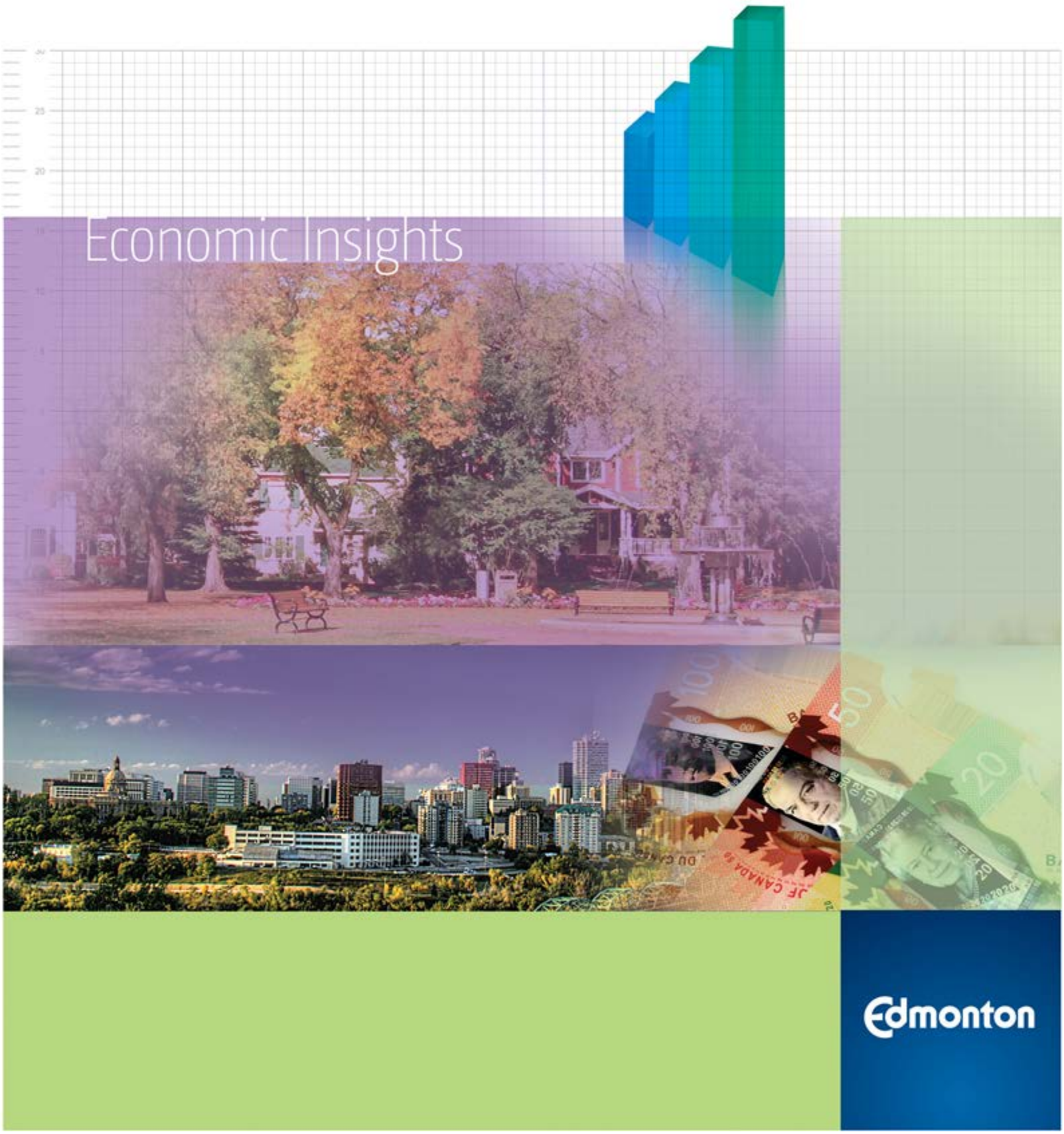
Neighbourhood Renewal Price Index
2017



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1.0 Executive Summary

The Neighbourhood Renewal Program is a cost-effective, long-term strategic approach to address infrastructure needs such as the renewal and rebuilding of roads, sidewalks and streetlights in existing neighbourhoods and collector roadways. Monitoring inflation facing the Neighbourhood Renewal Program is important for the City of Edmonton as it can have various effects on the year-to-year administration of the program as well as on the financial decision-making tied to its budgetary process.

Inflation is an increase in the price level of goods and services in an economy over an extended period of time. The Consumer Price Index (CPI), produced by Statistics Canada, measures the change in the price of a basket of goods and services consumed by an average customer. Although the CPI is the generally accepted measure of inflation, the City recognizes that it does not correctly represent the purchasing experience of the Neighbourhood Renewal Program.

Development of a Neighbourhood Renewal Price Index (NRPI) was undertaken as a means to measure inflation facing the Neighbourhood Renewal Program. The CPI represents the purchasing experience of the average consumer, whereas the NRPI represents the purchasing experience of the Neighbourhood Renewal Program.

Neighbourhood renewal price inflation was very volatile from 2009 to 2017. Prices were low in 2009 but began to rise rapidly in 2010 up to 2012 due to increased material and labour costs. However, this upward trend in prices changed to a downward trend in 2013 due to decreased material costs. In 2014, labour and material prices were lower compared to labour and material costs in 2013 due to the economic impact of collapsing oil prices.

At the time of the last report, neighbourhood renewal prices were estimated to fall by 0.85% in 2016. However, the actual 2016 year-end values showed that prices increased by 3.41% due to, in large part, a sharp rise in the cost of aggregate prices.

In 2017, neighbourhood renewal prices are estimated to increase by 5.82% while consumer prices are expected to increase by 1.70%—bringing the difference between the two inflation rates to 4.12 percentage points for 2017. A comparison of neighbourhood renewal and the consumer prices from 2009 to 2017 is shown in the table below.

Comparison of Neighbourhood Renewal and Consumer Inflation Rates 2009–2017[1]

	2009	2010	2011	2012	2013	2014	2015	2016	2017f
Neighbourhood Renewal Prices	-1.89%	0.83%	4.22%	7.04%	3.37%	-8.56%	1.43%	3.41%	5.82
Consumer Prices	0.16%	1.07%	2.52%	1.11%	1.26%	2.17%	1.21%	1.12%	1.70
Difference	**2.05%**	**-0.24%**	**1.70%**	**5.93%**	**2.11%**	**-10.73%**	**0.22%**	**2.29%**	**4.12**

[1] 2016 values are forecasts. 2009–2015 values are the actual rates experienced in those years.

2.0 Introduction

2.1 Neighbourhood Renewal

The Neighbourhood Renewal Program is a cost-effective, long-term approach to address Edmonton's neighbourhood infrastructure needs. It involves the renewal and rebuilding of roads, sidewalks and streetlights in existing neighbourhoods and collector roadways. The program balances the need to rebuild in some neighbourhoods with the need for preventive maintenance in others.

The types of neighbourhood renewal work vary depending on the state of infrastructure and include:

1. **Preventative maintenance** – roads are resealed to extend their lifespans.
2. **Overlay** – roads are repaved, and sidewalk panels are treated to eliminate trip hazards.
3. **Reconstruction** – roads are repaved, and streetlights and sidewalks are replaced.

By effectively combining reconstruction, overlay and preventative maintenance, the City of Edmonton can improve all of Edmonton's neighbourhoods within 30 years.

The costs of implementing the Neighbourhood Renewal Program have undergone considerable volatility in recent years. As such, a means to measure the inflation of neighourhood renewal costs was undertaken.

2.2 Understanding Inflation

Inflation is an increase in the price level of goods and services in an economy over a period of time. In essence, inflation means that as time passes, more money is required to purchase a particular good or service. 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, $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 approximately 2% per year. This monetary policy has been successful, and consumer inflation, as measured by the Consumer Price Index (CPI), has been, on average, stable at the national level.

The costs of implementing the Neighbourhood Renewal Program also face inflation. From year to year, a larger amount of expenditure is required by the City to purchase the same quantity of inputs necessary for neighbourhood renewal. However, because the basket of goods and services purchased by the Neighbourhood Renewal Program is considerably different than the basket of goods and services purchased by the average consumer, the CPI is not an adequate measurement of the inflation rate facing neighbourhood renewal. Moreover, the inflation rate facing the Neighbourhood Renewal Program tends to be higher and considerably more volatile than the rate facing the average consumer.

2.3 Developing A Neighbourhood Renewal Price Index

The development of the Neighbourhood Renewal Price Index (NRPI) was undertaken by a steering committee that comprises representatives from the Office of the Chief Economist and senior managers from Transportation Services. Prior to developing the NRPI, the Office of the Chief Economist constructed a Municipal Price Index (MPI). The MPI was designed to measure year-to-year inflation affecting the City's operating budget. The MPI does not, however, measure inflation for the City's capital projects. As a result, the NRPI project was launched with the specific goal to measure year-to-year inflation facing the Neighbourhood Renewal Program.

Measuring and understanding inflation is important as it affects both the planning and administering of municipal services. By understanding inflationary pressures, management can make informed decisions with respect to the Neighbourhood Renewal Program and strategically respond to external economic conditions.

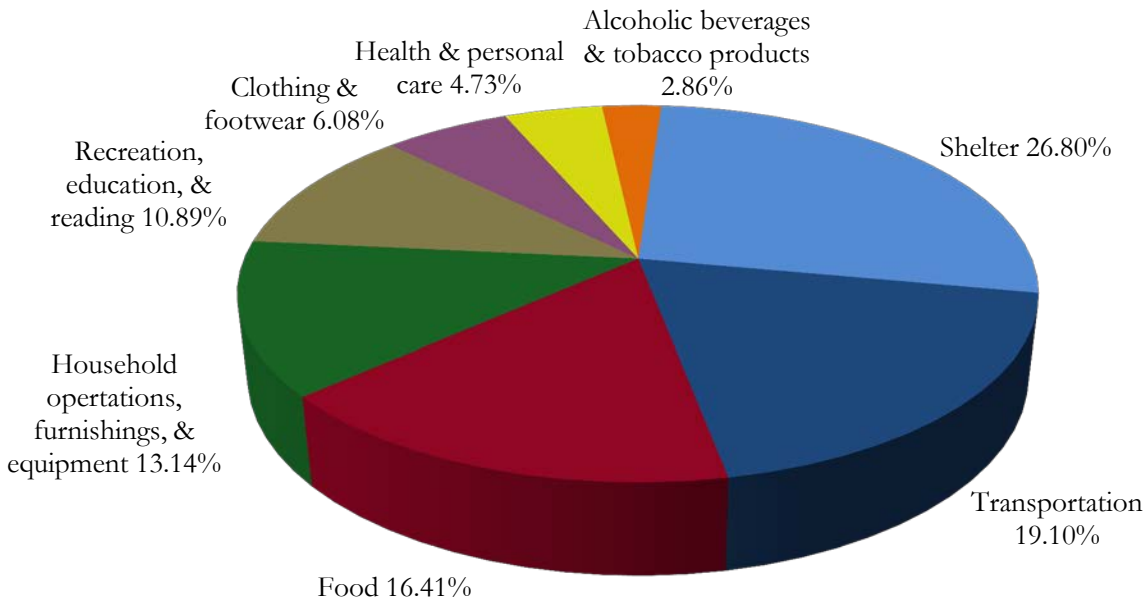
3.0 Consumer Price Index versus Neighbourhood Renewal Price Index

The Consumer Price Index (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: 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 the spending trends of Canadian consumers. For example, the proportion of the 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: 2013 CPI Weights of Major Components – Canada



[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 2013 CPI basket, the weight assigned to shelter is 26.80%, whereas the weight assigned to clothing and footwear is 6.08%. 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.

The CPI is a useful indicator of cost inflation because it is consistent, well known, published by a reputable independent organization and available free of charge. It is for these reasons that so many individuals and organizations use the CPI to measure inflation. However, the expenditure profile of the Neighbourhood Renewal Program is much different than the expenditure profile of the average consumer.

The average consumer spends money on food, housing, clothing, utilities and transportation, among other things. In contrast, the Neighbourhood Renewal Program spends money on asphalt, concrete, excavation work and so on. As the CPI does not reflect the purchasing patterns of this program, it is not an accurate indicator of the inflationary pressures that the Neighbourhood Renewal Program faces. The Neighbourhood Renewal Price Index, on the other hand, is an inflation measurement tool specifically tailored to reflect the cost pressures of the Neighbourhood Renewal Program.

4.0 Background to the Neighbourhood Renewal Price Index

The City of Edmonton's strategic plan, *The Way Ahead*, outlines the vision for Edmonton in 2040 and is to be implemented according to set corporate outcomes, performance measures and targets. One of the outcomes states: *"The City of Edmonton has a resilient financial position."*

This corporate outcome requires the City to demonstrate a commitment to well-managed, sustainable practices for infrastructure and approved programs. The development of the Neighbourhood Renewal Price Index (NRPI) is a means to achieve this outcome for neighbourhood renewal.

The concept of indexing municipal inflation 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 associated with the provision of municipal services. 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]

Since then, several Canadian municipalities have used the *American City and County* price index as a foundation to develop their own cost indices. The City has also developed its own MPI as a means to better monitor and manage the cost inflation facing its annual budgeting process for City operations.

The NRPI expands on the Municipal Price Index approach, tailoring it to the specific expenditures of the Neighbourhood Renewal Program. The NRPI can be used by the City of Edmonton to:

1. Measure the increase in the overall neighbourhood renewal expenditures attributed to inflation.
2. Allow managers to more closely monitor the increases in spending by construction category, thus making inflationary price increases or decreases more visible.
3. Provide an indication of the historical and current-year direction of prices relative to the City's neighbourhood renewal expenditures.
4. Justify and illustrate increased expenditures attributed to inflation in the capital budgeting process.

[3] American City and County. americancityandcounty.com

5.0 Methodology

The Neighbourhood Renewal Price Index (NRPI) follows the methodology employed by the City's Municipal Price Index. Its development involves determining:

1. The weights of construction categories within the Neighbourhood Renewal Program.
2. The weights of each construction category's factor inputs.
3. The appropriate inflation factor for each construction category's factor inputs.

Once the index has been collated with this data, the inflation affecting each construction category is calculated by summing every product of weight and inflation factor. The inflation rate for neighbourhood renewal is then calculated by summing the product of each construction category's weight and inflation rate.

5.1 Construction Categories and Weights

Administering the Neighbourhood Renewal Program involves seven broad categories of construction work.[4] These seven categories are as follows:

1. Asphalt
2. Base Work – Sidewalk
3. Base Work – Full-Depth Reclamation (FDR)
4. Concrete
5. Drainage/Underground
6. Excavation
7. Landscaping

Each type of construction work is attributed to a weight in relation to its proportion of the Neighbourhood Renewal Program's total cost. The weight of each construction category determines that category's relative impact on the inflation rate for neighbourhood renewal. The construction categories and weights were determined through industry consultation.

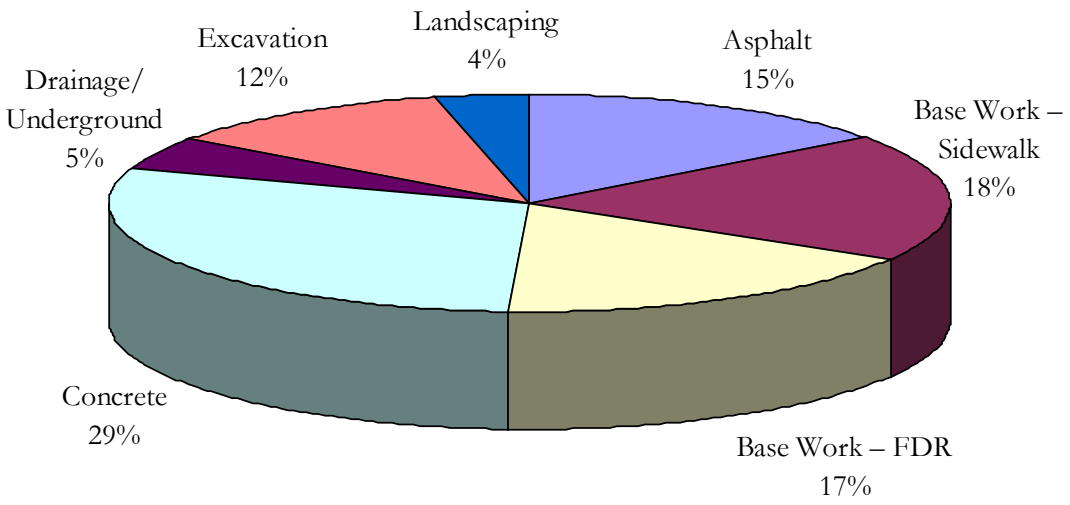
Table 1: Construction Categories and Weights for the Neighbourhood Renewal Program

No.	Construction Category	Weight
1	Asphalt	14.70%
2	Base Work – Sidewalk	19.00%
3	Base Work – Full-Depth Reclamation (FDR)	17.00%
4	Concrete	29.70%
5	Drainage/Underground	4.50%
6	Excavation	11.60%
7	Landscaping	3.50%
	Total	**100.00%**

[4] A full definition of each construction category is detailed in Appendix 1.

The following presents a diagrammatic depiction of the construction categories and associated weights for the Neighbourhood Renewal Program. As shown, concrete, base work and asphalt comprise the lion's share of construction work for a typical neighbourhood renewal project.

Figure 2: Construction Categories and Weights for the Neighbourhood Renewal Program



5.2 Factor Inputs and Weights

Each of the seven types of construction work listed in Table 1 is performed using three factor inputs. Factor inputs are the contributions that go into performing each type of construction, and the end product is the output of that construction category (for example, new asphalt, new sidewalks and new gutters). The three factor inputs used by each construction category are

1. Labour,
2. Equipment and
3. Materials.

Labour comprises operators and general labourers. The equipment used includes crawler pavers, pneumatic tire rollers and tandem-axel dump trucks, among others. The materials used are a combination of asphalt materials, concrete materials and aggregate materials.[5]

The factor inputs for each construction category are attributed to a weight in relation to their proportion of total category costs. The weight of each factor input determines the impact of a specific price change on the overall construction category. The factor inputs and weights were determined through consultation with industry partners.

[5] Appendix 2 provides definitions and a full breakdown of the factor inputs used.

Table 2: Factor Inputs and Weights for the Neighbourhood Renewal Program

No.	Construction Category	Factor Inputs			
		Labour	Equipment	Materials	Total
1	Asphalt	20%	20%	60%	100%
2	Base Work – Sidewalk	30%	30%	40%	100%
3	Base Work – Full-Depth Reclamation (FDR)	30%	30%	40%	100%
4	Concrete	50%	10%	40%	100%
5	Drainage/Underground	35%	40%	25%	100%
6	Excavation	50%	50%	0%	100%
7	Landscaping	45%	45%	10%	100%

Examining Table 2, we see that asphalt construction is materials heavy, consisting of 20% labour, 20% equipment and 60% materials. In contrast, landscaping is labour and equipment heavy, consisting of 45% labour, 45% equipment and 10% materials.

5.3 Inflation Factors

Once the construction categories, factor inputs and all weights were determined, the inflation factors were then calculated. Inflation factors indicate the year-to-year percentage change in the price of each factor input. The Alberta Roadbuilders and Heavy Construction Association (ARHCA) *2016 Force Account Rates* were used to populate the inflation factors for labour. Equipment inflation factors were calculated from the ARHCA *2016 Equipment Rental Rates Guide and Membership Roster*. The inflation factors for materials were determined by current contracts and expected price changes provided by the Materials Management branch of the City's Corporate Services Department. The inflation experienced each year was determined by calculating the price difference between the years.

5.4 Calculating Neighbourhood Renewal Price Inflation

The calculation for neighbourhood renewal price inflation is the average of each construction category's price change weighted by each construction category's proportion of total expenditure. The weights for construction categories indicate their size relative to total City expenditures made on neighbourhood renewal. Each construction category's price change is calculated by the weighted average of each factor input's price change. Using weights to construct the NRPI prevents overstating the influence of any given construction category.

Neighbourhood renewal price inflation, therefore, can be calculated using the following equation:

$$NRPI = X_1(W_1/W) + X_2(W_2/W) + \cdots + X_n(W_n/W) \quad [1]$$

where:

NRPI = Neighbourhood renewal price inflation
X_n = Price inflation for construction category *n*
W_n/W = Weight of construction category *n* in the City's Neighbourhood Renewal Program

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The price inflation for each construction category, X_n, is determined as follows:

$$X_n = Y_1(Z_1/Z) + Y_2(Z_2/Z) + \cdots + Y_m(Z_m/Z) \quad [2]$$

where:

X_n = Price inflation for construction category *n*
Y_m = Price change for factor input *m*
Z_m/Z = Weight of factor input *m* in the construction category *n*

Equations [1] and [2] can be combined and rewritten as follows:

$$NRPI = \sum_{i=1\ldots n}\left[\sum_{i=1\ldots m} Y_m(Z_m/Z)\right]_n (W_n/W) \quad [3]$$

Equation [3] produces a single inflation rate, which is the rate of cost increases facing the Neighbourhood Renewal Program for the year being examined.

6.0 The City of Edmonton's Neighbourhood Renewal Price Index

The inflation/deflation facing the Neighbourhood Renewal Program is shown in Table 3. The inflation rates for the years 2009 to 2016 represent the *actual* inflation rates experienced over that period, whereas the inflation rate for 2017 represents the *expected* price renewal inflation to occur over the current year.

The NRPI index is updated annually, generally during the first quarter of the year. The update to the index involves revising the previous year's update values to reflect *actual* inflation and adding the forecasted inflation rates for the current year. This NRPI report includes revisions to the 2016 inflation rate to reflect the actual rates and the forecasted inflation rate for 2017.

Neighbourhood renewal prices experienced a price deflation in 2009, decreasing by 1.89%. Following a modest increase of 0.83% in 2010, price pressures facing the Neighbourhood Renewal Program started to accelerate again. In 2011 and 2012, neighbourhood renewal prices started to rise peaking at 7.04% in 2012. Thereafter, in 2013 neighbourhood renewal prices increased modestly, compared to 2012, by 3.37% due to lower than expected material prices.

Neighbourhood renewal prices deflated significantly in 2014 by 8.56%. Mid-year 2014, global oil prices begun to drop impacting regional economic conditions. As a result the cost of materials in 2014 was low compared to previous years. In 2014, labour cost increased however not enough to offset the decline in material costs.

Neighbourhood renewal prices increased in 2015 by 1.43% which was higher than the estimated value of a drop in neighbourhood renewal prices by 4.08%. This was due to much higher than expected material costs while labour costs remained at 2014 levels. Meanwhile, consumer prices as measured by the consumer price index increased by 1.22% in 2015. In 2016 the NRPI accelerated to 3.41% as a result of an unexpected rise in aggregate prices.

Based on actual labour cost, 2017 equipment cost information and estimated material costs, neighbourhood renewal prices are forecasted to increase by 5.82% in 2017. This higher forecasted value for NRPI is driven almost solely by a forecasted continuation of aggregate prices over the course of 2017. Consumer prices are estimated increase 1.70% over the same period.

Figure 3 shows the neighbourhood renewal price inflation and consumer price inflation rates from 2009 to 2017. The figure shows that, historically, the neighbourhood renewal price inflation rate has been volatile and also – on average - higher than the consumer price inflation rate except for 2009 and 2014.

Figure 3: Neighbourhood Renewal Price Inflation versus Consumer Price Inflation[6]

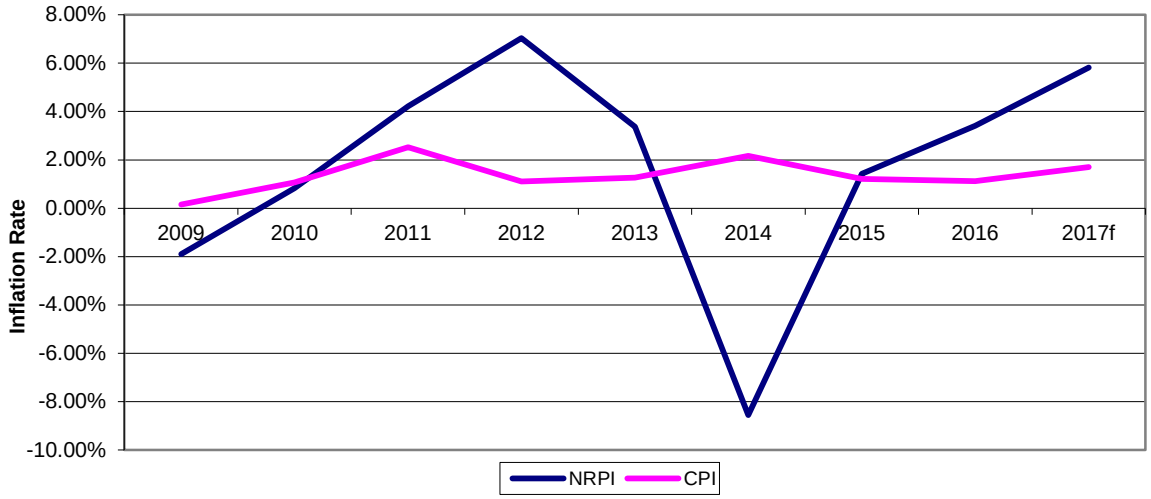

Table 3: City of Edmonton Neighbourhood Renewal Price Index[7]

No	Construction Category	Weight	Inflation Rates							
			2010	2011	2012	2013	2014	2015	2016	2017f
1	Asphalt	14.70%	-5.00%	4.42%	5.13%	0.69%	2.41%	0.69%	-0.10%	0.01%
2	Base Work – Sidewalk	19.00%	-3.52%	5.57%	10.58%	3.65%	-25.31%	0.90%	-6.59%	14.65%
3	Base Work – Full-Depth Reclamation	17.00%	-1.91%	4.96%	12.16%	4.31%	-25.24%	0.90%	7.89%	14.65%
4	Concrete	29.70%	6.53%	3.23%	3.06%	3.87%	2.71%	2.53%	1.08%	0.00%
5	Drainage/Underground	4.50%	-0.87%	3.81%	9.02%	4.46%	-15.71%	1.05%	5.42%	9.15%
6	Excavation	11.60%	5.00%	3.67%	5.64%	3.47%	2.00%	1.37%	1.37%	0.00%
7	Landscaping	3.50%	2.75%	3.27%	6.63%	2.59%	-4.83%	1.36%	3.10%	3.66%
		100.00%								
	Neighbourhood Renewal Price Inflation		**0.83%**	**4.22%**	**7.04%**	**3.37%**	**-8.56%**	**1.43%**	**3.41**	**5.82%**
	Consumer Price Inflation		**1.07%**	**2.52%**	**1.11%**	**1.26%**	**2.17%**	**1.21%**	**1.12%**	**1.70%**
	Difference		**-0.24%**	**1.70%**	**5.93%**	**2.11%**	**-10.73%**	**0.22%**	**2.29%**	**4.12%**

[6] 2016 values are forecasts. 2009–2016 values are the actual rates experienced in those years.

[7] 2016 values are forecasts. 2009–2016 values are the actual rates experienced in those years.

7.0 Appendix

7.1 Appendix 1: Construction Category Definitions

No.	Construction Category	Definition
1	Asphalt	The top layer of road structure consisting of oil, aggregate and binder.
2	Base Work – Sidewalk	The substructure of a sidewalk consisting of aggregate, cement and/or soil cement.
3	Base Work – Full-Depth Reclamation (FDR)	The substructure of a roadway consisting of aggregate, cement and or/soil cement. Full-Depth Reclamation is the use of existing road base in the construction of new road base.
4	Concrete	A major component of cement-incorporated work consisting of curb and gutter, sidewalk, moonwalk lane crossings, etc.
5	Drainage/Underground	The underground component of a roadway structure associated with drainage pipes, manholes, catch basins and associated work.
6	Excavation	Roadway-associated work consisting of removal and disposal of existing soils, existing concrete, asphalt and other roadway-associated materials.
7	Landscaping	Roadway-associated work consisting of sod, black dirt and associated landscaping features.

7.2 Appendix 2: Detailed Breakdown and Definitions of Factor Inputs

No.	Component	Definition	Inputs Used
1	Labour	The productive services provided by people.	General labourers (foremen, lead hands, formsetters, concrete finishers, raker people, screed people, pipe layers, pipe layer helpers, grade people, labourers and flag people) and operators (journeymen, group 1, group 2, group 3 and group 4).
2	Equipment	The machinery used to perform the construction work.	Crawler pavers, pneumatic tire rollers, double-drum steel rollers, tandem-axel dump trucks, pneumatic steel combinations, loaders–rubber tires, loaders–skid steers, reclaimers/stabilizers, single-drum padfoots, single-drum smooth–vibratory, motor graders, loaders–backhoes, hydraulic excavators and water trucks.
3	Materials	The physical materials that are used in construction.	Asphalt material (ACR, ACB, ACO, 10mm sandmix), concrete (class C summer mix, class C fall mix, class C cold weather mix) and aggregate (12.5mm, 20mm, 63mm recycled).

7.3 Appendix 3: Detailed Breakdown and Definitions of Factor Inputs

No.	Construction Category	Component	Inputs Used	Data Source
1	Asphalt	Labour	Combined general labourer and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Crawler Pavers (Groups 3 & 4) Pneumatic Tire Rollers (Groups 5 & 6) Double Drum Steel Rollers (Group 4) Tandem Axel Dump Trucks	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Asphalt material (ACR, ACB, ACO, 10mm sandmix)	City of Edmonton Materials Management - Corporate Services
2	Base Work - Sidewalk	Labour	Combined general labourer and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Crawler Pavers (Groups 3 & 4) Pneumatic Tire Rollers (Groups 1 & 2) Loaders-Rubber Tires (Group 5) Loaders-Skid Steers (Group 4)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Aggregate Supply (12.5mm, 20mm, 63mm recycled)	City of Edmonton Materials Management - Corporate Services
3	Base Work – Full-Depth Reclamation (FDR)	Labour	Combined general labourer and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Reclaimers/Stabilizers (Group 5) Pneumatic Tire Rollers (Groups 5 & 6) Single Drum Padfoots (Groups 4 & 5) Single Drum Smooth – Vibratory (Groups 4 & 5) Loaders – Rubber Tires (Group 5) Motor Graders (Groups 3 & 4)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Aggregate Supply (12.5mm, 20mm, 63mm recycled)	City of Edmonton Materials Management - Corporate Services

4	Concrete	Labour	Combined general labourer and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Crawler Pavers (Groups 3 & 4) Loaders – Skid Steers (Group 4)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Concrete Supply (Class C summer mix, Class C fall mix, Class C cold weather mix)	City of Edmonton Materials Management - Corporate Services
5	Drainage/ Underground	Labour	Combined general labourer and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Tandem Axel Dump Trucks Loader Backhoes (Groups 3 & 4)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Aggregate Supply (12.5mm, 20mm, 63mm recycled)	City of Edmonton Materials Management - Corporate Services
6	Excavation	Labour	Operator rate (journeyman, Group 1, Group 2, Group3, Group 4)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Tandem Axel Dump Trucks Hydraulic Excavators (Group 5, 6 & 9)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
7	Landscaping	Labour	Combined general labour and operator rate	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Force Account Rates – City of Edmonton Labour Rates
		Equipment	Loaders – Skid Steer (Group 4) Tandem Axel Dump Truck Water Trucks (8.422 – 16.380L)	Alberta Roadbuilders & Heavy Construction Association (ARHCA) 2016 Equipment Rental Rates Guide and Membership Roaster
		Materials	Aggregate Supply (12.5mm, 20mm, 63mm recycled)	City of Edmonton Materials Management - Corporate Services