

economic insights



CITY OF
EDMONTON

Municipal Price Index

2013

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1.0 Executive Summary

Inflation is defined as the rise in the level of prices of goods and services in an economy over a period of time. Monitoring inflation is important for the City of Edmonton because inflation can have various effects on year-to-year operations and financial decision-making that is tied to the City's budgetary process. Consumer inflation is typically measured through the Consumer Price Index (CPI) produced by Statistics Canada. The CPI, however, is not the best tool for the City of Edmonton to assess inflationary pressures.

The Municipal Price Index (MPI) serves to measure inflation growth for the City of Edmonton. While the CPI is the generally accepted measure of inflation, the City recognizes that the CPI does not correctly represent the municipal purchasing pattern. The CPI represents the purchasing pattern of an average consumer, whereas the MPI reflects the mix of goods and services purchased by the City of Edmonton. Development of an MPI was undertaken as a means to measure inflation facing the City of Edmonton's operating budget.

Historically, from 2008 to 2011, the MPI has been consistently higher than consumer inflation by approximately 0.51-2.41%. At the time of the last MPI report, the estimated 2012 MPI for the City was 2.76% while the expected CPI was 1.96%. The actual year-end MPI was very close to the estimated value and stood at 2.60% in 2012. The actual CPI for 2012 was 1.34%—lower than the estimated value, mainly due to softer energy prices seen during the year.

The MPI is estimated to be at 2.94% in 2013, higher than the expected consumer inflation by 0.57%. The MPI is then forecasted to increase from 2.96% in 2014 to 3.29% in 2016, higher than the CPI by 0.76% and 1.20%, respectively.

Comparison of Municipal Inflation and Consumer Inflation Rates, 2008 – 2016

	Actual						Forecast		
	2008	2009	2010	2011	2012	2013	2014	2015	2016
Municipal Inflation	4.71%	1.78%	3.49%	2.99%	2.60%	2.94%	2.96%	3.22%	3.29%
Consumer Inflation ¹	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
Difference	1.33%	1.61%	2.44%	0.47%	1.26%	0.57%	0.76%	1.18%	1.20%

¹ Source: Conference Board of Canada.

2.0 Introduction

2.1 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. In essence, inflation means that a particular good or service will require more and more currency for its purchase as time passes. For example, if an item costs \$100.00 in period 1 and period-to-period inflation is 2%, that same item will cost \$102.00 in period 2, cost \$104.04 in period 3, and so forth.

Since 1991, the Bank of Canada has employed an inflation control target, which aims to maintain annual consumer inflation at approximately 2%. This monetary policy has been successful, and consumer inflation as measured by the CPI has been, on average, stable at the national level.

The City of Edmonton's costs of municipal service provision also face inflation. From year to year, a larger amount of expenditure is required in the City's operating budget to purchase the same mix of goods and services. However, because the City purchases a considerably different range of goods and services than the average consumer, the CPI is not an adequate measurement of the inflation rate it experiences. Moreover, municipal costs tend to experience a higher level of inflation than average consumer costs do.

2.2 Developing an Inflation Index for the City of Edmonton

The City of Edmonton's Strategic Plan, *The Way Ahead*, outlines the vision for Edmonton in 2040. It is to be implemented as per the performance measures and targets within each of its six directional plans—one of which is the *The Way We Finance* (TWWF). TWWF has three corporate outcomes, and constructing an MPI for the City of Edmonton is requisite for satisfying corporate outcome 5.1, which states: "*The City has well managed and sustainable assets and services.*"

This corporate outcome requires the City to demonstrate a commitment to well managed sustainable practices for infrastructure and approved programs. As a means to achieve this outcome, two corporate measures were identified. One of these measures required the establishment of a Fiscal Sustainability Index (FSI), which further required the construction of an MPI. Based on a five-year rolling average, the FSI is calculated as follows:

$$FSI = \frac{\% \text{ Change in Operating Spending (Actuals)}}{\% \text{ Population Growth} + \% \text{ Inflation Growth}} \quad [1]$$

The *% Inflation Growth* component of equation [1] is what compelled the development of an MPI for the City of Edmonton.

Developing the MPI necessitated the formation of both steering and working committees. The steering committee comprised senior managers from the Financial Services and Utilities Department, who provided direction and assigned resources to the project. The working committee, that comprises representatives from most sections of the Financial Services and Utilities 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 *TWWF*, with both projects developed in close alignment.

It should be noted that 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.**

3.0 Consumer Price Index versus Municipal Price Index

The CPI is produced by Statistics Canada and measures the rate of price change for goods and services bought by Canadian consumers. It is the most widely used calculation of inflation for Canada, the provinces and municipalities. The CPI can be thought of as a measure of the percentage change over time in the average cost of a large basket of goods and services purchased by consumers.

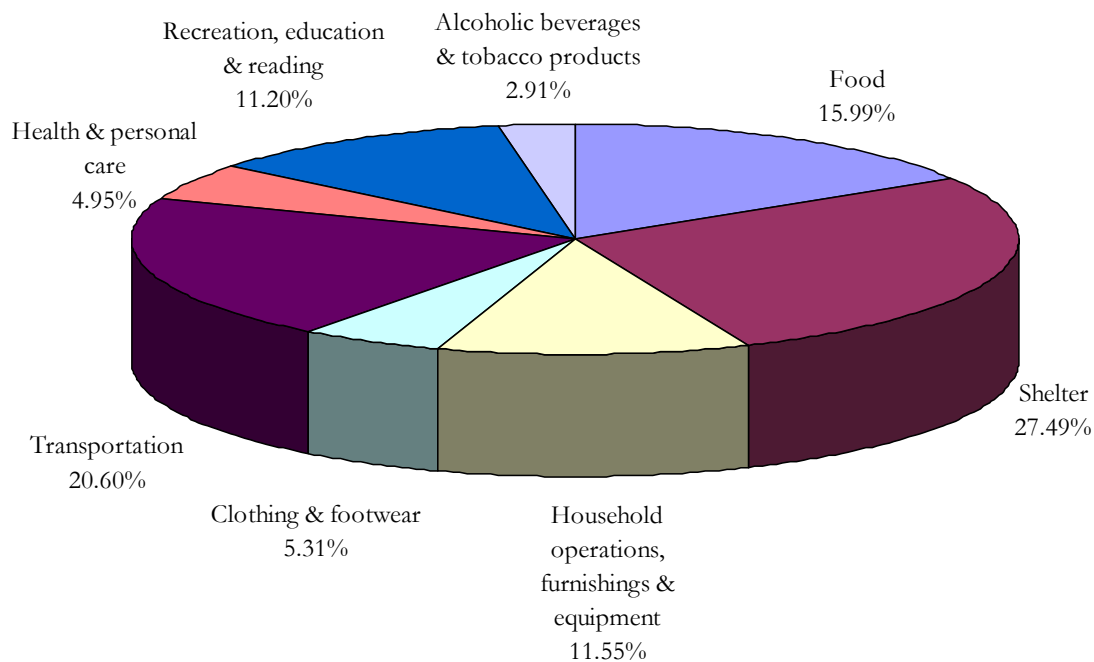
Goods and services within the basket are grouped together if they have similar end-uses, or are deemed substitutes for one another. At the highest level, these groupings of products are called major components. The major components that comprise the CPI basket of goods and services are the following: food; shelter; household operations, furnishings and equipment; clothing and footwear; transportation; health and personal care; recreation, education and reading; and alcoholic beverages and tobacco products.²

Major components of the CPI basket are attributed a weight in relation to spending trends by Canadian consumers. For example, the proportion of total basket that each major component comprises 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. Figure 1 illustrates the major CPI components and their respective weights.

² Statistics Canada. 1996. *Your Guide to the Consumer Price Index*. Catalogue no. 62-557-XPB.

The weight attributed to each major component determines the impact that a specific price change will have on the overall consumer budget. For example, a 10% increase in the price of shelter will have a much greater impact on the average consumer budget than a 10% increase in the price of clothing and footwear. In the 2009 CPI basket, the weight assigned to shelter is 27.49%, whereas the weight assigned to clothing and footwear is 5.31%. In an absence of weights, all goods and services would be given an equivalent degree of importance, which does not accurately represent the average consumer's expenditure basket.

Figure 1: 2009 CPI Weights of Major Components, for 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 profiles of consumers.

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.

4.0 Background to the Municipal Price Index

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 Indices.³

Using the *American City and County* price index as a foundation, several Canadian municipalities have developed their own MPI. 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. 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.

5.0 Methodology

Of all the MPIs surveyed, the City of Calgary maintains an MPI most applicable to Edmonton. In several cases, other municipal governments have adopted the Calgary methodology when developing their own MPI. 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

³ American City and County. <http://americancityandcounty.com>

with these data, municipal inflation can be calculated by summing every product of weight and inflation factor.

5.1 Expenditure Categories and Weights

The City's operating budget was analyzed to determine a pattern of expenditures for the 2009 base period. The expenditure categories fit with widely accepted City practices and align with the efforts being made to develop *TWWF*. It is 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.

Items in the budget with similar inflationary pressures were grouped together into broad expenditure categories. A total of 17 expenditure categories were formed. The weight of each category was assigned based on the percentage of the 2009 operating budget allocated to that category (Table 1). For example, if materials cost \$100, and the total budget was \$1,000, the weight for materials would be 10%.

Table 1: Expenditure Categories and Weights⁴

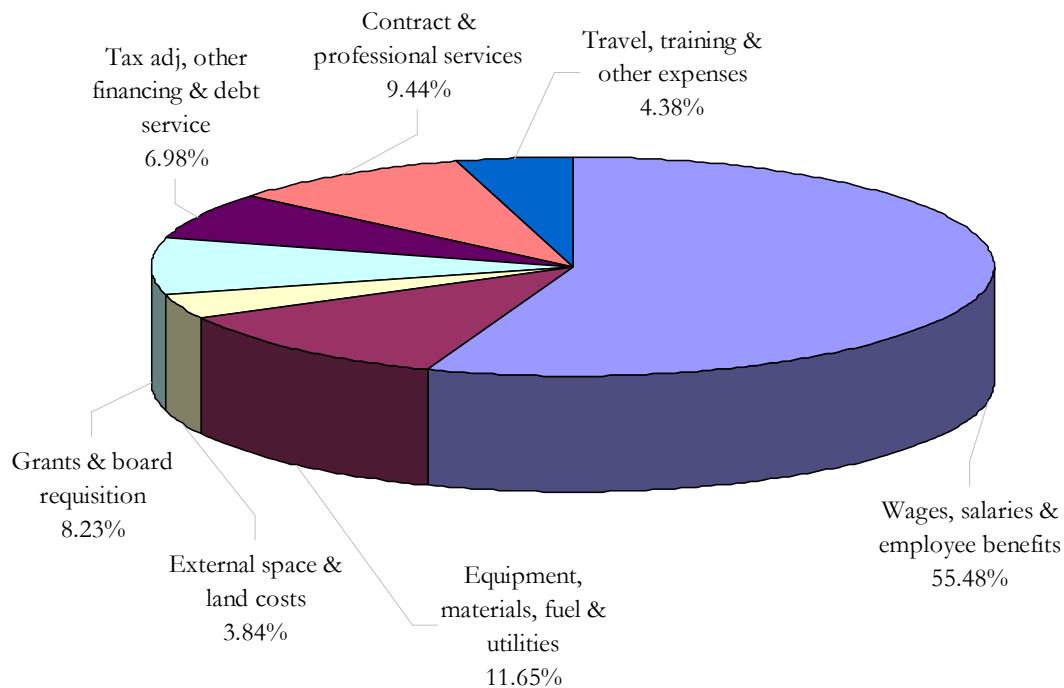
No.	Expenditure Category	Weight
1	Wages & Salaries	43.93%
2	Employee Benefits	11.55%
3	Equipment (Vehicles & Computers)	3.58%
4	Fuel	1.61%
5	Materials	3.77%
6	Natural Gas	0.64%
7	Utilities Total	2.06%
8	External Space	1.13%
9	Grants & Board Requisition	8.23%
10	Land Cost	2.70%
11	Tax Adjustments & Concessions	1.29%
12	Other Expenses	3.86%
13	Other Financing	0.25%
14	Travel & Training	0.52%
15	Contract Services	8.25%
16	Professional Services	1.19%
17	Debt Service Total	5.44%
Total		100.00%

⁴ The following items in the 2009 operating budget were not included in any MPI expenditure category as they do not represent budget components that undergo typical price inflation: 1) interdepartmental services, 2) amortization, 3) pay as you go levy and 4) transfer to reserves.

The most heavily weighted expenditure categories—the categories that comprise the largest share of the 2009 operating budget—are as follows: wages and salaries (43.93%), employee benefits (11.55%), grants and board requisition (8.23%) and contract services (8.25%).

For illustrative purposes, Figure 2 further aggregates the 17 expenditure categories into 7 even broader categories. As can be seen, over half of the City's annual operating budget is allocated to wages, salaries and employee benefits.

Figure 2: Expenditure Categories and Weights



5.2 Inflation Factors

The next step in constructing the 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 annually.⁵ Doing so will ensure each year's MPI calculation is congruent with the inflationary pressures facing the operating budget for that year.

⁵ Inflation factors should be updated during the month of February of each calendar 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 expenditure category labelled "Fuel." 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 43.93% of the operating budget. For years 2008–2013, the wages and salaries increases for City of Edmonton employees are based on actual labour settlements that extend into the future. For 2014, only certain unions have finalized labour settlements; for unions without finalized 2014 settlements, the Alberta industrial composite wage inflation forecast was used as proxy. For years 2015–2016, the Alberta wage inflation forecast was also used as proxy.

5.3 Calculating Municipal Price Index

The calculation for municipal price index is the average of expected price changes of all expenditure categories, weighted by the proportion of the operating budget spent on each expenditure 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 overstating the influence of a given item in the municipal basket of goods and services. Municipal price index can, therefore, be calculated using the following equation:⁶

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

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

⁶ 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.

Equation [2] can be rewritten as:

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

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.

6.0 The City of Edmonton Municipal Price Index

Table 2 (page 13) shows the City of Edmonton's actual and forecasted MPI over the period from 2008 to 2016. The inflation factors for years 2008 to 2012 represent *actual* historical inflation rates experienced in each of the expenditure categories while those for years 2013 to 2016 are forecasted inflation rates that are expected over the current year and the next three years.

The MPI is updated annually, generally during the first half of the year. The update to the MPI involves revising the previous year's estimated MPI values to reflect *actual* inflation figures and updating the inflation factors for the current year and the next three years with newer forecast values. This report incorporates the revisions to the previously estimated 2012 MPI values to reflect the actual figures, updates to the MPI forecasts for 2013–2015 period and the addition of the MPI forecast for 2016.

Historical municipal inflation for years 2008–2011 has been consistently higher than consumer inflation by approximately 0.51%–2.41%. Municipal inflation for 2012 came in at 2.76%, which is slightly lower than the 2.76% rate estimated at the beginning of 2012. This was mainly due to soft energy prices seen throughout 2012. The consumer inflation was 1.34% in 2012.

Municipal inflation is forecasted to be 2.94% in 2013, which is 0.57% higher than the estimated 2.37% consumer inflation. For the remainder of the forecast period, the MPI is estimated to range between 2.96% and 3.29%. Consumer inflation is expected to be between 2.20% and 2.09% over the same period. Consequently, municipal price index is forecasted to be between 0.76% and 1.20% higher than consumer price index over the period 2014 to 2016 (see Figure 3).

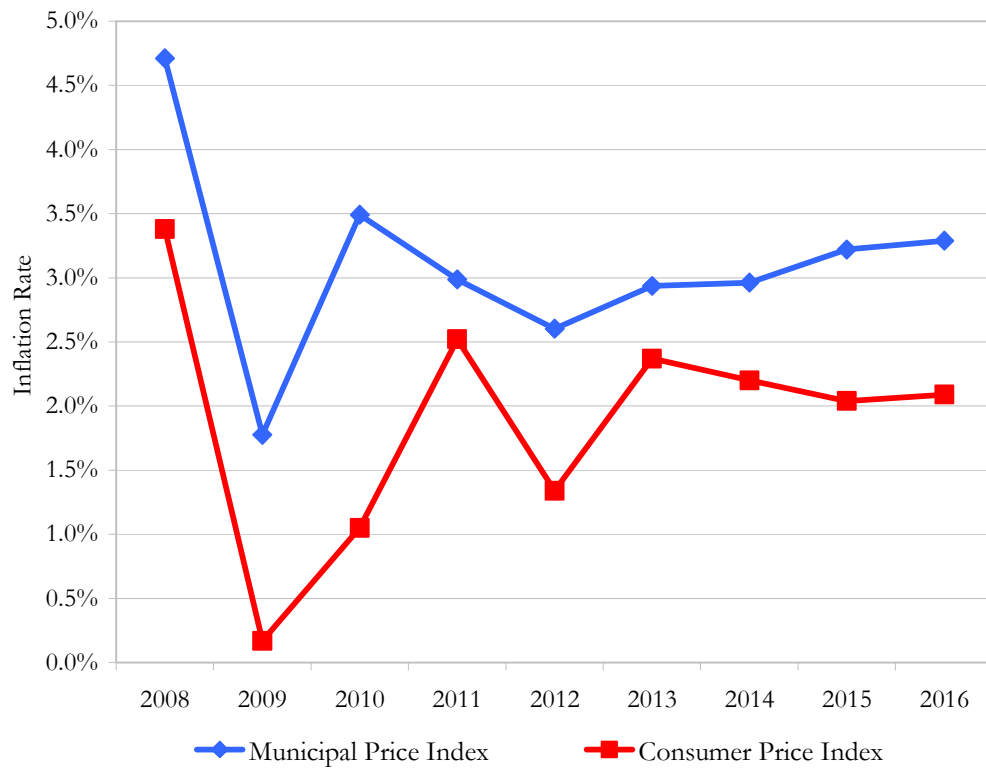
Figure 3: Municipal Price Index vs. Consumer Price Index

Table 2: City of Edmonton MPI

No.	Expenditure Category	Weight	Inflators for Each Expenditure Category								
			Actual					Forecast			
			2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Wages & Salaries	43.93%	4.92%	4.81%	4.74%	2.68%	3.08%	2.96%	3.26%	3.38%	3.28%
2	Employee Benefits	11.55%	3.08%	3.17%	3.25%	3.39%	3.31%	3.00%	3.26%	3.38%	3.28%
3	Equipment (Vehicles & Computers)	3.58%	4.37%	-3.43%	1.03%	4.64%	1.68%	4.63%	1.95%	2.29%	2.56%
4	Fuel	1.61%	37.06%	-29.36%	21.27%	21.17%	-10.63%	-0.40%	2.47%	7.85%	10.13%
5	Materials	3.77%	4.37%	-3.43%	1.03%	4.64%	1.68%	4.63%	1.95%	2.29%	2.56%
6	Natural Gas	0.64%	7.23%	-21.19%	-5.56%	-9.82%	-13.55%	-3.31%	4.95%	9.71%	11.01%
7	Utilities Total	2.06%	1.31%	-7.52%	5.32%	3.17%	-1.65%	0.24%	1.67%	2.22%	2.46%
8	External Space	1.13%	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
9	Grants & Board Requisition	8.23%	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
10	Land Cost	2.70%	-2.46%	-3.58%	3.03%	-1.42%	3.42%	2.00%	2.20%	2.04%	2.09%
11	Tax Adjustments & Concessions	1.29%	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
12	Other Expenses	3.86%	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
13	Other Financing	0.25%	4.73%	2.40%	2.60%	3.00%	3.00%	3.08%	3.69%	4.58%	5.58%
14	Travel & Training	0.52%	3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
15	Contract Services	8.25%	5.19%	2.59%	1.64%	2.36%	6.07%	4.11%	3.26%	3.38%	3.28%
16	Professional Services	1.19%	5.19%	2.59%	1.64%	2.36%	6.07%	4.11%	3.26%	3.38%	3.28%
17	Debt Service Total	5.44%	4.73%	2.40%	2.60%	3.00%	3.00%	3.08%	3.69%	4.58%	5.58%
		100.00%									
	Municipal Inflation		4.71%	1.78%	3.49%	2.99%	2.60%	2.94%	2.96%	3.22%	3.29%
	Consumer Inflation		3.38%	0.17%	1.05%	2.52%	1.34%	2.37%	2.20%	2.04%	2.09%
	Difference		1.33%	1.61%	2.44%	0.47%	1.26%	0.57%	0.76%	1.18%	1.20%

7.0 Critical Factors for Success

7.1 Use External Sources for Inflation Factors 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 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.

7.2 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 ensures that correct inflation factors—ones that accurately reflect inflationary pressures—are assigned to each expenditure category.

8.0 Beyond the Corporate Outcomes

The MPI is a powerful tool that measures the inflationary pressures that municipal operational expenditures face. The MPI can also 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.

9.0 Appendix 1: Sources for 2008–2016 Inflation Factors

No.	Expenditure Category	Inflation Factors	Source/Publisher
1	Wages & Salaries ⁷	1) Wage & Salary Settlements; 2) Wage Inflation Forecast, Alberta: Industrial Composite	1) City of Edmonton - Human Resources; 2) Conference Board of Canada
2	Employee Benefits ⁸	1) Labour Settlements; 2) Wage Inflation Forecast, Alberta: Industrial Composite	1) City of Edmonton - Human Resources; 2) Conference Board of Canada
3	Equipment (Vehicles & Computers)	Industry Product Price Index: Manufacturing	Conference Board of Canada
4	Fuel	Raw Materials Price Index: Crude Oil Forecast	Conference Board of Canada
5	Materials	Industry Product Price Index: Manufacturing	Conference Board of Canada
6	Natural Gas	Raw Materials Price Index: Natural Gas Forecast	Conference Board of Canada
7	Utilities ⁹	Electricity Power Price Index	Conference Board of Canada
8	External Space ¹⁰	CPI Forecast	Conference Board of Canada
9	Grants & Board Requisition	CPI Forecast	Conference Board of Canada
10	Land Cost ¹¹	1) Historical Average Housing Price; 2) Average Housing Price Forecast; 3) CPI Forecast	1) CREA Database; 2) REALTORS Association of Edmonton; 3) Conference Board of Canada
11	Tax Adjustments & Concessions	CPI Forecast	Conference Board of Canada
12	Other Expenses	CPI Forecast	Conference Board of Canada
13	Other Financing	Prime Lending Rate	Conference Board of Canada
14	Travel & Training	CPI Forecast	Conference Board of Canada
15	Contract Services	Wage Inflation Forecast, Alberta: Industrial Composite	Conference Board of Canada
16	Professional Services	Wage Inflation Forecast, Alberta: Industrial Composite	Conference Board of Canada
17	Debt Service Total ¹²	Prime Lending Rate	Conference Board of Canada

⁷ Inflation factors for 2008–2012 were derived from wage and salary settlements. For 2013, only certain unions have finalized settlements; for unions without finalized 2013 settlements, the Alberta industrial composite wage inflation forecast was used as proxy. For years 2014–2015, the Alberta wage inflation forecast was also used as proxy.

⁸ Inflation factors for 2008–2013 were derived from labour settlements. For years 2014–2016, the Alberta wage inflation forecast was used as proxy.

⁹ The Utilities expenditure category consists of power, water, telephones, sewer and waste, but it is largely comprises power. The Electricity Power Price Index is currently used as the inflation factor for Utilities. Research on alternatives continues, and this inflation factor will be replaced if a more suitable one is found. The Conference Board of Canada made some revisions to the Electricity Power Price Index in early 2013 to align this index with the structural revisions made to the Canadian System of National Accounts by Statistics Canada. As a result, the historical series has changed from the one used in estimating the 2012 MPI.

¹⁰ The CPI forecast is currently used as the inflation factor for External Space. Research on alternatives continues, and this inflation factor will be replaced if a more suitable one is found.

¹¹ Inflation factors for 2008–2012 were calculated using historical (2008–2012) average housing prices, taken from the Canadian Real Estate Association (CREA) database. The 2013 forecast of average housing price was taken from the REALTORS Association of Edmonton forecast, which was made available in a press release. The 2014–2016 forecasts do not yet exist, so CPI forecasts for these years were used as proxy. Research on a more suitable inflation factor is ongoing. If a better alternative is found for this expenditure category, the current inflation factors will be replaced.

¹² The movements in financing costs are expected to follow movements in the prime lending rate. Hence, the prime lending rate was used as the inflation factor for debt services. Research on a more suitable inflation factor is ongoing. If a more suitable alternative is identified, it will be replaced.