City of Mississauga

Corporate Report

MISSISSAUGA

11.4

Date: January 31, 2022	Originator's files:
To: Chair and Members of General Committee	
From: Shari Lichterman, CPA, CMA, Commissioner of Corporate Services and Chief Financial Officer	Meeting date: February 23, 2022

Subject

Annual Report on Commodity Price Hedging Agreements for 2021 (Electricity and Natural Gas)

Recommendation

That the Corporate Report dated January 31, 2022 entitled "Annual Report on Commodity Price Hedging Agreements for 2021 (Electricity and Natural Gas)", from the Commissioner of Corporate Services and Chief Financial Officer be received for information.

Executive Summary

- 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 gas price volatility.
- The total cost of electricity for the City of Mississauga in 2021 was $12,377,336 (1.76% tax included). The market conditions and offerings did not favour hedging for electricity; therefore, this strategy was not considered in 2021.
- The total cost of natural gas for the City of Mississauga in 2021 was $2,627,603 (1.76% tax included). The market conditions and offerings did not favour hedging for natural gas for the first 10 months of 2021; however, based on Subject Matter Experts' advice, the City entered into a winter hedging agreement for the remaining two months as prices were forecasted to increase.

- The winter hedging agreement is in effect for the first three months of 2022; however, no feasible hedging options were recommended for the remainder of 2022 as no favourable benefit to cost ratios were presented. This decision will be re-visited if the market conditions change and feasible hedging options become available.

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 energy consultants. They were 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 three 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 – is the component that covers the cost of building new electricity infrastructure in the province, maintaining existing resources, as well as providing conservation and demand management programs. Global Adjustment can be either Class A, Class B or embedded in the commodity rates for small accounts.
- Other Regulated Charges – Costs to deliver the electricity from the Generators 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 SMEs.

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. For the first half of 2021 HOEP made up 18% of the Spot

Market pricing on average and a hedge would have left a majority of the City's electricity exposed to the volatility of the Global Adjustment. However, during the second half of 2021 HOEP made up 37% of the Spot Market pricing on average. Should market pricing continue on this trajectory of increasing HOEP share of the Spot Market price then the purchasing strategy will be revisited.

The City also monitors electricity accounts type. There are 310 electricity accounts in the City that can be divided into two main categories:

- Small accounts (less than 50kW, 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 238 accounts in this category but they only represent around 12% of the annual electricity cost of the City. The City continuously monitors the optimal price plan for each account and switches between ToU and Tiered based on load profiles. No accounts had their price plans changed in 2021.

- Large account (50 to 499 kW, 500 to 4999 kW and Street Lighting):
  The City has 72 accounts in this category representing 88% 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 2020, this was the selected option for City Hall (Class A); however, in 2021 the optimal option was to switch back to Class B due to the COVID-19 shutdowns' impact on City Hall's load profile. The City will continue to monitor all large accounts and select the optimal strategy for each account as performance eligibility criteria and requirements change over time.

2022 Strategy

With HOEP (Hourly Ontario Energy Price) (i.e. index rates) currently averaging about 3.56 cents per kWh year-to-date, the Global Adjustment (4.90 c/kWh) still makes up a higher share of the City's electricity charge (8.46 c/kWh). As such, no hedging is currently suggested as part of the procurement strategy for 2022; 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.

Natural Gas

There are three 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) at Dawn (Ontario). If gas is purchased directly at Dawn the transportation cost becomes embedded in the commodity price.

- Regulated Charges – Administrative charges, costs to deliver the 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 gas aims to mitigate budget volatility while maintaining an optimal cost for gas over time.

There are three representative strategies for commodity procurement:

1) 100% Fixed Price (Hedge);
2) 0% Fixed (100% Index or Spot Market);
3) 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 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; however, for the majority of 2021 the City did not purchase any 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 gas prices at the time. For the winter period (November 1, 2021, to March 31, 2022) the City entered into a blended hedging agreement where 50% of the quantity is supplied at a fixed price at Dawn. A summary of the purchase strategy used in 2021 is presented in the Table 1.

Table 1: Natural Gas 2021 Procurement Strategy

Year	Procurement Method	Period	Duration	Amount (% of total volume)	Volume of Natural Gas
2021	Hedging (contract) at Dawn	Jan-Oct	10 Months	0%	24,705 GJ
		Nov-Dec	2 Months	50%	
	Daily Priced Index at Dawn	Jan-Oct	10 Months	100%	284,679 GJ
		Nov-Dec	2 Months	50%	
	2021 Totals	**Jan-Dec**	**12 Months**	**100%**	**309,384 GJ**

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

Review of Natural Gas Strategy for 2021

The following hedging scenarios were analysed for 2021 natural gas purchasing:

Table 2: Natural Gas 2021 Hedging Scenarios

				Cost compared to No-Hedging Scenario (Benefit)		
Date of Analysis	**Scenario**	**Percentage of Hedging**	**Duration**	**Low Index Price**	**Middle Index Price**	**High Index Price**
Sept 2020	Hedging 12 Months	55%	Nov 20 to Oct 21	$166,725	$258	($266,089)
Sept 2020	Hedging 12 Months + Winter Hedge	65%	Nov 20 to Oct 21 + Nov 20 to Mar 21	$207,904	$13,891	($296,531)
Aug 2021	Winter Hedge	50%	Nov 21 to Mar 22	$61,278	$13,563	($34,527)
Indicative Probability of Occurrence				**15%**	**55%**	**30%**

As can be seen from Table 2, all hedging scenarios would result in additional costs if the prices were around the middle of the forecast range or below. The prices have a combined probability of 70% to fall in that range. The City would only save if prices were towards the higher end of the forecast range. The September 2020 forecast indicated low price volatility for 2021; however, in an August 2021 update, market conditions indicated that prices were projected to increase over the winter months. Hence, a winter hedge option at 50% was presented and pursued.

Forecast and Recommendations

Gas prices are impacted by supply and demand factors. To anticipate gas prices, volatility and evaluate hedging options, the following factors were reviewed in the third quarter of 2020:

Storage – Normal to High

- Levels of natural gas in storage were projected to remain above average into early 2021.

Production Levels – Low to Normal

- Production were declining into the latter half of 2020 with a slow recovery into 2021.

Demand – Low to Normal

- Natural gas exports and domestic demand were projected to decline in the third quarter of 2020, with a slow recovery afterwards in 2021.

Weather

- Weather forecasts at the time indicated warmer temperatures in 2021.

An analysis of the above factors indicated that the risk of volatility is low and that the index prices would maintain recent trends. Additionally, no feasible hedging option was available at that time and the decision was made to purchase the entire City gas quantity at index price without any hedging for period from November 2020 to October 2021.

Implemented Actions

- The entire natural gas quantity for the period from November 2020 to October 2021 was purchased at Index price at Dawn (Ontario).
- There was no need for separate transportation charges as they were embedded in the commodity price.
- November and December of 2021 were hedged which resulted in $7,428 in avoided costs as compared to purchasing 100% of the quantity at market pricing.

Actual Conditions

The COVID-19 Pandemic broadly strained the world's supply chains. On the other hand, the reopening of certain sectors caused demand to return to near normal levels in 2021. The impact on natural gas prices has been marked up due to the following reasons:

Storage – Below Normal

- Storage injections lagged but improved through the late summer and fall of 2021; inventories are expected to remain below normal through the remainder of the year.

Production – Low to Normal

- The pandemic impacted gas production, delayed projects and reduced rig counts that did not recover to pre-pandemic levels until mid-year 2021.

Demand – High

- Although domestic demand returned to near normal in 2021, natural gas exports saw record levels, as world-wide requirements for Liquefied Natural Gas (LNG) accelerated.

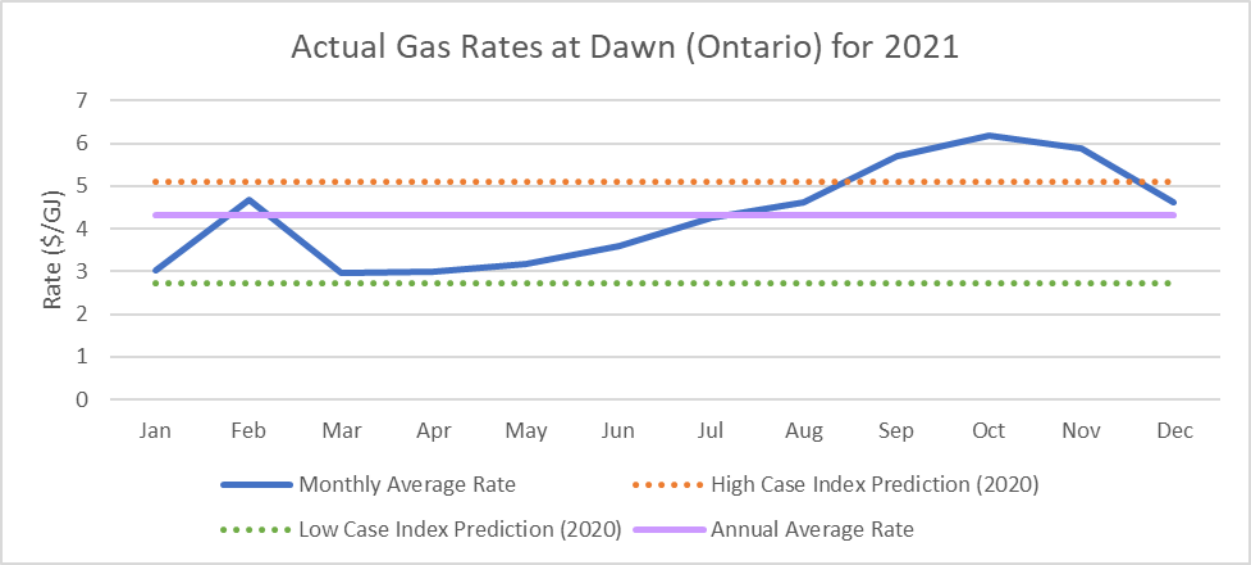
Weather

- A mostly typical year was offset by a mild fall; with an expected transition to normal or slightly warmer start to winter.

Actual Pricing

- The average monthly rate that the City paid for gas delivered to Dawn (transportation included) was $4.309/GJ.
- The average monthly rates had high volatility at the start of 2021 then stabilized with an increasing trend. The variation was around 23% on average from the mean where the monthly rates ranged between $2.966/GJ and $6.173/GJ.
- Figure 1 below depicts the monthly variation in rates which were within the prediction limits identified in 2020 until September 2021 when rates exceeded the high case index prediction.

Figure 1: Actual 2021 Gas Rates at Dawn



As can be seen from the above, the impact of the pandemic on supply and demand factors caused unusual volatility at the beginning of the year and then pushed the prices towards and above the high case index projection in the second half of 2021. Although not all projections materialized due to changes in the natural gas markets, the 2021 purchase strategy provided the intended budget stability and resulted in $7,428 in avoided costs as compared to purchasing 100% of the quantity on market pricing.

2022 Strategy

For the November 2021 to October 2022 period the following factors were reviewed in the third quarter of 2021 to anticipate gas prices, volatility and evaluate hedging options:

Storage – Below Normal

- Storage levels are projected to improve but persist near or slight below average into 2022.

Production Levels – Normal to High

- Production levels are expected to remain flat through first half of 2022, but more noticeably increase by mid-year.

Demand – Normal to Above Normal

- Domestic use is expected to be normal, however exports are expected to be substantially above prior years.

Weather

- An expected “El-Nina” year would bring more precipitation and might invoke much colder temperatures in western and warmer temperatures in eastern North America.

Given the above factors and the increasing trend in gas prices observed in the second half of 2021, a 50% Winter Hedge (November 2021 to March 2022) was recommended by the SME. The City entered a hedging agreement for 50% of gas requirements for winter at $4.935/GJ delivered at Dawn (transportation included). For the remainder of the year no hedging was purchased; however, this decision will be re-visited as market conditions change and feasible hedging options become available.

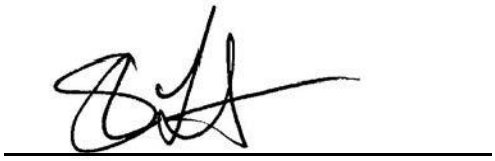
Financial Impact

In 2021, the City achieved the intended utility budget stability without the need for hedging except for November and December with natural gas. Although November and December are considered part of the 2022 purchasing strategy, the hedging option selected resulted in $7,428 in avoided costs in 2021.

Conclusion

This report provides an overview of the electricity and natural gas procurement strategy used in 2021 and the results of the strategy. Additionally, it presents the approach to be followed in 2022.

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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