Inflation factors were derived from wage and salary settlements. Where a settlement was not available, the Alberta industrial composite wage inflation rate was used. The Alberta industrial composite wage inflation forecast was used as a proxy for rates where bargaining settlement information was missing.

⁹ Inflation factors were derived from labour settlements. Where a settlement was not available, the Alberta industrial composite wage inflation rate was used. For forecasting purposes, the Alberta wage inflation forecast was used as a proxy.