City Auditor's Office

Hedging Audit (Foreign Exchange and Fuel)

July 8, 2016

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Executive Summary

Between January 1, 2015 and March 31, 2016, The City of Calgary (The City) purchased goods and services in foreign currency totaling $65M and commodities totaling over $157M[1]. These types of commitments potentially expose the City to currency exchange and market price volatility. Defined hedging practices can effectively mitigate price exposure providing The City improved budget certainty and protection of cash flows.

The objective of this audit was to evaluate the effectiveness of foreign exchange (FX) and fuel hedging processes and practices in achieving budget stability. We assessed compliance with the Chief Financial Officer's Department Hedging FX Purchases Policy (FX Policy) and the Fuel Hedging Committee Calgary Transit Terms of Reference (Fuel TOR), and reviewed transactions for contracts signed between January 1, 2015 and March 31, 2016. We also benchmarked City practices with good practices[2] from three Canadian municipalities to identify opportunities to further mitigate budget uncertainty and price exposure risks.

Based on our review of hedging good practices and current City policies and practices, we view The City as taking a conservative approach to hedging. We noted that many Canadian municipalities have established hedging policies to address aggregate exposure and utilize both physical and financial hedges. However, The City does not have a commodity hedging policy that applies to fuel, electricity and natural gas and the Fuel TOR focuses solely on physical hedges of Transit's diesel consumption. In addition, the FX Policy focuses on exposure at a Purchase Order (PO) transaction level. During times of price stability, a conservative approach may be effective, however, given recent market volatility, and anticipation of increased investment in capital projects and energy demands, a re-evaluation of the current risk mitigation strategy is prudent. We recommend a strategic review which also includes consideration of adopting hedge policies to address the aggregate impact of payables, risk tolerances based on aggregate exposure, and establishment of risk thresholds and limits based on spot prices and analysis of anticipated trends.

We determined the FX Policy and practices are well established and controls are in place, and effective in both Treasury and Supply to ensure transactions are conducted in compliance with policy. However, the FX Policy is prescriptive with all FX transactions over US$250K or €150K requiring hedging without considering risk limits based on FX trends and historical rates. Although Treasury may also support Business Units (BUs) to determine a hedging strategy for FX transactions under the threshold, there is no process in place to consider the exposure that exists prior to the approval of a PO. Projects that contain FX exposure are at risk of going over budget between the time of project budget approval and approval of the PO.

Under the Fuel TOR and practices, which were recently implemented in March 2015, hedges are achieved through the physical delivery of diesel at a locked-in price and an agreed delivery date (physical hedging). However, the strategy and current practices are not fully effective in providing corporate budget certainty since hedging takes place for Transit's diesel consumption only and not for other BUs or fuel types, leaving approximately 8M litres of diesel and 11M litres of gasoline unhedged for the audit period, and subject to market price volatility.

[1] Electricity, Diesel, Natural Gas, Unleaded Gasoline
[2] Techniques or methodologies that, through experience and research, have proven to produce superior results.

In addition, we raised recommendations to address the following improvements to controls and policies:

- The percentage of Transit's diesel hedged was not consistent with the Fuel TOR strategy. Fuel hedging activities should be monitored and exceptions approved.
- The FX Policy should define the timing to book FX hedging deals after a PO is communicated to Finance.
- The FX Policy and Fuel TOR should establish thresholds and limits for counterparty risk exposure and selection process.
- The FX Policy and Fuel TOR should set requirements to monitor and report on hedging effectiveness.

Finance agreed with our recommendations on both strategic considerations and existing policy and control improvements and has committed to implementation dates no later than October 31, 2017. The City Auditor's Office will follow-up on all commitments as part of our ongoing recommendation follow-up process.

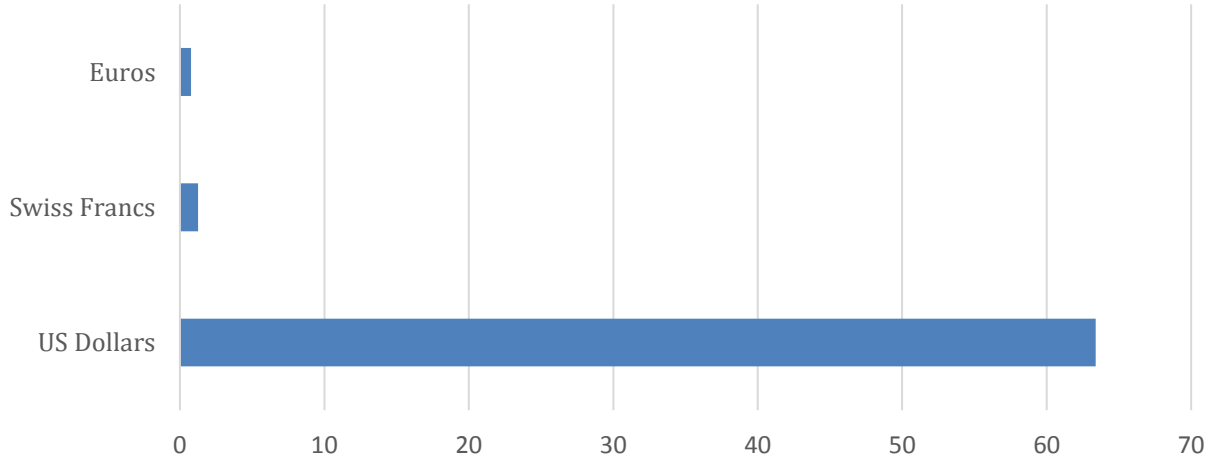
1.0 Background

The City engages in significant foreign exchange (FX) and commodity purchases (approximately $65M[3] and $157M[4] respectively from January 1, 2015 to March 31, 2016) as part of its regular operations and capital projects. This results in exposure to FX and commodity market price volatility. In addition, The City is preparing for future capital projects that may involve foreign suppliers and purchases in foreign currencies. Hedging is a risk mitigation strategy used to reduce The City's exposure to market price volatility on transactions paid in foreign currencies and on commodity supplies.

Foreign Exchange Purchases

The City pays for goods and services in foreign currencies, primarily US dollars. When the value of a foreign currency relative to the Canadian dollar is volatile, significant unforecasted budget variances may result. Chart 1 shows the amount of purchases in foreign currency from January 1, 2015 to March 31, 2016:

Chart 1 – Purchases in Foreign Currency ($M)



Source: FX Hedge Report & PeopleSoft

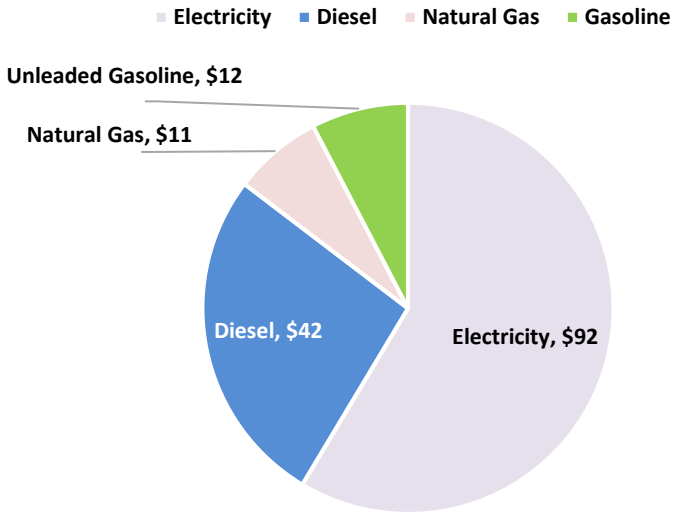
The Chief Financial Officer's Department developed the Hedging Foreign Exchange Purchases Policy (FX Policy) to define the business rules for hedging of FX purchases. Hedging is used to offset the risks associated with the possible change in value of foreign currency during the time when the funds are committed (i.e. when the Purchase Orders (PO) are communicated to Treasury) and when they are paid. Under the FX Policy, The City hedges any foreign currency procurement requirements in excess of US$250K or €150K based on the PO. Treasury purchases the foreign currency according to the cash flow schedule for payments against the PO. Hedging is achieved through the purchase of forward contracts or spot purchases of foreign currency. For the audit period, 85% of the total purchases in foreign currency were hedged.

[3] Canadian dollars based on the Bank of Canada's average FX rate.
[4] Based on Fuel Forecast Report & Interviews with Fuel Hedging Committee

Commodity Purchases

The City purchases fuel (unleaded gas and diesel), as well as other commodities (electricity and natural gas) that are exposed to market price volatility as outlined in chart 2:

Chart 2- Consumption per Commodity ($M)[5]

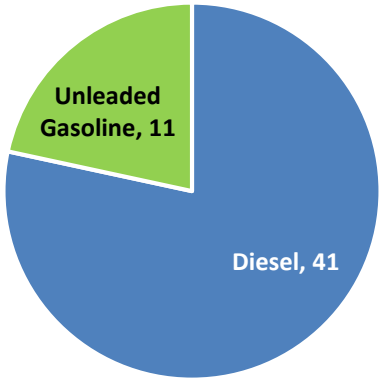


Source: Fuel Forecast Report & Interviews with Fuel Hedging Committee

Electricity prices are secured through a 20-year contract signed with the City's wholly-owned subsidiary that expires in 2026. The City has entered into a natural gas retail agreement that expires in 2017. The agreement provides The City with the option of locking in the price of all or a portion of the natural gas purchases. There is no overall City commodity hedging policy.

For the audit period, The City consumed both unleaded gasoline and diesel as detailed in chart 3:

Chart 3 - Consumption per Fuel Type (M Litres)

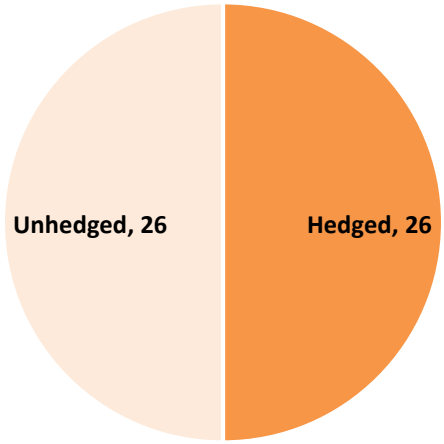


Source: Fuel Forecast Report & Interviews with Fuel Hedging Committee

[5] $157M for the period January 2015 to March 2016

The Finance and Transit BUs, and the Supply[6] division created a Fuel Hedging Committee (Committee). The Committee developed the Fuel Hedging Committee Calgary Transit Terms of Reference (Fuel TOR) to manage Transit's fuel procurement and price volatility as it relates to the yearly budget in March 2015. Transit is responsible for approximately 80% of The City's total diesel consumption. Fuel procurement is managed through hedging future volumes not to exceed 12 months in advance on a rolling calendar and 80% of the usage forecast. The Committee meets quarterly, at a minimum, to monitor diesel and unleaded gas prices and makes the decision to purchase diesel volumes for future delivery at locked in prices. Price, fuel type, delivery dates, and volumes to be hedged are to be determined based on pre-determined criteria summarized in The City of Calgary Fuel Strategy Chart (Fuel Strategy Chart) that takes market price and budget into consideration. Hedging is achieved by entering into contracts for the physical supply of diesel at a fixed price (physical hedging). The City hedges Transit's diesel consumption only. No hedging takes place for diesel consumed by other BUs or any of The City's unleaded gasoline consumption. Chart 4 illustrates The City's proportion of hedged and unhedged fuel during the audit period:

Chart 4 – Hedged and Unhedged Fuel (M Litres)



Source: Fuel Forecast Report & Interviews with Fuel Hedging Committee

An audit on the effectiveness of hedging processes was included in the City Auditor's Office 2016 Annual Audit Plan as FX and commodity purchases involve significant dollar amounts and are subject to market price volatility. Effective hedging processes can mitigate the exposure to market price volatility to improve The City's budget and cash flow management. Since there is no overall hedging policy for commodities and long-term contracts are in place for hedging electricity and natural gas consumption, we focused our audit on fuel hedging processes for which the Fuel TOR had been developed and implemented. We also included FX hedging processes since there was an established FX policy.

[6] Formerly part of the Finance & Supply BU and now a division under the Deputy City Manager's Office.

2.0 Audit Objectives, Scope and Approach

2.1 Audit Objective

The objective of this audit was to evaluate the effectiveness of FX and fuel hedging processes and practices in achieving budget stability.

2.2 Audit Scope

The scope of the audit included US dollar and Euro FX, and fuel hedging practices for which the Fuel TOR had been developed and implemented. We reviewed transactions for contracts signed between January 1, 2015 and March 31, 2016.

2.3 Audit Approach

The FX Policy and Fuel TOR provided the criteria that were used to evaluate effectiveness of hedging processes and practices.

- We tested a sample of 2015 and 2016 FX and fuel hedging activities to assess compliance with the FX Policy and Fuel TOR, and mitigation of the following risks:
    - Underhedging/Overhedging;
    - Utilizing inappropriate hedging instruments;
    - Market price speculation (fuel only); and
    - Adequately addressing market price exposure.
- We engaged an external consultant to provide information on good hedging policies and practices based on the consultant's experience (**Appendix A**). The consultant also provided information on good practice present in Canadian municipalities' hedging policies. We assessed City hedging against good practice to identify opportunities to enhance hedging effectiveness to further mitigate the risks above.

3.0 Results

3.1 Hedging Strategic Review

Based on our assessment of City hedging policies and practices, we identified opportunities to enhance hedging effectiveness. Other municipalities consider the aggregate impact of foreign currency and fuel purchases. We recommended a review and expansion of current risk mitigation strategies that considers aggregate corporate exposure for FX and all types of fuel and includes setting risk appetite, risk thresholds, and risk limits with senior management approval (Recommendations 1 and 3). This review is timely since the current strategy may not provide effective risk mitigation given exposure to recent market volatility, and increases in anticipated capital investment and energy demands.

The following sections provide further details on opportunities to enhance processes and policies, and strengthen controls specific to FX and fuel.

3.2 FX Hedge Processes

We tested the operating effectiveness of controls and assessed that controls are generally effective in ensuring compliance with the FX Policy. The FX Policy was created in 1999. Objectives, roles and responsibilities are defined in the FX Policy and hedging processes and controls are well established. POs are hedged according to hedging thresholds, and contracts are purchased to match the required payments in foreign currency.

We noted that the timing to book FX hedge deals was not defined in the FX Policy, resulting in an inconsistent process. We recommended defining a trigger for a FX hedge and a time frame to book the hedge, and monitoring hedges to ensure that they are booked in a timely manner (Recommendation 6).

Although FX hedging practices are well established, The City's approach to FX hedging is conservative. The FX Policy is prescriptive with all FX transactions over US$250K or €150K having to be hedged, with no consideration to spot rates and market trends. The FX Policy focuses on transactions (PO) rather than on an aggregate basis and does not consider aggregate corporate exposure or forecasted cash flows for projects, which in turn can negatively impact budget certainty.

FX hedge policies for other municipalities include consideration of spot price and forward expectation when setting risk limits, which can result in a more effective hedge strategy. We recommended the establishment of risk limits taking into account spot price and forward expectation, and the aggregated exposure from projects (Recommendation 3).

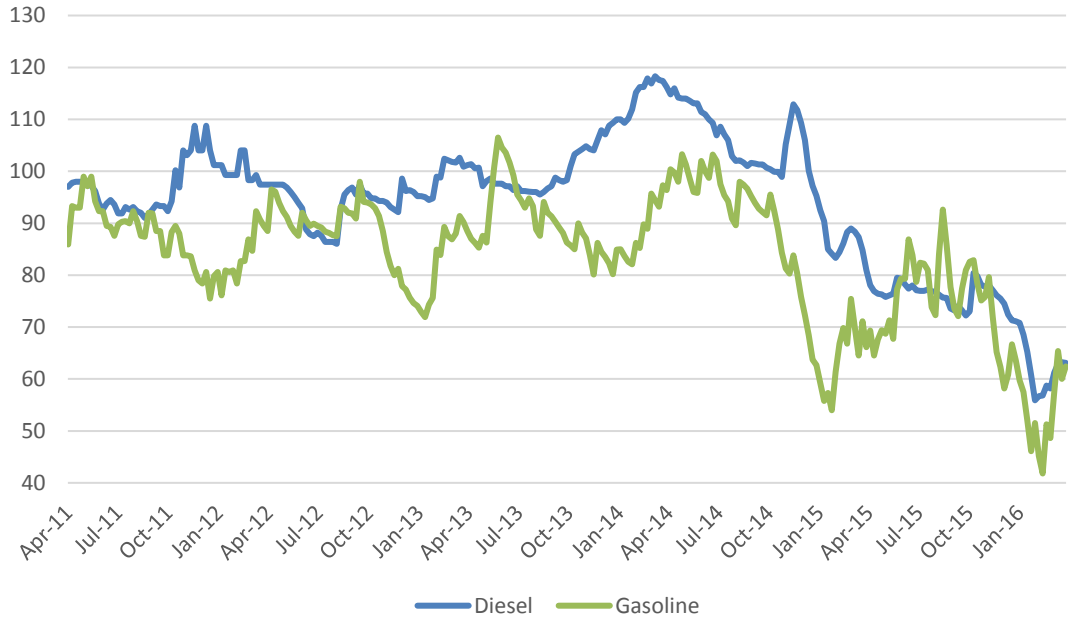
3.3 Fuel Hedge Processes

Administration defined a fuel hedge process and developed the Fuel TOR in March 2015. The Fuel TOR establishes a strategy to hedge Transit's diesel consumption based on budget versus market price. Overall, basic controls are in place to approve, review and place orders, and reconcile payments. The Committee composed of Finance, Supply and Transit employees assesses market conditions and approves the orders for Transit's diesel consumption. Transit's diesel consumption is hedged no more than 12 months in advance, in line with the Fuel TOR. Supply reviews the information and places the orders with the fuel distributor. The fuel distributor was selected based on a competitive process and The City was assigned priority status in case of fuel shortages. The City may also purchase fuel from an alternate supplier if needed. Supply performs month-end reconciliations to ensure the proper payment amounts.

The fuel hedge strategy and current practices are not fully effective in providing budget certainty since no hedging takes place for the consumption of diesel for other BUs or gasoline for The City, leaving approximately 8M litres of diesel and 11M litres of gasoline unhedged for the audit period, and subject to market price volatility. In addition, physical hedging of Transit diesel consumption provides Transit budget certainty when diesel prices are decreasing but is not effective if diesel prices increase above Transit's budget.

Chart 5 shows retail diesel and gasoline prices (excluding taxes) for Calgary for the period April 2011 to March 2016. Fuel prices were volatile with diesel prices fluctuating between 56 cents/litre and 118 cents/litre, and gasoline prices reaching a low of 42 cents/litre and a high of 107 cents/litre.

Chart 5 – Diesel and Gasoline Prices (excluding taxes) - Calgary (Cents/Litre)



Source: Natural Resources Canada – Average Retail Prices in Calgary

Benchmarked Canadian municipalities describe the use of financial derivatives such as swaps to hedge fuel price variance. The use of financial derivatives may provide greater budget certainty when fuel prices increase. Financial derivatives may also allow The City to expand hedging to all fuel types and BUs and to other commodities such as electricity and natural gas. We recommended that Administration consider the use of financial hedge instruments such as swaps to hedge all fuel types and BU consumption, and other commodities, and incorporate processes and controls to support the change (Recommendation 1). The use of financial derivatives will require a shift in accountability (e.g. Treasury), to provide appropriate expertise, along with the establishment of associated controls.

Oversight controls for fuel hedging should be strengthened to mitigate the risk of speculation. Hedged diesel from October 2016 to April 2017 were not consistent with pre-determined criteria in the Fuel Strategy Chart. Committee members advised that hedging decisions may be guided by forecasted future prices to address external perceptions of locked-in prices versus market prices. Until such time as the fuel strategy is revisited, we recommended an

interim process to monitor compliance with the Fuel TOR pre-determined criteria, and a review and approval process for exceptions (Recommendation 2).

3.4 Hedging Risk Assessment and Oversight

Based on hedging policies and practices we noted the following improvement opportunities that apply to fuel and FX hedging:

- The FX Policy and the Fuel TOR are silent on the risk of engaging counterparties that are unable to fulfill their obligations. We recommended that acceptable exposure to counterparty credit risk and counterparty limits, and the process to select and approve counterparties be defined in The City's hedge policies (Recommendation 4).
- The FX Policy and Fuel TOR do not include requirements to monitor and report on FX and fuel hedge effectiveness. To enhance consistency with the hedging strategy and mitigate the risk of speculation for fuel, we recommended the implementation of monitoring and reporting on the effectiveness of hedge strategies, and an update of City hedging policies to include performance indicators and post execution reviews (Recommendation 5).

We would like to thank staff from Finance, Supply, and Transit for their assistance and support throughout this audit.

4.0 Observations and Recommendations

4.1 Fuel Hedge Policy and Accountability

The City's fuel hedge strategy, described in the Fuel Hedging Terms of Reference (Fuel TOR) and current practices are not effective in providing budget certainty, which could result in financial loss. Fuel hedge policies for other municipalities include approved hedge strategies, approved financial and physical instruments, and mitigation of the underlying risk factors.

The Fuel TOR states that the objective of fuel hedging is to "manage The City fuel procurement and price volatility as it relates to the yearly budget". The strategy is to lock-in a price and volume for Transit's diesel consumption needs based on Transit's diesel budget (price per litre). If future delivery date prices are less than the budget, a percentage of the expected consumption is to be locked-in. This is accomplished through physical delivery of diesel to The City at the agreed delivery dates (physical hedge). The strategy is designed to provide Transit budget certainty when diesel prices are decreasing. The Fuel TOR states that price, fuel type, delivery dates and volumes to be hedged will be determined based on pre-determined criteria summarized in the Fuel Strategy Chart. The Fuel Strategy Chart is based on the budgeted price of diesel for the year, lock-in prices quoted by the fuel distributor for future delivery, and the quantity of fuel to be locked-in. Hedging future fuel volumes does not exceed 12 months in advance on a rolling calendar.

Hedging All Fuel

The scope of the Fuel TOR applies to all business units (BU) and fuel types. In accordance with the Fuel TOR, all fuel types should be hedged based on aggregated volumes across The City. However, hedging practice is focused on hedging Transit's diesel consumption only, leading to non-compliance with the Fuel TOR. There is no hedging of diesel consumption for BUs other than Transit and no hedging of gasoline or compressed natural gas.

As noted in the Background section, The City's total diesel and gasoline consumption for the audit period was approximately 41M and 11M litres respectively. Transit's diesel consumption was 33M litres for the audit period, which is approximately 80% of The City total. According to the fuel hedge strategy in the Fuel TOR, only up to 80% of Transit's diesel consumption may be hedged (26M litres) to deal with forecast demand uncertainties. Diesel consumption of 8M litres in other BUs along with 11M litres of gasoline are unhedged and subject to market price volatility. The Fuel Hedge Committee has advised that compressed natural gas volumes will likely increase due to Transit bus conversion from diesel.

Use of Financial Instruments

The strategy in the Fuel TOR does not address the risk to budget certainty of diesel price increases above the budget amount and is silent as to the acceptable instruments (financial or physical) that may be used to accomplish the fuel hedge strategies. The City may be able to hedge all of its fuel consumption by using financial hedges, providing an effective mitigation of market price exposures and budget variances through a corporate approach. As per **Appendix B** (illustrative purpose only), when fuel is procured at the current market price it exposes The City to budget variances. As illustrated in Appendix B, a fixed for float swap for 50% of the projected demand is used. If market prices increase above the budget value, the hedge has a market gain. If market prices fall below the budget value, the hedge has a market loss. The market gains/losses of the hedge offset the budget variance of the physical purchases providing greater budget certainty than the unhedged position alone.

The accountability for fuel hedging activities currently sits with the Fuel Hedge Committee. In order to hedge fuel through the use of financial instruments, a shift in accountability for hedging activities to Treasury may be required along with associated controls. Appropriate controls will need to be implemented to ensure activities are consistent with the fuel hedge strategy. In addition, impacted BUs will need to provide information on expected demand on a timely basis.

Fuel Risk Exposure and Limits

Good hedge policy practice calls for Council or senior management to set the maximum tolerable amount of loss, stated in dollars, that the organization is willing to accept (risk appetite). Risk thresholds are then set to provide guidance on the amount of variability that will be tolerated, such as maximum percentage of budget variance. Once the risk appetite and thresholds are defined, risk limits setting out the parameters for hedging should be determined such as term and volume limits. In addition, hedge policies state that, when setting risk limits, spot prices, forward expectations, and historical trends should be considered.

Although volume (% to be hedged) and term limits (12months) are defined in the Fuel TOR for hedging Transit's diesel consumption, the Fuel TOR does not define risk limits for other fuel types or hedge strategies for circumstances of increasing fuel prices beyond the established budget. The Fuel TOR states that the fuel hedging process for Calgary Transit will be revisited every January on an annual basis. Updates to the process will be made as required. The Fuel TOR:

- Drafted in March 2015, is to be reviewed and approved only by members of the Fuel Hedge Committee. The document exists in draft form, with no evidence of review or approval outside of members of the Fuel Hedge Committee; and
- The Fuel Strategy Chart in the Fuel TOR has not been updated to reflect the 2016 budget or current market prices.

Recommendation 1

The Director of Finance/ City Treasurer:

a) Expand fuel hedging activities to include all types of fuel and all BU consumption;
b) Consider the use of financial instruments to hedge fuel (e.g. swaps);
c) Incorporate processes and controls to support a) and b) including, communication of fuel consumption forecasts to Treasury;
d) Define fuel risk exposure and limits (acceptable volume and exposure limits per fuel type) and obtain approval from Senior Management; and
e) Update the Fuel Hedging Terms of Reference accordingly including:
    i. Documenting the revision history (revision date, reviser's name and title, a description of the revisions made, approver's name and title, approval date); and
    ii. Periodic review of fuel hedging objectives, strategy and limits.

Management Response

Agree.

Action Plan	Responsibility
The City's Fuel Hedge Committee is an ad hoc committee that primarily focuses on hedging Calgary Transit's fuel consumption as Calgary Transit is The City's largest fuel user. a) Finance will explore formalizing the current Fuel Hedging Committee including the mandate, accountabilities, and structure. The review will include: • Consultation with the CFO and if he agrees to proceed, ALT engagement and approval to be obtained • Proposed mandate, accountabilities, and structure • Consideration of expansion of fuel to include hedging of energy costs (i.e. natural gas, electricity) • Identification of specialized skill set and resources required b) The corporate commodity hedging committee, if created, will: • Identify all types of fuel that can be hedged • Consider use of financial instruments to hedge fuel (e.g. swaps) • Develop a corporate hedging policy that includes risk exposure and limits, counterparty selection process, performance indicators, and monitoring and reporting requirements	Lead: Director of Finance/City Treasurer Support: Manager, Supply and key business unit stakeholders Commitment Date: a) Consultation with CFO, ALT engagement and approval, and explore: July 14, 2017 b) If agreed to, formalize corporate commodity hedging committee and develop corporate hedging policy: October 31, 2017

4.2 Fuel Hedge Risk Mitigation

The percentage of fuel hedged for the seven months starting in October 2016 was not consistent with pre-determined criteria outlined in the Fuel TOR, resulting in non-compliance with the Fuel TOR and an increased risk of budget uncertainty. Fuel hedging activities should be monitored and exceptions to policy approved outside of the Fuel Hedge Committee.

As noted in observation 4.1, the Fuel TOR states that price, fuel type, delivery dates and volumes to be hedged will be determined based on pre-determined criteria summarized in a Fuel Strategy Chart. We observed:

- In February 2016, the fuel distributor indicated a future delivery price per litre of diesel of $0.779 for October 2016. The fuel strategy in the Fuel TOR would direct a hedge of 62% of the expected diesel consumption for the month of October 2016. However, only 36% of the expected diesel consumption had been hedged as at April 15, 2016;

- In February 2016, the fuel distributor indicated a future delivery price per litre of diesel of $0.827 for November 2016 and $0.816 for December 2016. The fuel strategy in the Fuel TOR would direct a hedge of 52% and 55% of the expected diesel consumption for the months of November and December 2016 respectively. In the February 2016 meeting a decision was made not to hedge. Hedging of 45% of the expected consumption took place two months later, at the April 15, 2016 meeting; and
- For 2017, the budget for the price of one litre of diesel is set at $1.07. The fuel distributor indicated future delivery prices for diesel ranging from $0.610 to $0.775 for the months of January to April 2017. The fuel strategy chart in the Fuel TOR would direct a hedge of 65% to 80% of the diesel volume for the months January to April 2017. No hedging had taken place as at April 15, 2016.

The Fuel Hedge Committee acknowledged that hedging decisions were not always guided by the Fuel Strategy Chart. Interviews with committee members indicated that the decision to hedge was influenced by external perceptions of locked-in prices versus market prices, leading to timing the market by forecasting future price movements.

The Fuel TOR does not contain provisions for the reporting and approval of decisions that are not supported by the pre-determined hedge criteria.

Recommendation 2
Until recommendation #1 is implemented, the Director of Finance/ City Treasurer ensure compliance with the Fuel TOR by implementing:

a) A process to monitor compliance with the Fuel TOR pre-determined criteria; and
b) A review and approval process for exceptions to the pre-determined hedge criteria.

Management Response

Agree.

Action Plan	**Responsibility**
Supply Management will support Finance by preparing a quarterly report that will include: • Compliance with the Fuel Hedging Terms of Reference and reasons for any exceptions; and • Comparison of performance to budget and market. The quarterly report will be provided to the City Treasurer to circulate to impacted Directors and/or General Managers, with any concerns brought forward to the City Treasurer for discussion.	Lead: Director of Finance/City Treasurer Support: Supply Management and Calgary Transit Finance Commitment Date: September 30, 2016

4.3 Foreign Exchange Hedge Policy

The City's Foreign Exchange (FX) Hedge Policy (Policy) does not permit flexibility to consider aggregate corporate exposure and hedge timing based on risk limits or forecasted cash flows for projects, which in turn can negatively impact budget certainty.

The Policy describes hedging as a financial strategy to manage the risk of major changes in the value of a foreign currency in relation to the Canadian dollar. Hedging is to provide business units with predictable costs by eliminating exposure to exchange rate risk. The Policy establishes a process for which purchase orders (PO) exceeding the established limit of US$250K or €150K must be hedged. Hedging takes place when a PO transaction is communicated to Treasury.

The current policy focuses on managing exchange rate risk (exposure to FX fluctuation) on a transaction basis (PO) rather than on an aggregate basis. FX hedge policies for other municipalities are starting to include the aggregate impact of payables in a foreign currency and the impact of projected cash flows. Considering aggregate exposures in addition to transaction exposure ensures that the full market exposure to budget certainty is managed.

As noted under Observation #1, hedge policies should set the maximum tolerable amount of loss, stated in dollars, that the organization is willing to accept (risk appetite) along with risk thresholds and risk limits taking spot prices, forward expectations, and historical trends into consideration. The current hedge limits (US$250K or €150K) were first defined in 1999 and have not been reassessed.

As per **Appendix C** (illustrative purpose only), a purchase order dated December 14, 2015, for US$1M would be hedged at the USD exchange rate (spot) of US$1= $1.3924. Assuming that this would be the locked-in exchange rate for this purchase, this would result in a purchase of $1.39M. Over the last ten years, the USDCAD exchange rate has mostly fluctuated between $1 and $1.30 (76% of the time) with a trough of $0.9358 in October 2007 and a peak of $1.4345 in January 2016. Setting hedge limits taking historical exchange rates into consideration mitigates the risk of market volatility and will result in a more effective hedge strategy.

The Policy does not address the exposure that exists prior to the creation of the PO. Projects that contain a significant portion of their budget based on foreign currency (i.e. foreign suppliers of equipment, technology or services) are at risk of going over budget or having to reduce scope if hedging doesn't take place until the PO is created. Budget for these projects contain assumptions on exchange rates that are exposed to market volatility. There is a risk that the exchange rate secured once the PO is created will be higher than the foreign exchange rate initially budgeted, resulting in higher costs. As The City's capital expenditure increases over the next years, this may result in a risk of projects exposed to foreign exchange rate fluctuations being over budget.

<u>Recommendation 3</u>
The Director of Finance/City Treasurer:

a) Define risk limits (volume limits, exposure limits) in light of price scenarios (spot price, forward expectation, historical trends) taking into account:
    i. The aggregated corporate exposure from projects and other initiatives; and
    ii. A stage-gating approach to hedge forecasted project cash flows over a designated time period.

b) Obtain approval from Senior Management on FX hedge risk exposure and limits; and
c) Update the FX Hedge Policy accordingly.

Management Response

Agree.

Action Plan	Responsibility
Treasury will: • Consult with business units on their historical FX expenditures and future FX budgets and aggregate corporate requirements and consult other municipalities and research best practices; • Define corporate FX risk limits (i.e. management risk tolerance); • Enhance Treasury systems to enable new hedging strategy; and • Revise the FX Hedge Policy accordingly and obtain approval from the CFO.	Lead: Manager Treasury Support: Supply Management and key business unit stakeholders Commitment Date: June 30, 2017

4.4 Counterparty Risk

The FX Policy and the Fuel TOR do not consider counterparty risk. An established counterparty selection process mitigates the risk of contracting counterparties that are unable to fulfill their physical and financial obligations. Hedge policies for other municipalities establish acceptable exposures to counterparty credit risk (risk appetite), typically based on credit rating. The credit rating considers the counterparty's ability to fulfill financial commitments. A list of agreed counterparties is approved to ensure competitive pricing. Counterparties are selected based on a competitive bidding process and agree to an unsecured threshold dollar amount that they are willing to accept.

FX

For our sample, all FX hedging deals were booked with The City's primary banker. By hedging with the primary banker, The City incurs no transaction fees. The policy does not specify thresholds for counterparty exposure (i.e. acceptable credit risk, in dollars, with any one counterparty) or the selection process for counterparties.

Future City projects are expected to involve significant amounts of purchases in foreign currencies, which may result in high value hedging transactions and the need to use more than one counterparty at a time. A defined process will support the selection of counterparties with the appropriate credit ratings and thresholds.

Fuel

A competitive process (Request for Proposal - RFP) took place based on the best wholesale discounted price. A fuel distributor was selected based on the results of the RFP and a contract was signed assigning priority status to The City in case of fuel shortages. The City may also purchase fuel from an alternate supplier if needed. The contract with the fuel distributor will end in Q4 2018.

A defined process to select a counterparty will support The City in implementing financial hedging (e.g. swaps), in addition to physical hedging, if The City decides to pursue this strategy.

Recommendation 4
The Director of Finance/City Treasurer:

a) Define acceptable exposure to counterparty credit risk and counterparty limits;
b) Define the process to select and approve counterparties; and
c) Update the City's hedge policies accordingly.

Management Response

Agree.

Action Plan	Responsibility
Treasury will: a) Define acceptable FX counterparty exposure; b) Define the FX counterparty selection criteria and approval process; and c) Revise the FX Hedge Policy accordingly and obtain approval from the CFO. For fuel, refer to Action Plan in recommendation #1 above.	Lead: Manager Treasury Support: N/A Commitment Date: a) December 30, 2016 b) December 30, 2016 c) June 30, 2017

4.5 Monitoring and Reporting on Hedge Effectiveness

The FX Policy and the Fuel TOR are silent on requirements to monitor and report on FX and fuel hedge effectiveness. The FX Investment Advisory Committee receives limited information on FX hedging effectiveness. No independent monitoring and reporting on the effectiveness of fuel hedge strategies takes place. Monitoring and reporting on hedging activities enhance consistency with the hedging strategy and mitigate the risk of speculation. Hedge policies for other municipalities include:

- Post execution review of hedges to assess performance and re-evaluate strategy; and
- Independence between execution and reporting of hedge performance.

FX
Every quarter, management reports to an Investment Advisory Committee composed of the CFO, City Treasurer, Deputy City Manager and one General Manager on the outstanding amount of forward contracts for different foreign currencies. Good practice calls for information presented on counterparty exposure, percentage of FX exposure hedged, and compliance with policy (e.g. timing of hedging activities vs. PO approval). This information is not included in the reports provided to the Committee.

Fuel
The City monitors its actual diesel cost versus the budgeted cost for diesel for the year. There is no requirement in the Fuel TOR to report on the fuel hedging activities and to assess the effectiveness of hedging (e.g. no established performance indicators to assess hedging performance). The decision authority rests with members of the Fuel Hedge Committee, and

no independence exists between execution and reporting of hedge performance. Good practice calls for information to be presented on compliance with pre-determined hedge criteria (e.g. percentage hedged), and hedge results (e.g. mark to market).

Recommendation 5
The Director of Finance/City Treasurer implement monitoring and reporting on the effectiveness of hedge strategies and update City hedging policies taking into account:

a) Performance indicators to assess hedging effectiveness; and
b) Independence for preparing reports and performing post execution reviews (Fuel).

Management Response

Agree.

Action Plan	Responsibility
a) Treasury will develop performance indicators to assess hedging effectiveness and will incorporate in the revised FX Hedge Policy to be approved by the CFO. b) For fuel, refer to the management response in recommendation #2 above.	Lead: Manager Treasury Support: N/A Commitment Date: a) June 30, 2017 b) September 30, 2016

4.6 Defining FX Hedge Timing

The timing to book FX hedge deals is undefined in the Policy. We expected a defined time frame to complete the booking of FX hedge deals once POs were approved and communicated to Treasury (e.g. five business days). A time lag between the PO and the closing of a hedge deal negatively impacts FX volatility risk and budget uncertainty.

From our sample of FX hedge transactions, we observed that the timing to book FX hedge deals was not defined, resulting in an inconsistent process. There were seven hedge deals that took place prior to the final approval of the PO and four instances (22% of our sample) where it took more than five business days between the time the PO was approved and the hedge deal was booked:

Time Frame	Number of Booked Deals
Deal booked prior to final PO approval	7
Deal booked up to 5 business days after PO approval	7
Deal booked between 6 and 10 business days after PO approval	1
Deal booked between 11 and 30 business days after PO approval	1
Deal booked more than 30 business days after PO approval	2

Management advised us that the timing to book a FX hedge deal is not defined and is not monitored through performance indicators.

Recommendation 6
The Manager Treasury:

a) Define the transaction timing that will trigger a foreign exchange hedge (e.g. at the moment a purchase order is approved);
b) Determine a time frame in which the foreign exchange hedge has to be booked; and
c) Monitor that the foreign exchange hedges are booked in a timely manner.

Management Response

Agree.

Action Plan	**Responsibility**
Treasury will: • Define the transaction timeframes and monitoring procedures; and • Revise the FX Hedge Policy accordingly and obtain approval from the CFO.	Lead: Manager Treasury Support: Supply Management and key business unit stakeholders Commitment Date: December 30, 2016

Appendix A – Hedging Consultant

We engaged KPMG to provide information on good hedging policies and practices. KPMG assigned the Director Financial Risk Management to support the audit. The scope of the work involved a review of The City's FX Policy, Fuel TOR and supporting documentation, and providing subject matter guidance and feedback on benchmarking and leading practices from other Canadian municipalities.

The Director Financial Risk Management has over 14 years of consulting and business experience focusing on energy risk management, commodity purchase, and hedging methodologies.

Relevant experience includes:

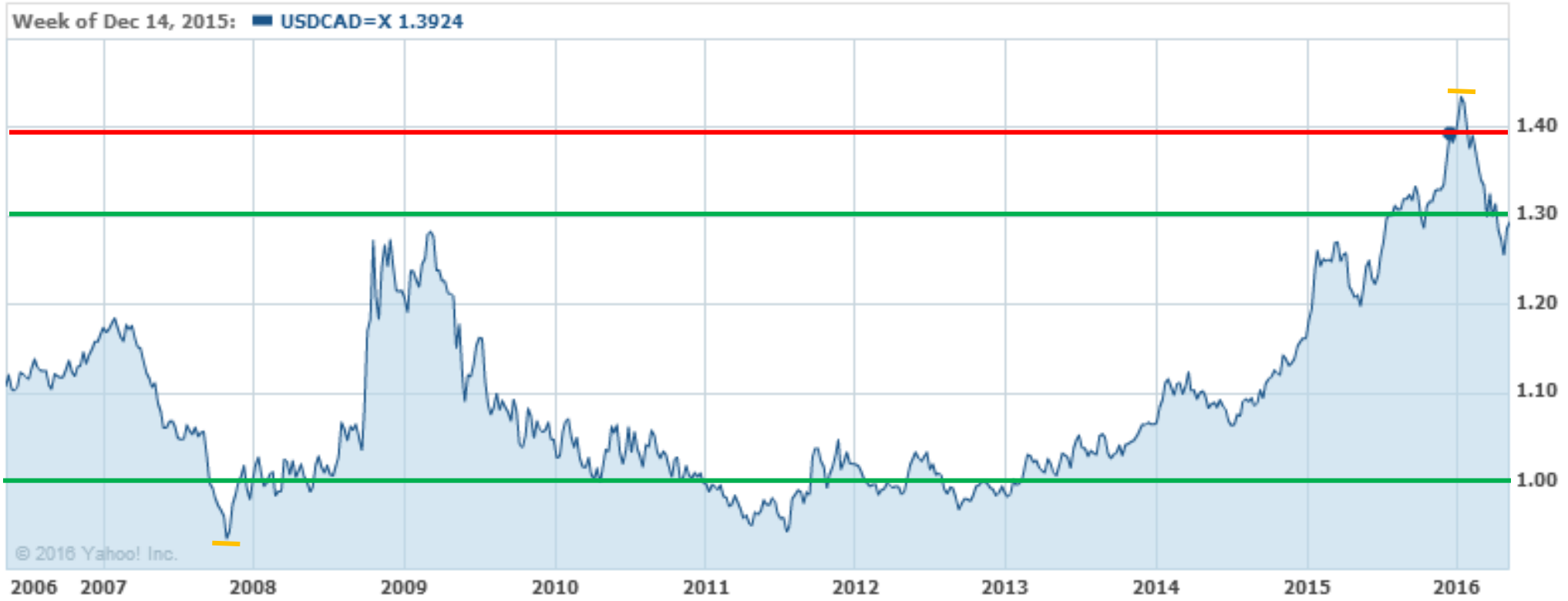
- Designed and implemented trading risk policy, including hedge policy design;
- Aligned hedge policy to enterprise risk and Board risk appetite; and
- Assessment of risk and hedging policy and risk practices, and development of gap analysis to leading practice.

Appendix B – Fuel Hedge Strategy

Hedge Strategy	Contract	Budget Value	Contract Price	Volume (Litres)	Market Price		Budget Variance	Comments
					Drop	Increase	Positive: over budget, Negative: under budget[7]	
Current Strategy	Do nothing when prices are greater than budget. Full exposure to market price when price exceeds budget. E.g. market price of $1.15 (10 cents above budget)	$1.05	n/a	400,000	n/a	$1.15	$40,000	No budget certainty and fully exposed to market price. Over budget by 10 cents per litre or $40,000.
	Hedge only when prices fall below budget. E.g. market price of $0.95 (10 cents below budget)	$1.05	$0.95	400,000	$0.95	n/a	$(40,000)	Budget certainty only when market price under budget. Budget certainty increases as market prices become more favourable. Under budget by 10 cents per litre or $40,000.
Alternative Strategy: Buy at Market, Hedge with Swap	Purchase fuel needs at market price	$1.05	n/a	400,000	$0.95	$1.15	$40,000 to $(40,000)	No budget certainty and fully exposed to market price. Over budget by 10 cents per litre or under budget by 10 cents per litre.
	Hedge with a fixed ($1.05) for float swap for 50% of the volume. Net position with market price of $0.95	$1.05	$1.05	200,000	$0.95	n/a	$20,000	Budget certainty for 50% of the volume and reduced exposure to market prices, gains reduced from $40,000 to $20,000.
	Hedge with a fixed ($1.05) for float swap for 50% of the volume. Net position with market price of $1.15	$1.05	$1.05	200,000	n/a	$1.15	$(20,000)	Budget certainty for 50% of the volume and reduced exposure to market prices, losses reduced from $40,000 to $20,000.

[7] Reflects minimum hedging contract volume of 400K litres. Actual fuel consumption for the audit period was approximately 52M litres.

Appendix C – Historical US/CAD Exchange Rates



Source: Yahoo! Finance

- Exchange rate at December 14, 2015 ($1.3924)
- Exchange rate range ($1.00 to $1.30)
- Exchange rate peak ($1.4345) and trough ($0.9358)