

City of Mississauga
Corporate Report



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| <p>Date: February 14, 2023</p> <p>To: Chair and Members of General Committee</p> | <p>Originator's files:</p> |
| <p>From: Raj Sheth, P. Eng, Acting Commissioner of Corporate Services</p> | <p>Meeting date: March 8, 2023</p> |

Subject

Annual Report on Commodity Price Hedging Agreements for 2022 (Electricity and Natural Gas)

Recommendation

That the Corporate Report dated February 14, 2023 entitled "Annual Report on Commodity Price Hedging Agreements for 2022 (Electricity and Natural Gas)", from the Commissioner, Corporate Services be received for information.

Report Highlights

- The Ontario Regulation 653/05 "Debt-related financial instruments and financial agreements" under Municipal Act 2001 as it pertains to Commodity Price Hedging Agreements, requires that municipalities adopt a statement of policies and goals relating to the use of financial agreements to address commodity pricing and costs before the municipality enters into commodity price hedging agreements. City of Mississauga adopted Corporate Policy #03-06-07 Procurement of Electricity and Natural Gas. This report is to satisfy the requirements of this Policy.
- 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 natural gas price volatility.
- The total cost of electricity for the City of Mississauga in 2022 was \$12,665,702 (1.76% tax included). The market conditions and offerings did not favour hedging for electricity; therefore, this strategy was not considered in 2022.
- The total cost of natural gas for the City of Mississauga in 2022 was \$4,345,833 (1.76% tax included). The City entered into a hedging agreement for 184,625 GJ (61%) of the

total natural gas requirements of 300,652 GJ for 2022, which was based on SME's advice as natural gas prices were forecasted to increase. The total avoided costs as a result of the blended hedge is \$249,376 compared to purchasing 100% of the quantity at market pricing.

- The City entered into a hedging agreement for 219,450 GJ (69%) of the total natural gas requirements of 319,172 GJ for 2023, which was based on SME's advice as natural gas prices are forecasted to increase.
- Moving City Hall to Class A for Global Adjustment in 2023 is expected to reduce electricity costs by \$82,570 to \$182,620 per year.

Background

This Report is being provided to General Committee as required by Corporate Policy # 03-06-07 on Commodity Price Hedging Agreements on 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 Jupiter Energy Advisors Inc. (Subject Matter Expert) as an energy consultant for natural gas procurement and WattsWorth Analysis Inc. as an energy consultant for electricity procurement. They are hired to advise on supplier contracts and market opportunities and to provide the City with ongoing market updates 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. Global Adjustment can be either Class A, Class B or embedded in the commodity rates for small accounts.

- Regulated Charges – Costs to deliver the electricity from the Generator to the LDC (Transmission) and from the LDC to the end user (Distribution) in addition to fixed connection and administrative fees.

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.

Hedging is a procurement strategy known to manage the price volatility. Hedging 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 the Hourly Ontario Electricity Price (HOEP) which is the commodity portion of the electricity price, and not the Global Adjustment. As the HOEP currently makes up 48% of the pricing, a hedge would still leave a portion of the City's electricity exposed to the volatility of the Global Adjustment.

The City also monitors Electricity accounts type. There are 321 electricity accounts in the City that can be divided into two main categories:

- Small accounts (less than 50 kW, Residential and Small Commercial):
Commodity rates for these accounts are regulated and can be either Time of Use (ToU) or Tiered price plans. There are 258 accounts in this category but they only represent around 13% of the annual electricity cost of the City. The City recently changed 9 of these accounts from Tiered to Spot and 1 account from Tiered to ToU as they are better suited for the load profiles.
- Large account (50 to 499 kW, 500 to 4999 kW and Street Lighting):
The City has 63 accounts in this category representing 87% of the annual electricity cost. Electricity rates for these accounts are based on Spot Market Rates (Hourly Ontario Energy Price – HOEP) and; for the majority of them; Global Adjustment Class B rates. The City has the option to select Global Adjustment Class A if the demand of the account is more than 1,000 kW. This allows the City to potentially save on Global Adjustment charges by curtailing demand during peak periods. In 2022, the optimal option was to remain Class B due to uncertainty associated with the impact on the load profile.

2023 Strategy

With HOEP (i.e. index rates) currently averaging about 4.71 cents per kWh year-to-date, the Global Adjustment (5.34 c/kWh) still makes up a higher share of the City's electricity charge (10.05 c/kWh). As such, no hedging is currently suggested as part of the procurement strategy for 2023; however, should market conditions continue to trend towards higher HOEP share and the risk of higher index price volatility increases, the strategy will be revisited.

For 2023, the more beneficial option from a cost perspective for City Hall for 2023 was to opt in for ICI Class A. The avoided cost for the City to elect this option is estimated to be between \$82,570 to \$182,620 over remaining in Class B. The Class A versus Class B option will be reviewed each year.

The City will continue to monitor all large accounts and select the optimum strategy for each one as performance, eligibility criteria and requirements change over time.

Natural Gas

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

- Commodity/Supply – The cost of purchasing the physical natural gas from a supplier.
- Transportation – The costs associated with moving the purchased natural gas from the point of purchase to the Local Distributing Company (LDC) at Dawn (Ontario). If natural gas is purchased directly at Dawn the transportation cost becomes embedded in the commodity price.
- Regulated Charges – Administrative charges and costs to deliver the natural gas from the LDC to the end user and the Federal Carbon Charge.

This report refers to the first two bullet points. Regulated charges are set by the Ontario Energy Board (OEB) or the Federal government and are not subject to commodity purchase strategies.

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

There are three representative strategies for commodity procurement:

- 100% Fixed Price (Hedge);
- 0% Fixed (100% Index or Spot Market);
- Blended strategies (a combination of the two strategies).

Statistics show that a 100% Fixed Price strategy lowers volatility but produces the highest prices. The 100% Index achieves the lowest price but with greater volatility relative to other strategies. Blended strategies provide a compromise between price and volatility. Hedging contracts are offered for fixed terms. Typical terms include Winter Hedges (November to March) and Annual Hedges (November to October).

The City used Blended strategies in the past years and the City did pursue purchasing 61% of the required quantity on fixed price contracts (hedging). The decision was taken after reviewing historical market conditions and the future forecasted trends of the factors that impact natural gas prices. The City also reviewed hedging scenarios received from Jupiter Energy Advisors

Inc. (Subject Matter Expert) and a summary of the purchase strategy used in 2022 is presented in the table below.

Table 1: Natural Gas 2022 Procurement Strategy

| Year | Procurement Method | Period | Duration | Amount (% of total volume) | Volume of Natural Gas |
|--------------------|----------------------------|----------------|------------------|----------------------------|-----------------------|
| 2022 | Hedging (contract) at Dawn | Jan-Jun | 6 Months | 50% | 184,625 GJ |
| | | Jul-Oct | 4 Months | 75% | |
| | | Nov-Dec | 2 Months | 67% | |
| | Daily Priced Index at Dawn | Jan-Jun | 6 Months | 50% | 116,027 GJ |
| | | Jul-Oct | 4 Months | 25% | |
| | | Nov-Dec | 2 Months | 33% | |
| 2022 Totals | | Jan-Dec | 12 Months | 100% | 300,652 GJ |

It should be noted that the decision to engage in different purchase strategies of natural gas is always based on the information available at the time and the recommendations provided by the SME engaged by the City to advise on commodity procurement.

Review of Natural Gas Strategy for 2022

The following hedging scenarios were analysed for 2022 natural gas purchasing:

Table 2: Natural Gas 2022 Procurement Scenarios

| Date of Analysis | Scenario | Percentage of Hedging | Duration | Cost Compared to No-Hedging Scenario (Benefit) | |
|-------------------------|-------------------|-----------------------|------------------|--|------------------|
| | | | | Forecasted Index Price | High Index Price |
| Aug 2021 | Winter Hedge | 50% | Nov 21 to Mar 22 | (\$13,563) | (\$34,527) |
| Mar 2022 | Hedging 12 Months | 50% | Apr 22 to Mar 23 | (\$2,600) | (\$229,900) |
| | Hedging 19 Months | 50% | Apr 22 to Oct 23 | (\$2,600) | (\$264,600) |
| Jun 2022 | Hedging 9 Months | 25% | Jul 22 to Mar 23 | \$21,200 | (\$197,300) |
| | Hedging 21 Months | 25% | Jul 22 to Mar 24 | \$46,400 | (\$256,100) |
| Dec 2022 | Hedging 12 Months | 44% | Apr 23 to Mar 24 | (\$19,100) | (193,100) |
| RiskSensor Model | | | | 10% | 90% |

In March 2022, based on SME's advice the City entered a hedging agreement for 12 months as the RiskSensor Model analysis shown above indicated that all hedging scenarios would result in avoided costs.

In June 2022, SME's analysis indicated high price volatility due to the explosion at a Texas LNG plant which at the time caused prices to increase significantly. Hence, additional hedging options were pursued at the time the forecasts were presented.

In December 2022, a combination of colder than normal weather forecasts and the anticipated higher exports due to the resumption of the Texas LNG plant indicated that prices were going to increase into 2023. Based on the SME's advice the City entered into a hedging agreement as the analysis showed the proposed hedging scenario would result in avoided costs.

Forecast and Recommendations

Natural gas prices are impacted by supply and demand factors. To anticipate natural gas prices, volatility and evaluate hedging options, the following factors were reviewed in 2022:

Storage – Low

- Storage levels were slightly below the 5 year average levels.
- Storage levels were expected to fall further behind the 5 year average by the end of 2022.

Production Levels – Normal

- Production increased to pre-pandemic levels and expected to increase only gradually through the remainder of 2022 into 2023.

Demand – Normal to High

- Natural gas exports increased significantly from 2021 to 2022 and are expected to grow again from 2022 to 2023.
- Domestic use was expected to increase due to nuclear capacity going offline and natural gas being used to backfill it.

Weather

- Weather forecasts indicated colder than normal winter conditions for the remainder of 2022 going into 2023.

An analysis of the above factors at the time indicated that the risk of volatility is high and that the index prices would maintain recent variable trends.

Implemented Actions

- In the first quarter of 2022, the City entered into a hedge agreement for 50% of its natural gas requirements on a fixed price contract for the period April 2022 to March 2023, with the remaining 50% at index pricing.
- In the second quarter of 2022, the City entered into another hedge agreement for 25% of its natural gas requirements on a fixed price contract for the period July 2022 to March 2024.

- In the last quarter of 2022, the City entered into another hedge agreement for 44% of its natural gas requirements for the period April 2023 to March 2024.
- There was no need for separate transportation charges as they were embedded in the commodity price.
- Hedging in 2022 resulted in \$249,376 in avoided costs as compared to purchasing 100% of the quantity at market pricing.

Actual Conditions

The actual market conditions were disturbed by the tight supply and demand balance that impacted the majority of the world in 2022 due to ongoing geopolitical conditions. The impact on natural gas prices was unprecedented volatility that resulted in higher prices over 2022 due to the following reasons:

Storage –Low to Normal

- Lower than normal storage at the end of 2022 compared to the 5 year average.

Production – Low to Normal

- The production has increased to pre-pandemic levels but still lower than the 5 year average production levels.

Demand – Normal to High

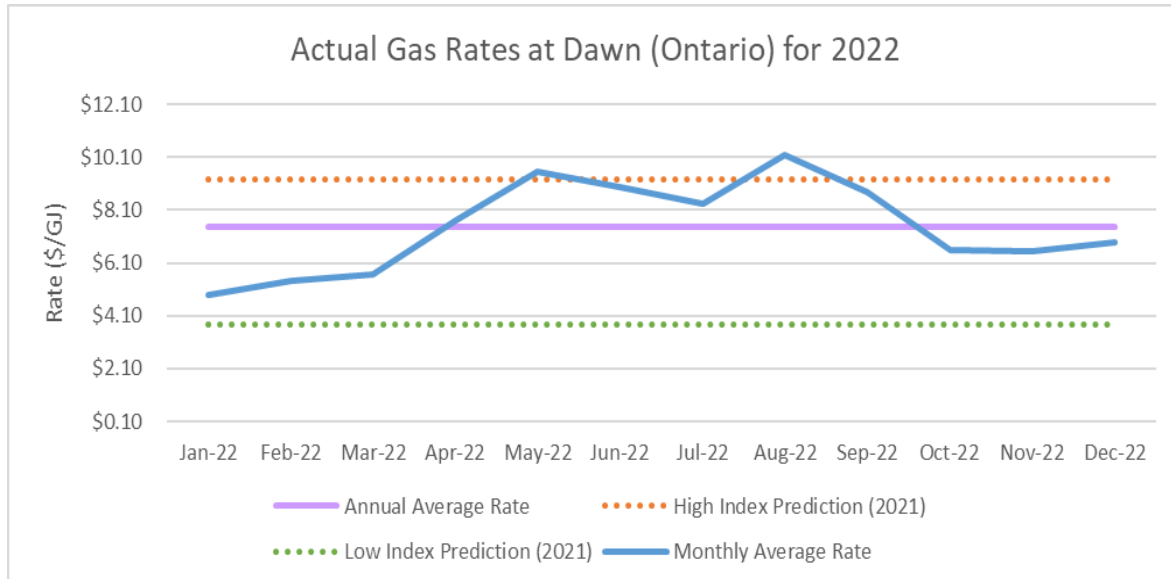
- Liquefied Natural Gas (LNG) exports grew significantly between 2021 and 2022.
- Domestic use increased due to nuclear capacity going offline and natural gas being used to backfill it.

Weather

- Relatively mild summer and a moderate beginning to the heating season helped reduce the demand for natural gas in 2022.

Actual Results

- The annual average of the monthly rate that the City paid for natural gas delivered to Dawn (transportation included) was \$7.452/GJ.
- The average monthly rates had an increasing trend at the start of 2022 then significantly increased following March 2022 until October 2022 when prices started to stabilize. The variation was around 20% on average from the mean where the monthly rates ranged between \$3.770/GJ and \$9.280/GJ.
- Figure 1 below depicts the monthly variation in rates which were within the prediction limits identified in 2021 until September 2022 when rates exceeded the high case index prediction.

Figure 1: Actual 2022 Natural Gas Rates at Dawn

As can be seen above, the impact of the pandemic on supply and demand factors and geopolitical factors caused unusual volatility in the second quarter of 2022 and pushed the prices towards and above the high case index projection into the third quarter of 2022. The 2022 purchase strategy provided the intended budget stability and resulted in approximately \$249,376 in avoided costs as compared to purchasing 100% of the quantity on market pricing.

2023 Strategy

For the period from November 2022 to October 2023 period the following factors were reviewed in 2022 to anticipate natural gas prices, volatility, and evaluate hedging options:

Storage – Low

- Storage levels were slightly below the 5 year average levels.
- Storage levels were expected to fall further behind the 5 year average by the end of 2022.

Production Levels – Normal

- Production increased to pre-pandemic levels and expected to increase only gradually through the remainder of 2022 into 2023.

Demand – Normal to High

- Natural gas exports are expected to grow again from 2022 to 2023.
- Domestic use is expected to decrease slightly in 2023 due to recessionary expectations.

Weather

- Weather forecasts indicated colder than normal winter conditions for the remainder of 2022 going into 2023.

Given the above factors and the unprecedented natural gas prices in 2022 and market volatility the City entered into hedging agreements as noted above.

Financial Impact

In 2022, the City achieved the intended utility budget stability with hedging. Although November and December are considered part of the 2023 purchasing strategy, the hedging options selected resulted in 2021 and 2022 resulted in \$249,376 in avoided costs for the calendar year.

Conclusion

This report provides an overview of the electricity and natural gas procurement strategy used in 2022 and the results of the strategy. Additionally, it presents the approach to be followed in 2023.

The City proactively monitors electricity and natural gas markets conditions and takes appropriate procurement decisions in order to mitigate the risk of price volatility and optimize the cost of the City's utilities.



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