

General Committee

Date

June 27, 2018

Time

9:00 A.M.

Location

Council Chamber

2nd Floor

300 City Centre Drive

REMOVAL OF DEPUTATION

- 5.5 Kevin Sherwin, Chair of the Board of Directors and Douglas Markoff, Executive Director of the Riverwood Conservancy regarding an update on the Riverwood Conservancy and Grant

ADDITIONAL DEPUTATIONS

- 5.7 Item 8.10 David Wojcik, President & CEO, Mississauga Board of Trade

ADDITIONAL CORPORATE REPORT

- 8.26 Annual Report on Electricity and Natural Gas Procurement for 2017

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City of Mississauga
Corporate Report



Date: 2018/06/04

To: Chair and Members of General Committee

From: Gary Kent, CPA, CGA, Commissioner of Corporate Services and Chief Financial Officer

Originator's files:

Meeting date:
2018/06/27

Subject

Annual Report on Electricity and Natural Gas Procurement for 2017

Recommendation

That the Corporate Report titled "Annual Report on Electricity and Natural Gas Procurement 2017", dated June 04, 2018, from the Commissioner, Corporate Services and Chief Financial Officer be received for information.

Report Highlights

- The goal of the electricity and natural gas procurement strategies is to mitigate the risk of price volatility and optimize the cost of the City's electricity and natural gas.
- Fixed Price Contract (Hedging) is a method of managing the electricity and gas price volatility.

Electricity

- The total cost for electricity, inclusive of street lighting, for the City of Mississauga in 2017 was \$15,050,000 before taxes.
- All electricity accounts are reviewed annually to ensure the most appropriate billing method is selected for each account. The billing method is decided based on the volume of electricity used as well as the load profile of each account. As part of the 2017 electricity procurement strategy, 57 accounts were transferred from hourly Spot Market billing (including Pass-Through contract) to Time of Use billing. The avoided costs for this change for the City was \$16,125 in 2017.
- The current market conditions and offerings don't favour hedging, therefore this strategy was not considered in 2016 or 2017.
- With the 'Fair Hydro Plan' still in effect, no significant changes will be made in 2018 to the City's electricity billing strategy.

Natural Gas

- The total cost for natural gas for the City of Mississauga in 2017 was \$2,390,000 before taxes.
- In 2017, the City reduced the amount of natural gas purchased on Fixed Price contracts from 50% of its requirements in 2016, to 20% for December only.
- Purchasing more gas on Spot Market pricing gave the City \$79,350 in avoided costs as compared to the 2016 strategy.
- For 2018, with lower rates and lower volatility expected in the market, the City will purchase its entire natural gas requirement for April to October on Spot Market pricing.

Background

This Report is being provided to General Committee as required by Corporate Policy # 03-06-07 on Procurement of Electricity and Natural Gas. The Policy states that electricity and natural gas procurement will be undertaken in a manner that endeavours to balance the need to achieve the lowest cost with the need for price stability.

To assist in developing the City's electricity and natural gas procurement strategy, the City hired E2 Energy (subject matter expert) to provide advice on supplier contracts, identifying market opportunities, providing the City with market updates and ongoing advice and support as required.

The Policy also requires that the Commissioner of Corporate Services and CFO provide a report to Council, on an annual basis that contains the information provided in this Report.

Comments

Electricity

There are 3 major costs associated with Electricity use for the City:

- **Commodity/Supply** – The cost of purchasing the electricity from a Generator, Retailer, or the Local Distributing Company (LDC).
- **Global Adjustment** – Charge which includes compensation to Ontario Power Generation when market prices fall below an agreed base price but also the recovery of premium that the Province pays towards green power generation projects and conservation programs.
- **Regulated Charges** – Costs to deliver the electricity from the Generator to the LDC (Transmission) and from the LDC to the end user (Distribution).

This report will discuss the first two bullets as regulated charges are fixed costs and are not subject to commodity purchasing strategy.

In an effort to identify the most suited electricity procurement strategy which best optimizes the City's electricity cost and reduces the risk of adverse price movement, the City analyzes the previous year's strategy performance, the market conditions, new regulations and available procurement options offered by the LDC.

All electricity accounts (273 in 2017) are reviewed every year to determine if the most appropriate billing method is selected for each account. The billing method is decided based on the volume of electricity used as well as the load profile of each account. Currently the City uses the following methods:

- Regulated Price Plan: Time of Use (ToU) and Tiered, and
- Non-Regulated Price Plan: Spot Market and Pass-Through

A description of each billing method is provided in Appendix 1.

2017 Electricity Strategy vs. 2016

The 2017 and 2016 electricity procurement strategies are summarized in the table below.

| Year | Regulated Price Plan (RPP) | | Non-Regulated Price Plan (Non-RPP) | | Total Accounts |
|------|----------------------------|--------|------------------------------------|--------------|----------------|
| | ToU | Tiered | Spot | Pass Through | |
| 2016 | 146 | 26 | 48 | 57 | 277 |
| 2017 | 199 | 26 | 48 | 0 | 273 * |

* Four accounts were closed/discontinued in late 2016/early 2017

The changes in 2017 strategy vs. 2016 were driven by the Province's 'Fair Hydro Plan' (Ontario Rebate for Electricity Consumers Program) where Time of Use rates were lowered significantly beginning in May of 2017. The reductions ranged from 11.5% for Off-Peak rates, to 14.4% for Mid-Peak rates, as compared to the May 2016 to April 2017 rates.

With the lower rates, the City moved all of its smaller accounts which were being billed through the Pass-Through contract onto the Time of Use billing method. The Table below shows the number of accounts that were moved from the Pass-Through contract to Time of Use billing, and the avoided costs that were realized.

| 2016 | 2017 | Count | Predicted Avoided Cost | Avoided Cost |
|--------------|------|-------|------------------------|--------------|
| Pass-Through | ToU | 57 | \$14,300 or higher | \$16,125 |

In total, the avoided costs in 2016 from changing the billing strategy of these accounts was \$16,125.

Hedging – a procurement strategy known to manage the price volatility was not considered for the City’s electricity purchase since 2004 when Global Adjustment was introduced. The reason for this is that retailers are currently only offering contracts to cover Hourly Ontario Electricity Price (HOEP) portion of the Spot Market, and not the Global Adjustment. As the HOEP currently only makes up about 15% of the Spot Market pricing, a hedge would still leave a majority of the City’s electricity exposed to the volatility of the Global Adjustment.

2018 Electricity Strategy

With the continuation of the ‘Fair Hydro Plan’, no major changes are anticipated for the billing strategies for the City accounts.

As part of the Industrial Conservation Initiative (I.C.I) program, eligible consumers (1 MW average annual demand) can choose on how they are billed for Global Adjustment: based on their percentage contribution to the top five peak Ontario demand hours (Class A), or based on kilowatt hours used (Class B). Currently all City accounts are Class B. However, with the new lowered threshold of 1 MW, the Mississauga City Hall account can opt to switch to class A.

The two options, Class A and Class B, were reviewed again this year, and it appears more beneficial from a cost perspective for the City Hall account to remain on the Class B structure. The avoided costs for the City by maintaining this strategy is estimated to be between \$6,600 to \$12,200 per year over changing to Class A.

The Class A versus Class B option will be reviewed each year.

Natural Gas

There are 3 major costs associated with Natural Gas use for the City:

- Commodity/Supply – The cost of purchasing the physical gas from a supplier
- Transportation – The costs associated with moving the purchased gas from the point of purchase to the Local Distributing Company (LDC)
- Regulated Charges – Costs to deliver the gas from the LDC to the end user.

This report will discuss the first two bullets as regulated charges are fixed costs and are not subject to commodity purchase strategies.

Similar with electricity, the procurement strategy for gas aims to mitigate budget volatility while maintain an optimal cost for gas over time.

There are 3 representative strategies for commodity procurement:

- 100% Fixed Price (Hedge)
- 0% Fixed (100% Index or Spot Market)
- Blended strategies (a combination of the 2 above)

Statistics show that a 100% Fixed Price strategy lowers volatility but produces the highest prices. The 100% Index achieves the lowest price but with significantly greater volatility relative to other strategies.

Blended solutions have proved in many cases to reduce the budget volatility without sacrificing the lower price potential.

The City used Blended strategies for both 2016 and 2017 with a term-layered approach which involves a series of multiple hedges of varying durations and varying end-dates. This is a more opportunistic approach to ever-changing market conditions. A summary of the strategy used in 2016 and 2017 is presented in the table below.

It should be noted that the decision to purchase different blocks of gas was based on the information at the time of purchase and the recommendations provided by E2 Energy (subject matter expert), engaged by the City to advise on commodity procurement.

| Year | Procurement Method | Period | Duration | Amount (% of total volume) | Volume of Natural Gas |
|--------------------|--------------------|----------------|------------------|----------------------------|-----------------------|
| 2016 | Hedging (contract) | Jan-Mar | 3 Months | 75% | 160,200 GJ |
| | | Apr-Oct | 7 Months | 50% | |
| | | Dec | 1 Month | 50% | |
| | Daily Priced Index | Jan-Mar | 3 Months | 25% | 161,573 GJ |
| | | Apr-Oct | 7 Months | 50% | |
| | | Nov | 1 Month | 100% | |
| | | Dec | 1 Month | 50% | |
| 2016 Totals | | Jan-Dec | 12 Months | 100% | 321,773 GJ |

| Year | Procurement Method | Period | Duration | Amount (% of total volume) | Volume of Natural Gas |
|--------------------|--------------------|----------------|------------------|----------------------------|-----------------------|
| 2017 | Hedging (contract) | Jan-Mar | 3 Months | 50% | 41,425 GJ |
| | | Dec | 1 Month | 20% | |
| | Daily Priced Index | Jan-Mar | 3 Months | 50% | 267,245 GJ |
| | | Apr-Oct | 7 Months | 100% | |
| | | Dec | 1 Month | 80% | |
| 2017 Totals | | Jan-Dec | 12 Months | 100% | 308,670 GJ |

Review of Natural Gas Strategy for 2016 and 2017

In 2016 the City was advised to engage a hedge for the winter period – December 2016 through to March, 2017, based on an anticipated upward movement in gas rates and the at the time, low natural gas price. This advice was reiterated for the winter season 2017-2018. The City engaged in a series of hedges for budget stability as shown in the table above.

Forecast and Presumptions

The Main contributing factors causing a forecasted upwards gas price pressure:

1. Storage Level – Normal
No major changes to storage levels were predicted for 2017.
2. Production Levels – Normal
Overall production was expected to remain consistent to 2016.
3. Demand – Increased
Increase demand for gas was expected due to factors such as: increased interest in Liquefied Natural Gas proven by the high number of applications, and coal generation in the U.S. planning to be retired in 2016/17 and replaced with natural gas generation.
4. Weather – Winter was forecasted to be normal
5. Others
 - a. Pipeline infrastructure still the same with new and expanded pipelines under construction. Volatility in prices during the periods of peak demand will continue to exist until the upgrade of the piping infrastructure is completed.
 - b. The nature of the market is for the gas to flow to where the prices are most attractive which would be towards the U.S. northeast, which is one of the highest prices natural gas markets in North America. This will put pressure on prices here to remain competitive with the general market.

Based on these factors the forecasted gas rate was in the range of \$2.60 to \$3.05 per GJ in 2017 which denoted a mild level of price volatility supporting the decision to hedge for budget stability during winter months only.

Actual Conditions

As shown below, most of the factors expected to create an upwards pressure on natural gas prices never materialized.

1. Storage Levels – Normal
Average natural gas storage level greater than previous season due to abundant gas supply and sustained production.
2. Production Levels – Normal

Production levels increased marginally in 2017 over 2016 levels in Canada. In the U.S., production levels increased even more (5.3%).

3. Demand – Modest growth

Natural gas demand experienced modest growth in both Canada and the U.S.

4. Weather – The winter of 2017 could be classified as a somewhat normal winter. The average winters would result in normal demand on natural gas for heating leaving.

5. Others

a. Declining U.S. natural gas imports – The rising production in the U.S. was better able to supply the U.S. demand, reducing the requirement to import Canadian gas. This would put lowered demand on Canadian gas.

b. Modest economic growth.

As noted in the above table, in the winter period for 2016/17 the City purchased on average 50% of its natural gas requirements on a fixed price contract, with the remaining 50% at the Spot Market. At the time of the purchase, natural gas rates were low and were forecasted to increase in 2017. The intent behind the purchase was to take advantage of what were then historically low prices and to protect against the projected price increases. However, due to a warmer than expected winter and high supply, market prices did not increase as predicted.

Because of this, it was decided to reduce the volume of the City's natural gas on a fixed rate, and increase the percentage on the Spot Market. For the winter of 2017-2018, the City purchased approximately 20% of its natural gas requirements on a fixed price contract, with the remaining half at variable Spot Market prices.

With the average Spot Market rates even lower in 2017 than in 2016, by reducing the portion of City gas on fixed contracts, and increasing the percentage at Spot Market pricing, the City avoided about \$79,350 in costs in 2017.

| | |
|---|-----------|
| Actual 2017 Natural Gas commodity costs - Jan-Mar: 50% Contract / 50% Spot prices - Apr-Nov: 100% Spot prices - Dec: 20% Contract / 80% Spot prices | \$743,400 |
| 2017 Natural Gas Commodity costs at 2016 Strategy - Jan-Mar: 70% Contract / 30% Spot prices - Apr-Oct: 50% Contract / 50% Spot prices - Nov: 100% Spot prices - Dec: 50% Contract / 50% Spot prices | \$822,750 |
| Avoided Cost | \$79,350 |

Transportation

In 2016 and 2017 the City purchases its natural gas from suppliers located in Alberta. In order to move the gas from the supplier to the end use location, the City was required to purchase capacity in the pipelines, or 'Transportation', from either a supplier, or from the TransCanada Pipeline (TCPL). For both periods the City purchased its Transportation requirements from the TCPL. Beginning November, 2017, the City began purchasing its natural gas from Dawn (a closer supply hub). Below are the Transportation costs the City paid for its natural gas:

| | |
|------|-----------|
| 2016 | \$677,800 |
| 2017 | \$662,550 |

2018 Strategy

During fiscal year 2018, the City hedged 20% of its requirements for the period of January 1st to March 31st, 2018. The remaining 80% was purchased on the daily Spot Market. The decision to buy the full requirement on the Spot Market from April to at least October 31st has been based on lower forecasted index prices, healthy supply forecasts and as supported by an expectation of lower volatility for remainder of the fiscal period. This should allow the City to avail itself of lower expected Index-based commodity prices during a period of expected limited volatility.

Financial Impact

With the adjustments to the 2016 electricity and natural gas procurement strategies to remove several electricity accounts from the Pass-Through contracts, and buying a larger percentage of natural gas on the Spot Market, the City was able to avoid an estimated \$95,475 (\$16,125 in electricity, \$79,350 in natural gas) in costs for 2017.

Conclusion

This report provides an overview of the changes in electricity and natural gas procurement strategy used in 2017 as compared to 2016, and the resulting avoided costs. Additionally, it describes the approach being followed in 2018.

The City proactively monitors electricity and natural gas markets conditions and takes appropriate procurement decisions to maximize benefit to the energy portfolio.

Attachments

Appendix 1: Electricity Commodity Billing Method Description

A handwritten signature in black ink that reads "G. Kent." with a period at the end.

Gary Kent, CPA, CGA, Commissioner of Corporate Services and Chief Financial Officer

Prepared by: Daryl Martin, Energy Management Coordinator, Facilities and Property Management

Appendix 1: Electricity Billing Methods Description

- | | |
|-----------------------|---|
| Time of Use (ToU) | <ul style="list-style-type: none"> - A Regulated Price Plan rate which varies according to the time of day the power is used. ToU rates are broken down into 3 categories: On Peak (most expensive), mid-Peak, Off-Peak (least expensive). The schedule for each category varies by season. ToU rates are advantageous for accounts where a significant portion of electricity is used during off-peak hours. |
| Tiered | <ul style="list-style-type: none"> - A Regulated Price Plan, with 2 tiered fixed rates, where a lower rate applies to the first 750kWh of consumption and a higher rate is charged for consumption beyond 750 kWh. Tiered rates are economical for City's small accounts (lower consumption) |
| Spot Market | <ul style="list-style-type: none"> - A non-Regulated Price Plan. Customers pay the Hourly Ontario Electricity Price (HOEP) based on the hourly rate and their consumption during that hour. The HOEP rate varies hourly depending on supply, demand, and other economic factors. On top of the hourly rate, customers also have to pay the Global Adjustment (GA) charge. Large customers, who use 250,000 kWh or more each year, are billed on the Spot Market by the utility automatically. Generally, the Spot Market rates are higher than ToU during Off-Peak hours, but less expensive during On-Peak. For accounts that have large consumption where a majority is used during the On-Peak hours, the Spot Market would be more cost effective. |
| Pass Through Contract | <ul style="list-style-type: none"> - Pass Through Contracts are similar to Spot Market except that the accounts are less than 250,000 kWh per year. Below that threshold, the customer is required to sign up with a retailer if they wish to be billed on the Spot Market. Signing an account up with a retailer usually involves an additional fee. |

Note:

Regulated Price Plans are reviewed and approved by the Ontario Energy Board (OEB). Regulated Price Plan rates are set for a given period of time.

Non-Regulated Price Plans are not approved by the OEB, but rather are determined by market conditions on an hourly basis.